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Effect of Instructional Guidelines regarding Uterotonic Drugs Administration on Nurses' Performance and Labor Outcome

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Abstract

Background: The nurse has a very important role before, during and after uterotonic drugs administration through assessment, observation, proper interventions and notification of any abnormalities to the physician to render the highest quality of obstetrical care. ***The aim of this study was to:*** Evaluate the effect of the instructional guidelines regarding uterotonic drugs administration on nurses' performance and labor outcome. ***Subjects and Methods*:** A quasi experimental research design was used**.** ***The study was conducted at three settings of labor units in Tanta city:*** Tanta University Hospital, El-Menshawy General Hospital and El-Mabara Hospital. ***The sample of this study*** *consisted of all available* nurses (40 nurses) as well as a purposive sample of 120 parturient women. ***Three tools were used for data collection; Tool I,*** Structured interview schedule**,** it included two parts. ***Part (1):*** Nurses socio-demographic characteristics. ***Part (2):*** Assessment of nurses′ knowledge regarding uterotonic drugs. ***Part (3):*** Socio-demographic characteristics of parturient women**.** ***Tool II:*** Observational checklist for nurses′ practice regarding uterotonic drugs administration. ***Tool III:*** Labor outcome assessment tool. ***Results*:** The implementation of the instructional guidelines resulted in a significant positive improvement of nurses' performance regarding uterotonic drugs administration compared to pre instructional guidelines implementation consequently the maternal, fetal and neonatal outcomes were positively improved. ***Conclusion*:** it can be concluded from this study that the research hypothesis has been achieved after implementation of the instructional guidelines regarding uterotonic drugs administration which resulted in a statistically significant positive improvement of maternity nurses' performance and labor outcome immediately and three months later compared to pre guidelines implementation. ***Recommendations****:* Planning in-service training programs for all nurses must be conducted in order to improve, update and refresh their knowledge and qualify their practices dependent on recent evidence based guidelines regarding uterotonic drugs administration.

Keywords: Instructional guidelines, Uterotonic drugs, Nurses′ performance, Labor outcome.

Introduction

Childbirth is the most pleasurable event for mother and at the same time, it is also considered a life-threatening event to her. It is a physiological process which may be defined as a coordinated effective sequence of involuntary uterine contractions that result in cervical effacement and dilatation as well as voluntary bearing down effort leading to expulsion of conception products including the fetus, membranes, umbilical cord, and placenta. Uterine stimulants (uterotonics or oxytocics) are medications that are given either to induce or augment the labor. (1-3)

Induction of labor (IOL) is defined as a process of artificial initiation of uterine contractions after the fetal viability and before spontaneous onset of labor, with the aim of achieving effective cervical effacement and dilatation which lead to vaginal delivery. Induction rates vary greatly between obstetric units depending on incidence of high risk pregnancies, local hospital protocols and the availability of resources. It has been estimated that more than 22% of all gravid women undergo IOL in the United States (US) and the overall rate of IOL has been increased and become doubled since 2006 to 2016 while in Egypt it is approximated that the use of uterotonic drugs during labor reached to 45 % of all births in 2015 which is utilized to induce or augment labor. (4-6)

Moreover, augmentation of labor refers to the stimulation of uterine contractions when spontaneous contractions have failed to produce progressive cervical dilatation needed for expulsion of the fetus. Uterine stimulants can be used to augment existing uterine contractions, to increase their frequency, duration and intensity by using uterotonic drugs such as oxytocin, prostaglandins, and misoprostol. Uterotonic drugs can be given intramuscularly (IM), intravenously (IV), and as a tablet, gel, and /or vaginal suppository. (7-9)

Uterotonics was designated as a high-alert medication in 2007 by the Institute for Safe Medical Practice (ISMP) which requires special considerations and precautions before, during and after their administration. Based on professional liability survey which done by American College of Obstetrics and Gynecologists (ACOG, 2011) found that about 21.9% of claims had involved neurologically impaired babies, and 14.7% had involved stillbirths or neonatal deaths among labors managed with oxytocin. Approximately one half of these claims had involved

allegations of oxytocin misuse. The ultimate goal of an active management of labor is to improve the quality of care for laboring women, prevent complications and thus in turn will decrease maternal morbidity and mortality. This could be achieved through promoting nurses' compliance with high alert medications such as uterotonics administration guidelines during labor.(10-12)

Compliance is a state of being in accordance with established guidelines, specifications, and legislation. Compliance with drug guidelines is considered as fundamental concept for accountability, autonomy, competence and delegation that are considered in determining scope of practice which also relates to the profession's role in medication management (13-15). However, non-compliance with drug guidelines is a serious, widespread problem among nurses. Understanding and utilizing the scope of nursing and midwifery practice framework and its determinants in conjunction with professional guidance on medication management can facilitate the nurse's performance and response to medication errors as an individual and team member.(16-17) When medication errors result in patient harm, these adversely influence the patient, the health care providers, and also the health care setting. (18)

The ultimate goal of nurses' role is to reduce unsatisfactory effects of uterotonics by following guidelines of its use. These effects are the main source of serious maternal and fetal complications. Maternal complications such as; prolonged active phase, uterine hyper stimulation, uterine tachysystole, maternal intensive care unit admission, uterine rupture, cervical laceration as well as third and fourth degree perineal tear. In addition, the most frequent fetal complications such as; fetal heart rate abnormalities, fetal hypoxia, fetal distress, stillbirth, low Apgar score, neonatal morbidity (e.g. seizures, birth asphyxia, neonatal encephalopathy, infection) and neonatal intensive care admission.(19-22)

Significance of the study

The maternity nurse as a member of the health team could play a crucial role in promoting compliance with guidelines of uterotonic drugs before, during and after its administration. The maternity nurse has a vital role to assume responsibility for the management of obstetric and gynecological care essential for low risk women through assessment, observation, proper interventions and notification of any abnormalities to the physician to render the highest quality of obstetrical

care. Reducing nurses errors with uterotonics administration will save maternal and fetal life.[20-22] Unfortunately insufficient studies were conducted to evaluate the effect of instructional guidelines regarding uterotonic drugs administration on nurses performance and labor outcome.

The aim of this study was to:

Evaluate the effect of instructional guidelines regarding uterotonic drugs administration on nurses' performance and labor outcome

Research Hypothesis:

Nurses' performance as well as labor outcome are expected to be improved after implementation of the instructional guidelines regarding uterotonic drugs administration.

Subjects and Method

Subjects

Subjects and method of the current study were represented according to the following designs:

- Technical design.
- Administrative design.
- Operational design.
- Statistical design.

- **Technical Design.**

i. Research Design:

A quasi experimental research design was used to evaluate the effect of the instructional guidelines regarding uterotonic drugs administration on nurses' performance and labor outcome**.**

ii. Settings:

This study was conducted at labor units of obstetric department at three settings in Tanta city:

- Tanta University Hospital.
- El-Menshawy General Hospital Affiliated to the Ministry of Health and Population.
- El-Mabara Hospital Affiliated to the Health Insurance.

iii. Subjects:

The sample of this study consisted of:

1. All available nurses (40 nurses) who were working in the previously mentioned study settings and provided care to women before, during and after uterotonic drugs administration.
   - Nurses who are working at Tanta University Hospital (20 nurses).
   - Nurses who are working at El-Menshawy Hospital (10 nurses).
   - Nurses who are working at El-Mabara Hospital (10 nurses).
2. Purposive sample of 120 parturient women were selected from the

previously mentioned study settings with the following **inclusion criteria:**

- Age ranged from 20 -35years old.
- Free from any medical or obstetric diseases.
- Pregnant with singleton fetus, also with cephalic presentation
- Willing to participate in the study.

iv. Tools for data collection:

To achieve the aim of this study the following three tools were used by the researcher based on review of recent related literatures.

Tool I: A structured interview schedule:

A specially designed structured interview schedule was developed and used by the researcher based on the recent review of relevant literatures to collect the basic data about the study subjects. It included the following three parts;

Part (1): Nurses socio-demographic characteristics:

This part was used to collect data about nurses' general characteristics such as; age, marital status, level of education, occupation, years of experience in labor unit as well as previous training courses regarding care of women during uterotonic drugs administration.

Part (2): Assessment of nurses′ knowledge regarding uterotonic drugs: This tool was developed by the researcher after reviewing of recent related literature **(15-16)** to assess nurses′ knowledge regarding uterotonic drugs administration.

It entailed 32 questions regarding the following; general knowledge about uterotonics drugs, types, mode of action, storage temperature, routes for administration, indication, contraindications, regulation of the drip and side effects. In addition, precaution taken as well as nursing care before uterotonics administration, nursing intervention and observations recorded during the administration, frequency, duration and also intensity of uterine contraction to be achieved. Also, indication for stopping the infusion, signs of maternal and fetal distress, signs of uterine hyper stimulation, signs of uterine rupture, and also antidote for oxytocin as well as nursing measures after uterotonics administration.

The scoring system for nurses' knowledge was categorized as follows:

- Correct and complete answer was scored as (2).
- Correct and incomplete answer was scored as (1).

- Incorrect answer and didn't know was scored as (0).

The total score level of nurses' knowledge was calculated as follows (0-64):

- High level of knowledge 75-100%. (48-64)
- Moderate level of knowledge 60 - <75%. (38.4 - <48)
- Low level of knowledge <60%. (0-<38.4)

Part (3): A structured interview schedule for parturient women:

This tool was developed by the researcher after reviewing of recent related literature [17-18 and 27] and was used to collect basic data about parturient women:

(a): Socio-demographic characteristics of parturient women included data such as: age, marital status, education, occupation and also residence.

(b): Reproductive history of parturient women, this part was used to collect data about obstetric characteristics of parturient women such as: gravidity, parity, spacing period, number of abortion, mode and place of past deliveries as well as previous use of uterotonic drugs and previous maternal or fetal complications with uterotonics administration during previous labor and deliveries.

Tool II: Observational checklist for nurses′ practice regarding uterotonic drugs administration:

This tool was developed by the researcher after reviewing the recent related literature **[17-19, 21]**. It was used and comprised of 55 items to assess nurses′ practice during care of women who receive uterotonic drugs; it included the following parts:

Part (1): Pre-Preparation for uterotonic drugs administration

It comprised 4 items observed by the researcher to assess nurses' practice regarding uterotonic administration such as:

- Obtained obstetrician order before starting oxytocin induction.
- Ensured the following preliminary assessment to start oxytocin induction :-
  - Prenatal record on chart.
  - Indication for induction is documented.
  - Contraindications for induction are excluded.
- Assess women's pelvis to be clinically adequate.
- **Assess Bishop's score through vaginal examination as follows:-**

Inducibility features	**Score 0**	**Score 1**	**Score 2**	**Score 3**	**Total**
Cervical dilation	Os closed	1-2	3-4	5or more	0-3
Cervical effacement (or) Cervical canal length (cm)	0-30% <0.5	40-50% 0.5-1	60-70% 1<2	80% or more 2	0-3
Consistency of cervix	Firm	Medium Soft	Soft	-	0-2
Position of cervix	Posterior	Mid position	Anterior	-	0-2
Station of fetal head	-3	-2	-1,0	+1,+2	0-3

Minimum score required for uterotonic induction: 7 for primipara, 5 for multipara and the overall total score =0-13

Part (2): Administration of uterotonics

It involved 39 items observed by the researcher to assess nurses' practice regarding maternal and fetal condition before, during as well as after uterotonics administration:

a) Maternal and fetal assessment before uterotonics administration

Maternal assessment, it contained 14 items as follow;

- Review woman's sheet to ensure clarity of physician's order, also for correct date, time & dose of oxytocic.
- Compare name of oxytocic with woman's sheet to ensure correct name.
- Check woman's name by asking her name or checking wrist band.
- Obtain detailed history regarding previous abdominal or uterine surgery, history of hypovolemic state, cardiac disease or bronchial asthma.
- Obtain informed consent.
- Make sure that gestational age is 38 weeks or more.
- Check for contracted pelvis.
- Assess the status of cervix as documented.
- Check for malpresentation or assess the presentation as documented.
- Assess the vital parameters (blood pressure, pulse, respiration and temperature).
- Check for signs and symptoms of maternal distress.
- Place the hand on the fundus to monitor the uterine contractions to check the frequency of uterine contraction within 10 min and also the duration and intensity of uterine contractions.
- Calculate the dosage before administering oxytocin.
- Use ringer lactate solution for oxytocin infusion, solution with oxytocin is flagged with a label containing (date, time and dose) .

Fetal assessment, it consisted of 4 items as follow;

- Check the fetal gestational age, fetal weight in the last week, fetal heart rate as well as occurrence of tachycardia & bradycardia and signs and symptoms of fetal distress.

b) Maternal and fetal assessment during uterotonics administration.

Maternal assessment, it entailed 8 items as follow;

- Check duration, intensity and frequency of uterine contractions in 10 min also uterine relaxation in between uterine contractions.
- Increase the drip rate every ½ hour, double the drip rate to increase the dosage.
- Adjust the oxytocin infusion rate based on contraction, maintain the drip rate when contraction are 3 in 10mts for 45 seconds duration and also reduce the drip rate when contraction are >5 in 10mts .
- Check vital parameters (temperature, blood pressure, respiration and pulse) every 2 hours till membrane rupture .
- Assess for any sign of uterine rupture.
- Perform the per abdomen examination every ½ hour for descent of the fetal head .
- Monitor the progress status every ½ hour through vaginal examination .
- Make intake and output chart.

Fetal assessment, it covered 5 items as follow;

- Adjust oxytocin infusion based on fetal reaction.
- Observe & record fetal heart rate as follows;
  - On initiation of oxytocic infusion
  - 15 minutes after initiation of oxytocic infusion
  - Then every 30 minutes
  - On increasing or decreasing oxytocic infusion
- Check the number of acceleration and deceleration rate within 20min.
- Stop the oxytocin and give oxygen if the fetal heart rate <100beats/minute, or if the fetal heart rate >160beats/minute .
- Inform doctor in case of fetal heart rate abnormalities.

c) Maternal and neonatal assessment after uterotonics administration (after delivery)

Maternal assessment, it consisted of 5 items as follow;

- Monitor the uterine contractility every ½ hour after stopping the oxytocin.
- Check the amount of vaginal bleeding or lochia every ½ hour .
- Check the vital parameters temp, pulse, respiration and blood pressure .
- Monitor the urine output hourly .

- Check for edema all over the body .

Neonatal assessment after uterotonics administration, it comprised 3 items as follow;

- Assess for incidence of trauma, occurrence of seizures, birth asphyxia, neonatal encephalopathy and infection.

Part (3): Emergency measures during uterotonics administration

It entailed 4 items regarding actions should be taken if complications during uterotonics administration arise as follow;

- Discontinue the drug on conditions such as:-uterine hyper stimulation, maternal exhaustion, tachycardia or hypotension, non-reassuring fetal heart rate as well as meconium stained liquor .
- Turn the mother on left side .
- Administer oxygen at 2 to 3 lit/minute by facemask .
- Immediately inform the obstetrician about the maternal condition.

Part (4): Documentation

It included 8 items about documentation of the following data regarding oxytocic infusion on woman's sheet as follow:

- Dose of Oxytocic as well as amount & type of solution.
- Initial Oxytocics' rate, increasing or decreasing rate and discontinuation or restarting it.
- Fetal heart rate.
- Maternal vital signs.
- Vaginal examination findings.
- Intake and output.
- Progress of labor.
- Nursing intervention and signature.

Scoring system of nurses' practice was categorized as follows:

- Done correctly and completely was scored as (2).
- Done correctly but incompletely was scored as (1).
- Done incorrectly or not done was scored as (0).

The total score of nurses' practice was calculated and classified as follow:

The scores of nurses' practice were obtained for each nurse who ranged from (0-110) then summed up as well as, converted into a percent score. The total score of nurses' practice regarding uterotonics administration was classified as follow:

- **Satisfactory practice (≥ 75 %). (82.5-110)**

- Unsatisfactory practice (0 < 75%). (0-< 82.5)

Tool (III): Labor outcome assessment:

This tool was developed by the researcher, after reviewing of recent related literature [27-29] and was used to assess maternal and fetal/ neonatal outcome of parturient women before and after implementation of the instructional guidelines. Maternal and fetal/ neonatal outcome refers to the extent to which maternal and fetal/ neonatal well-being lies within normal or abnormal limits from onset of uterotonics administration, and then through labor and delivery of the baby. This tool included the following two parts as follow:

Part (1): Assessment of maternal outcome:

It was used to assess the effect of uterotonic drugs on maternal condition. Maternal outcome was measured on the basis of the following:

During labor

- Incidence of ineffective cervical dilatation / failed induction.
- Duration of second stage of labor.
- Incidence of uterine hyper stimulation/ hypertonic uterine contractions.
- Incidence of precipitous labor.
- Incidence of uterine rupture.
- Occurrence of intrapartum hemorrhage.

Immediately after delivery

- Type of delivery.
- Incidence of third or fourth degree perineal tear.
- Incidence of postpartum hemorrhage.
- Maternal intensive care unit admission.

Part (2): Fetal / neonatal outcome assessment:

It was used to assess the effect of uterotonic drugs on fetal/ neonatal condition. Fetal outcome was measured on the basis of the following:

During labor

- Occurrence of fetal heart rate abnormalities.
- Incidence of fetal hypoxia and fetal distress.
- Intrapartum fetal death (Stillbirth).

Immediately after delivery

- Apgar score at one and five minutes.
- Presence of meconium aspiration.
- Presence of respiratory distress.
- Neonatal intensive care admission.

Method

Administrative Design:

- An official permission and approval was obtained from the responsible

authorities before conducting this study through official letters from the Faculty of Nursing Tanta University, clarifying the purpose of the study directed to hospitals administrators of obstetric departments at the three settings (Tanta University Hospital, El-Menshawy and El-Mabara Hospitals) to obtain their approval and cooperation for carrying out the study.

- **The actual study (field work):** Data were collected from all available nurses (40 nurses) who are working in the previously mentioned study settings and providing care to women before, during and after uterotonics administration. In addition, purposive sample of 120 parturient women were selected from the previously mentioned study settings over a period of one year from the beginning of June 2020 to June 2021.
- Data collection was conducted at the morning, and afternoon shifts until the predetermined sample size were collected. All parturient women at time of data collection and had the inclusion criteria at each setting were included in the study.
- The data initially collected from the studied nurses for "assessment phase". Appropriate health instructional guidelines sessions were prepared, planned, and implemented by the researcher according to their needs.

Operational design:

The study was implemented and carried out according to the following steps:

A. Tools development:

Three tools were developed by the researcher after reviewing of the relevant and recent literatures and used for data collection including; **Tool I part (1)**: a structured interview schedule, **Tool I part (2):** Assessment of nurses′ knowledge regarding uterotonic drugs. **Tool I part (3):** A structured interview schedule for parturient women. **Tool II:** Assessment of nurses′ practice regarding uterotonic drugs administration by using observational checklist. **Tool III:** Labor outcome assessment tool. Tools were tested for content and construct validity by 5 experts in obstetric and gynecological nursing field and modifications were carried out. Tools reliability was tested used appropriate statistical test by calculating Cronbach's alpha from data collected in the pilot study. The alpha value was found to be 0.98 indicating high reliability of the study tool.

B. Ethical and legal considerations:

Nurses as well as parturient women's oral informed consent was obtained to participate in the study after explaining the purpose of

the study. The researcher ensured that the nature of the study didn't cause any harm and/or pain for the entire sample. Also, confidentiality and privacy were ascertained and put into consideration regarding the collected data and the women's rights to withdraw at any time if desired.

C. The Pilot Study:

After the development of the tools, the pilot study was carried out on 10% of the studied nurses and parturient women "4 nurses and 12 parturient women who administered uterotonic drugs" from the previously mentioned study settings to ascertain the clarity, feasibility and applicability of the developed tools. The pilot study was conducted before the actual data collection. Consequently the necessary modifications, and/or rephrasing, were done according to the results of this pilot study, then the tools made ready for use. Data obtained from the pilot study were included from the current study sample because there no major changes were done on the tools.

D. The instructional guidelines was implemented and conducted through 4 phases: assessment, planning, implementation, and evaluation.

Phase I: Assessment phase (Pre-test):

- This phase was done before **implementation of the instructional guidelines**. The researcher met the studied nurses at the morning and afternoon shifts in the previously mentioned study settings. Nurses were asked to participate in the study after explaining the aim of the study.
- **The studied nurses** were assessed using **Tool I part (1)** to collect their baseline data (socio-demographic characteristics) and **part (2)** was also used to assess their knowledge regarding uterotonic drugs.
- Nurses' knowledge regarding **uterotonics administration** was assessed individually from each nurse through a pre-test structured interview schedule which lasted 15-20 minutes in the presence of the researcher for necessary clarification.
- **Tool (II)** was used to assess nurses' practice regarding uterotonics administration before implementation of the instructional guidelines.
- Nurses' practice was assessed by the researcher individually for each nurse before, during as well as after uterotonics administration through an observational checklist.
- **The parturient women** were assessed for their general and obstetric characteristics (socio-demographic and

reproductive history) through a structured interview schedule that was distributed and conducted individually for each woman using **Tool I** part **(3)** as well as by using **Tool (III)** to assess the effect of uterotonic drugs on maternal and fetal outcome before implementation of the instructional guidelines.

Phase II: Planning phase

- Based on the data collected using an interview schedule to assess nurses' knowledge and practices (nurses' performance) regarding **uterotonics administration**" assessment phase". Appropriate instructional guidelines were prepared, planned, and implemented by the researcher for the studied nurses. The steps of planning for the instructional guidelines sessions included the following**:**

a-Setting the goals and objectives of the instructional guidelines:

- The goal of the instructional guidelines was to:

Enhance nurses' performance regarding uterotonics administration.

Improve labor outcome after uterotonic drugs administration.

- **Objectives of the instructional guidelines:** After implementation of the instructional guidelines the nurses will be able to:

- Identify types and mode of action of uterotonic drugs.

- Recognize routes of uterotonic drugs administration.

-Determine indications, contraindications and complications of uterotonic drugs administration.

- Recognize the maternal and fetal/ neonatal outcome after uterotonics administration.

- Demonstrate and re-demonstrate the nursing intervention before, during and after uterotonic administration.

b- The instructional guidelines included two main parts:

- **Theoretical part**: It was prepared based on the instructional guidelines objectives and assessment of nurses knowledge before conducting the educational session and was guided by relevant literature. The theoretical part included (types, mode of action, routes of administration, indications, contraindications, complications, signs to discontinue the drug and also antidote for uterotonic drugs).

- **Clinical part:** It was prepared based on the instructional guidelines objectives and assessment of nurses practice before conducting the educational session and was guided by relevant literature. The clinical part included (nursing care provided to parturient women before, during and after uterotonic drugs administration, assessment of Bishop Score, abdominal examination, vaginal examination as well as assessment of uterine contraction).

c- Prepare the content of the instructional guidelines:

- An educational booklet was developed by the researcher based on nurses′ knowledge and practice to increase their awareness regarding uterotonic drugs administration and nursing care measures needed before, during and after administration.

- Different methods of teaching were used to conduct the instructional guidelines such as; lecture, group discussion, posters, power point, demonstration and re-demonstration and video scenarios presentation.

- Content of the educational booklet was prepared by the researcher to be used as a guide for nurses self-learning.

Phase III: Implementation phase:- (Instructional guidelines sessions)

- The researcher explained the purposes of the instructional guidelines for the studied nurses, and obtained their consent to participate.
- The instructional guidelines included 3 sessions (one session for theoretical part and two sessions for clinical part); it was carried out in the previously mentioned settings. The total numbers of nurses were (40 nurses) divided into 8 groups. Each group included 5 nurses (four groups at Tanta University Hospital, two groups at El- Menshawy General Hospital and two groups at El-Mabara Hospital); the instructional guidelines were conducted over 3 days per week. The duration of each session ranged from 30 to 45 minutes including periods of discussion.
- The sessions were conducted at morning and afternoon shifts.
- The sessions were as follow:
  - **The first session:**

The aim of this session was to explain the goal and objective of the instructional

guidelines and also providing nurses with knowledge about different types of uterotonic drugs, mode of action, indications, contraindications, storage temperature, and routes of administration, available drugs units, regulation of the drip, side effects, precaution taken before drug administration and its effect on maternal and fetal condition.

- **The second session:**

The aim of this session was to explain the goal and objective of the instructional guidelines and providing nurses with practical skills about abdominal examination as well as assessment of uterine contractions.

- **The third session:**

The aim of this session was to explain the goal and objective of the instructional guidelines and providing nurses with practical skills about assessment of Bishop score, vaginal examination, assessment of maternal and fetal wellbeing before/ during and after uterotonic drugs administration including signs of uterine rupture, signs of fetal and maternal distress as well as emergency measures that should be taken during uterotonic drugs administration and also documentation of nursing intervention.

Phase IV: Evaluation phase (Post-test):

- Nurses' knowledge regarding uterotonic drugs administration was assessed individually from each nurse who fulfills it by herself in the attendance of the researcher immediately and three months after implementation of the instructional guidelines by using **Tool I part (2).**
- Assessment of nurses' practice regarding uterotonic drugs administration was done by using **Tool II (observation checklist).**
- Each nurse was observed three times individually while caring for parturient women to assess their practice when conducting nursing care before, during and after uterotonic drugs administration.
- Comparison was done in relation to nurses' knowledge and practice before, immediately and three months after implementation of the instructional guidelines.
- **The effect of the instructional guidelines regarding uterotonic drugs administration on labor outcome for**

mother and fetus/ neonate was assessed by using **tool (III)** before, immediately and three months after implementation of the instructional guidelines.

– **Statistical Design:**

The collected data were organized, tabulated and statistically analyzed using SPSS version 19 (Statistical Package for Social Studies) created by IBM, Illinois, Chicago, USA. For numerical values the range mean and standard deviations were calculated. The differences between two mean values were used using T test. For numerical data when the normal distribution was not guaranteed Mann-Whitney test was used to compare difference in mean values instead of T test. For categorical variable the number and percentage were calculated and differences between subcategories were tested by chi square test. When chi square wand not found appropriate, either Fisher exact test or Monte Carlo exact tests were used as appropriate. The correlation between two variables was calculated using Pearson's correlation coefficient. The level of significance was adopted at $p<0.05$.[22]

Results:

Table (1): Shows the distribution of nurses according to their socio-demographic characteristics. It is observed that nurses' age ranged from 28-57 years, with **Mean age ± SD** of 41.65±8.25. As regards their marital status, the majority (90.0%) of nurses were married, about two third (67.5%) of them had completed diplome of nursing; the vast majority (92.5%) of them were bed side nurse, while the minority (7.5%) of them were nursing supervisor. Moreover, the table also reveals that (62.5%) of nurses had 20 years of experience or more, the vast majority (85%) of nurses didn't take any previous training courses regarding uterotonic drugs administration and only (15%) of them who had previous training regarding uterotonic drugs administration. Finally, the table also reveals that the entire subjects (100%) reported that they did not have any teaching aids (booklet - poster - brochure) regarding uterotonic drugs administration in their department.

Figure (1): Displays the distribution of nurses according to their total score level of knowledge regarding uterotonic drugs administration pre, immediately and three months post guidelines implementation. It was observed that (12.5%) of nurses had high level of knowledge regarding uterotonic drugs administration pre guidelines implementation, which increased to (92.5%) immediately after guidelines

implementation, then the percentage decreased to (85%) three months post guidelines implementation with highly statistical significant difference (P<0.001**).

Figure (2): Displays the distribution of nurses according to their total score level of practice regarding uterotonic drugs administration pre, immediately and three months post guidelines implementation. The figure clarifies that (27.5%) of nurses had satisfactory practice regarding uterotonic drugs administration pre guidelines implementation, increased to (90%) immediately after guidelines implementation, while the percentage decreased to (85%) three months post guidelines implementation.

Table (2): presents the distribution of parturient women according to their socio-demographic characteristics pre, immediately and three months post guidelines implementation. It is observed that the parturient women age ranged from (21-32, 22-33, and 22-35 respectively) with Mean ± SD of (26.50±2.40, 27.50±1.32, and 28.40±1.81 respectively) pre, immediately and three months post guidelines implementation. The table also reveals that the majorities (90%, 100%, and 95% respectively) of the parturient women were married pre, immediately and three months post guidelines implementation. Concerning the occupation of parturient women, it is found that (72.5%, 67.5%, and 62.5% respectively) of them were housewives pre, immediately and three months post guidelines implementation. In relation to level of education, it is noticed that (50%, 42.5%, and 60% respectively) of parturient women had completed secondary education pre, immediately and three months post guidelines implementation. Regarding residence of parturient women, it is evident that (55%, 67.5%, and 57.5% respectively) of them were from rural residence pre, immediately and three months post guidelines implementation. The table also reveals that (75%, 85%, and 60%) of parturient women had enough income as well as (62.5, 67.5, and 65%) of them from nuclear type of family.

Table (3): Presents the distribution of the studied women according to maternal outcome assessment during uterotonic drugs administration pre, immediately and three months post guidelines implementation. In relation to ineffective cervical dilatation, it is observed that (37.5%, 7.5% and 2.5% respectively) of women had ineffective cervical dilatation or (failed induction) during labor also (30%, 100%, and 97.5% respectively) of them had normal duration of

second stage of labor pre, immediately and three months post guidelines implementation. The table also demonstrates that (20%, 0%, and 2.5% respectively) of women had uterine hyper-stimulation (hypertonic uterine contractions), it is also noticed that only (2.5%, 0%, and 0% respectively) of them had precipitous labor as well as uterine rupture pre, immediately and three months post guidelines implementation. It is also evident that only (5%, 0%, and 0% respectively) of women had intrapartum hemorrhage pre, immediately and three months post guidelines implementation. Also is observed that (62.5%, 92.5%, and 97.5% respectively) of parturient women delivered normal vaginal delivery as well as (17.5%, 5%, and 2.5% respectively) of them had experienced third or fourth degree perineal tear pre, immediately and three months post guidelines implementation. Finally, it is observed that only (5%, 0%, and 0% respectively) as well as (7.5%, 0% and 0% respectively) of women experienced postpartum hemorrhage and admitted to the maternal intensive care unit pre, immediately and three months post guidelines implementation.

Table (4): Reveals the distribution of the studied women according to fetal/ neonatal outcome assessment regarding uterotonic drugs administration pre, immediately and three months post guidelines implementation. In relation to occurrence of fetal heart rate abnormality, it is observed that only (12.5%, 0% and 5%) had fetal heart rate abnormality during labor pre, immediately and three months post guidelines implementation respectively. Also, it is found that (7.5%, 0% and 2.5%) experienced fetal hypoxia during labor pre, immediately and three months post guidelines implementation respectively. Concerning incidence of intrapartum fetal death, it is noticed that only (7.5%, 0% and 2.5% respectively) who had incidence of still birth pre, immediately and three months post guidelines implementation as well as only (12.5%, 0%, and 2.5% respectively) had abnormal Apgar score at one and five mints pre, immediately and three months post guidelines implementation. In relation to occurrence of meconium aspiration and incidence of respiratory distress, it is also evident that only (7.5%, 0%, and 2.5% respectively) who experienced meconium aspiration and respiratory distress pre, immediately and three months post guidelines implementation. As regard neonatal intensive care admission, it is also observed that only (12.5%, 0%, and 2.5%

respectively) of delivered newborn admitted to the neonatal intensive care unit pre, immediately and three months post guidelines implementation.

Table (5): Shows the correlation between nurses' socio- demographic characteristics and their total score level of knowledge and their total score level of practice pre, immediately and three months post guidelines implementation. A significant correlation was found between nurses' total score level of knowledge and between their age pre and three months post guidelines implementation where r=0.354 and P=0.022* and r=0.534 and P=<0.001**respectively. A significant correlation was also found between nurses' total score level of knowledge and between their years of experience immediately after guidelines implementation and three months post guidelines implementation where r=0.627 and P=<0.001**and r=0.362 and P==<0.001**respectively. Moreover, a significant correlation was noticed between nurses' total score level of practice and between their age pre guidelines implementation and three months post guidelines implementation where r=0.248 and P=0.039* and r=0.490 and P=<0.001** respectively. Finally, a significant correlation was also found between nurses'

total score level of practice and between their years of experience three months post guidelines implementation where r=0.755 and P=<0.001**.

Table (1): Distribution of nurses according to their socio-demographic characteristics (n=40).

Nurses' socio-demographic characteristics	N	%
Age (years)		
<40	15	37.5
40- <50	18	45.0
50 or more	7	17.5
Range	**28-57**	
Mean±SD	**41.65±8.25**	
Marital status		
Married	36	90.0
Widow	4	10.0
Level of education		
Diplome of nursing	27	67.5
Technical institute of nursing	10	25
Bachelor of nursing	3	7.5
Occupation		
Bedside nurse	37	92.5
Nurse supervisor	3	7.5
Years of experience		
5-<10	5	12.5
10- <20	10	25.0
20 or more	25	62.5
Previous training courses regarding uterotonic drugs administration		
Yes	6	15
No	34	85
Number of training courses (n=6)		
Only one training course	4	66.7
2-3 training courses	2	33.3
Time of the last training courses		
≥ 5 years	6	100
Agency provided previous training courses		
University	2	33.3
Ministry of Health and population	4	66.7
Nurses have teaching aids (booklet - poster - brochure) regarding uterotonic drugs administration		
No	40	100

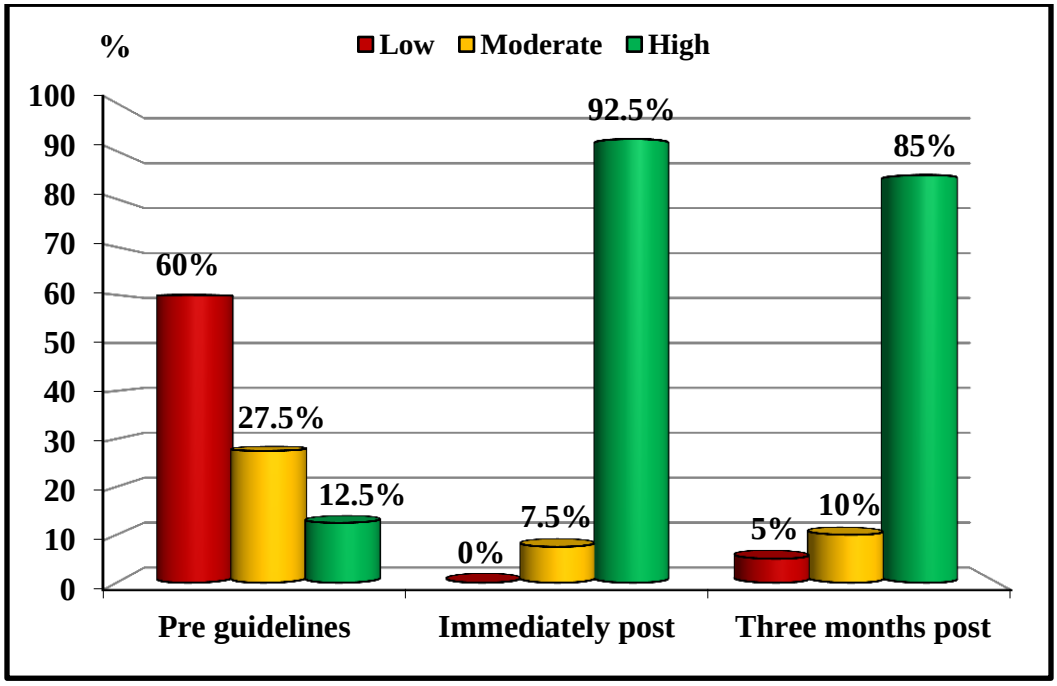
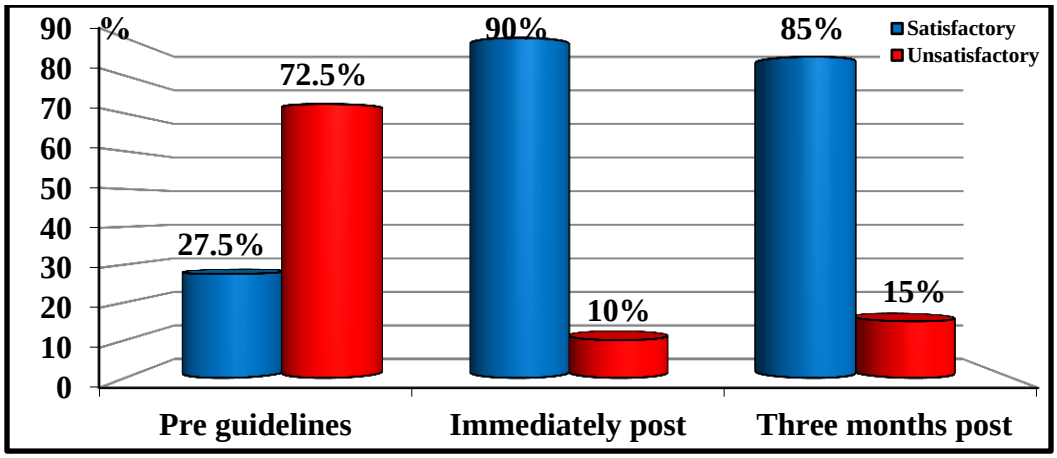


Fig (1): Distribution of nurses according to their total score level of knowledge regarding uterotonic drugs administration pre, immediately and three months post guidelines implementation. (n=40)

***Significant (P<0.05)**



***Significant (P<0.05)**

Fig (2): Distribution of nurses according to their total score level of practice regarding uterotonic drugs administration pre, immediately and three months post guidelines implementation. (n=40)

Table (2): Distribution of parturient women according to their socio-demographic characteristics pre, immediately and three months post guidelines implementation. (n=120)

Socio-demographic characteristics of parturient women	The studied women						Chi-square	
	Before guidelines implementation		Immediately post guidelines implementation		three months post guidelines implementation			
	N	%	N	%	N	%	$\chi 2$	P-Value
Age years:								
< 25	12	30	9	22.5	17	42.5	12.30	0.001*
25-29	15	37.5	16	40	11	27.5		
30-35	13	32.5	15	37.5	12	30		
Range	**21-32**		**22-33**		**22-35**			
Mean ± SD	**26.50±2.40**		**27.50±1.32**		**28.40±1.81**			
Marital status								
Married	36	90	40	100	38	95	70.731	<0.001**
Widow	2	5	0	0	1	2.5		
Divorced	2	5	0	0	1	2.5		
Occupation:								
House wife	29	72.5	27	67.5	25	62.5	0.374	0.829
Employee	11	27.5	13	32.5	15	37.5		
Level of education:								
Illiterate	1	2.5	0	0	0	0	6.947	0.326
Primary or preparatory	12	30	14	35	13	32.5		
Secondary	20	50	17	42.5	24	60		
University or postgraduate	7	17.5	9	22.5	3	7.5		
Residence:								
Rural	22	55	27	67.5	23	57.5	2.010	0.366
Urban	18	45	13	32.5	17	42.5		
Income/month:								
Not enough	10	25	6	15	16	40	4.013	0.236
Enough	30	75	34	85	24	60		
Family type:								
Nuclear family	25	62.5	27	67.5	26	65	11.100	0.004*
Extended family	15	37.5	13	32.5	14	35		

***Significant (P<0.05)**

Table (3): Distribution of parturient women according to maternal outcome assessment regarding uterotonic drugs administration pre, immediately and three months post guidelines implementation. (n=120).

(Maternal outcome assessment)	The studied women						Chi-square	
	Before guidelines		Immediately post-guidelines		three months post-guidelines			
	N	%	N	%	N	%	χ^2	P
During labor								
Ineffective cervical dilatation (failed induction).								
Yes	15	37.5	3	7.5	1	2.5	39.314	0.0001*
No	25	62.5	37	92.5	39	97.5		
Duration of second stage of labor								
Normal	12	30	40	100	39	97.5	81.783	0.0001*
Prolonged	28	70	0	0	1	2.5		
Incidence of uterine hyper stimulation (hypertonic uterine contraction)								
Yes	8	20	0	0	1	2.5	68.602	0.0001*
No	32	80	40	100	39	97.5		
Incidence of precipitous labor								
Yes	1	2.5	0	0	0	0	52.806	0.0001*
No	39	97.5	40	100	40	100		
Incidence of uterine rupture								
Yes	1	2.5	0	0	0	0	52.806	0.0001*
No	39	97.5	40	100	40	100		
Occurrence of intrapartum hemorrhage								
Yes	2	5	0	0	0	0	72.140	0.0001*
No	38	95	40	100	40	100		
Immediately after delivery								
Type of delivery.								
Normal vaginal delivery	25	62.5	37	92.5	39	97.5	74.538	0.0001*
Cesarean section	15	37.5	3	7.5	1	2.5		
Incidence of third or fourth degree perineal tear.								
Yes	7	17.5	2	5	1	2.5	55.925	0.0001*
No	33	82.5	38	95	39	97.5		
Post-partum hemorrhage.								
Yes	2	5	0	0	0	0	72.140	0.0001*
No	38	95	40	100	40	100		
Maternal intensive care unit admission.								
Yes	3	7.5	0	0	0	0	45.478	0.0001*
No	37	92.5	40	100	40	100		

***Significant (P<0.05)**

Table (4): Distribution of the studied women according to fetal/ neonatal outcome assessment regarding uterotonic drugs administration pre, immediately and three months post guidelines implementation. (n=120)

(Fetal/ neonatal outcome assessment)	The studied women						Chi-square	
	Before guidelines		Immediately post-guidelines		three months post-guidelines			
	N	%	N	%	N	%	χ^2	P
During labor								
Fetal heart rate abnormality.								
Yes	5	12.5	0	0	2	5	39.314	0.0001*
No	35	87.5	40	100	38	95		
Incidence of fetal hypoxia								
Yes	3	7.5	0	0	1	2.5	81.783	0.0001*
No	37	92.5	40	100	39	97.5		
Intrapartum fetal death (stillbirth)								
Yes	3	7.5	0	0	1	2.5	55.470	0.0001*
No	37	92.5	40	100	39	97.5		
Immediately after delivery								
Apgar score at one and five minutes								
Normal	35	87.5	40	100	39	97.5	73.723	0.0001*
Abnormal	5	12.5	0	0	1	2.5		
Meconium aspiration								
Yes	3	7.5	0	0	1	2.5	55.470	0.0001*
No	37	92.5	40	100	39	97.5		
Respiratory distress								
Yes	3	7.5	0	0	1	2.5	55.470	0.0001*
No	37	92.5	40	100	39	97.5		
Neonatal intensive care unit admission.								
Yes	5	12.5	0	0	1	2.5	73.723	0.0001*
No	35	87.5	40	100	39	7.5		

***Significant (P<0.05)**

Table (5): Correlation between nurses' socio- demographic characteristics and their total score level of knowledge and their total score level of practice pre, immediately and three months post guidelines implementation. (n=40)

Nurses' socio- demographic data		Total knowledge		Total practice	
		r	P-value	r	P-value
Age (years)	Pre	0.354	0.022*	0.248	0.039*
	Immediately	0.126	0.096	0.240	0.064
	Three months post	0.534	<0.001**	0.490	<0.001**
Years of Experience	Pre	0.152	0.125	0.047	0.723
	Immediately	0.627	<0.001**	0.158	0.432
	Three months post	0.362	<0.001**	0.755	<0.001**

***Significant (P<0.05)**

Discussion

Induction of labor is defined as the process of using drugs or other methods to artificially start labor by stimulation of uterine contractions to cause the delivery before spontaneous labor occurs [(13)]. Labor is typically induced using one or more of the following methods: cervical ripening agents, artificial rupture of membranes or uterine stimulation with oxytocic [(22-6)].

Oxytocin is a hormone that originates in the hypothalamus which is secreted by the posterior lobe of the pituitary gland. Synthetic oxytocic is the most commonly used drug for the induction of labor in viable pregnancies. It is given through the intravenous infusion route. It is used exclusively to stimulate the pregnant uterus to contract because it allows precise measurement of the amount of medication being administered, and rapid discontinuation of drug when side effect occurs [(26-9)].

Inappropriate use of oxytocin cause serious complication for parturient woman and her fetus. These complications include uterine hyper stimulation, uterine rupture, non-reassuring fetal heart rate, depressed newborns at birth, long term neurologic problems and/ or fetal death. It is important to consider that misuse of oxytocin is also

the most preventable cause of perinatal liability. (20-2)

The maternity nurse plays an important role during oxytocin titration decisions based on nursing assessment as well as a sound knowledge of the pharmacologic properties of oxytocin, the physiology of uterine contractions, response of the woman and fetus to contractions as well as the standards and practice guidelines of care that govern their actions during uterotonic induction or augmentation. Nurses must continually update their knowledge and understand the standards guiding their practice regarding uterotonic drug administration. Therefore, this study was conducted with the aim to evaluate the effect of the instructional guidelines regarding uterotonic drugs administration on nurses' performance and labor outcome (15-7).

Regarding the socio-demographic characteristics of the studied nurses women, the findings of the present study revealed that the studied nurses' age ranged from 28-57 years, the majority of them were married, about two third of them had completed diplome of nursing, slightly more than three fifths of them had 20 years of experience or more, the majority of them didn't take any previous training courses regarding uterotonic drugs administration and also about two thirds of them had only one training course regarding uterotonic drugs administration as well as the entire sample reported that they did not have any teaching aids (booklet - poster - brochure) regarding uterotonic drugs administration.

The findings of the present study is similar to **Shiny S.T (2017)(17)** study under the title "assessment of the knowledge and practice on use of oxytocin among nurses working in selected hospitals in Chennai" who reported" that the studied nurses age ranged from (28-50) as well as two third of them were bed side nurse and completed technical diplome of nursing. Again this finding is consistent with **Roma N et al., (2014)(3)** who investigated " nurses' compliance with oxytocic administration guidelines during labor". They found that the majority of the studied nurses did not attend any training courses regarding oxytocin administration and also the number of programs among those who attended them was 1-2. Again this is also matching with the study of **Thamer H (2014)(30)** about "assessment of nurses' knowledge regarding oxytocin administration during labor at maternity hospitals in Al-Kut City" who indicated that 62.9% of nurses had no training in the administration of oxytocin during labor and

52.9% of them had more than 5 years of experience.

On the other hand, this finding is contradictory to **Mohamed A et al., (2019)** [27] who studied the "effect of educational program on improving nursing knowledge and practice regarding administration of oxytocin during labor". They found that the studied nurses' age ranged from 18-38 years old with Mean age ± SD of 25.2±5.8. Moreover, the finding of the present study was dissimilar with **Gamal A et al., (2020)** [31] who investigated **"**assessment of nurses' compliance with oxytocin administration protocol during labor at Damietta city". They found that half of the studied nurses had two courses, and less than half had the last course from one year.

Concerning the total score level of nurses knowledge regarding uterotonic drugs administration, it was observed that the minority of the studied nurses had high level of knowledge regarding uterotonic drugs administration pre guidelines implementation, which increased to the majority of them had good level of knowledge immediately and three months after guidelines implementation with highly statistical significant difference. The findings of the present study is matching with **Mohamed A et al., (2019)**[27] who revealed that a significant increase of post-test knowledge score in all the items of knowledge during oxytocin induction. This finding was in accordance with **Zeinab R. A et al., (2017)**[32] who evaluated "the effect of an instructional package on nurses' performance regarding obstetrical emergencies during oxytocin administration". They reported that the minority of the studied nurses had good knowledge before implementation of the instructional package. While, most of them had good knowledge immediately after implementation of the instructional package that slightly decline at follow up phase of the instructional package implementation as (p=0.000).

From the researcher point of view, the congruity between the current study and the above mentioned studies attributed to the effect of the instructional guidelines in improving the knowledge of staff nurses and this will help them to improve the quality of care provided to woman during oxytocin induction. Therefore it is confirmed that the instructional guidelines regarding uterotonic drugs administration is an effective strategy

to improve the knowledge and practice level of the studied nurses.

Nursing is a profession that needs lifelong learning to keep up with struggling of dynamic healthcare setting which surround nursing practices in current century. Nurses need continuous education to provide safe level of practice and expand their level of competency as professionals. Therefore the nurses who strive for providing safe, high quality patient care must continuously seek to expand the professional knowledge and practice as justified by **Masters K., (2014)** [30].

Regarding the total score level of nurses practice during oxytocic administration, the majority of the studied nurses in the present study had unsatisfactory practice level pre guidelines implementation which significantly improved immediately and three months after guidelines implementation. This finding is in agreement with a study done by **Tenaw Z et al., (2017)** [33] about the "Role of doctors and midwives nurses in oxytocic administration in Istanbul". Their findings showed that 84.9% of midwives and 76% of doctors demonstrated poor compliance with oxytocic administration guidelines. They rationalized their results by the lack of oxytocic protocol. Again, **Sims M. E (2016)** [34] study about the "midwifery role in malpractice cases related to oxytocic application" who found that 39.6% of midwifery nurses had poor practice related to oxytocic application. Although the midwifery nurses spent more time with laboring women during induction or augmentation process, they are more blamed than other health service groups when mistakes occur during oxytocic administration. The similarity between the result of the present study and above mentioned study could be attributed to the absence of oxytocic protocol in labor unit as well as inadequate training of midwifes nurses on the proper administration of oxytocic drugs which reflect the importance of the instructional guidelines regarding uterotonic drugs administration on maternity nurses performance as well as labor outcome.

Referring to the maternal and fetal outcome assessment of parturient women after uterotonic drugs guidelines application, the findings of the current study yielded a significant improvement of maternal outcome in relation to; incidence of failed induction, duration of second stage of labor, incidence of uterine hyper

stimulation, incidence of precipitous labor, incidence of uterine rupture, occurrence of intrapartum hemorrhage , type of delivery, incidence of third or fourth degree perineal tear, post-partum hemorrhage as well as maternal intensive care unit admission. Moreover, the findings of the current study illustrated a significant improvement of fetal outcome regarding fetal heart rate abnormalities, incidence of fetal hypoxia, intrapartum fetal death (stillbirth), Apgar score at one and five minutes, meconium aspiration, respiratory distress and also neonatal intensive care unit admission.

Therefore, the findings of the present study align with **Nour S et al., (2017)** [35] who investigated "outcomes of labor in women undergoing induction of labor and plan of nursing action". They reported that the majority of women had successful induction of labor, no incidence of uterine hyper-stimulation or uterine rupture as well as no need for maternal intensive care admission and also improvement in fetal condition such as normal Apgar score at one and five minutes and no need for neonatal intensive care admission. The findings were also compatible with **Lopezosa P et al., (2016)** [36] who studied "labor stimulation with oxytocin: effects on obstetrical and neonatal outcomes". They declared significant improvement on parturient women outcome in relation to; the rates of perineal lacerations, no need for advanced neonatal resuscitation, Apgar scores and meconium aspiration.

Moreover, the finding of the present study is relatively in accordance with **Mohamed A et al., (2019)** [27] who revealed a significant positive improvement of maternal and fetal outcome. Again the finding of the present study goes hand to hand with **Lonfeldt N et al., (2019)** [37] who conducted a descriptive study about assessing risk of neurodevelopmental disorders after birth with oxytocin. They revealed adverse maternal and fetal outcome and complication associated with injudicious use of oxytocin.

The results of the current study go in line with **Selin (2018)** [20] who performed a descriptive research to investigate the labor outcome and its relationship to oxytocin mismanagement. The findings indicated that 68.5% of bad fetal outcome and complication was associated with unfair use of oxytocin. Misuse of labor inducing drugs as oxytocin was recognized as contributing to maternal and neonatal mortality. The use

of labor inducing drug by inadequately qualified healthcare workers has serious implications for mothers and their children as reported by **Jackson (2019)** [18]. The similarity between the current study and the above mentioned studies could be attributed to the effect of the instructional guidelines regarding uterotonic drugs administration on nurses' performance and labor outcome.

Regarding the correlation between nurses socio-demographic characteristics and their total score level of knowledge and practices regarding uterotonic drugs administration, the findings of the current study had revealed a statistically significant positive correlation between levels of nurses' knowledge as well as the level of nurses' practice regarding oxytocic administration and their socio- demographic characteristics such as age, educational level as well as years of experience. The current finding is consistent with the results of **Anggraini D et al, (2018)** [38] study titled "analysis of training programs for nurses during oxytocin induction in south Kalimantan, Indonesia". They reported that there was a statistical significant correlation between the years of experience of the maternity nurse & their skill as well as their knowledge.

Moreover, this finding is supported by the results of **Sengab E. S et al., (2020)** [39] the study titled " nurses' knowledge and practices regarding oxytocin infusion care for women during labor ". They found that there was significant positive correlation between the maternity nurses knowledge, practices and their level of education. The current finding is also consistent with the results of **Housseine N et al., (2020)** [40] study about "intrapartum care review and guidelines", which found that there was significant positive correlation between nurses knowledge, practices and their socio-demographic characteristics.

Finally, the findings of this study revealed that the reason for poor level of knowledge as well as unsatisfactory practices during oxytocin induction pre guidelines implementation are the unavailability of the oxytocic guidelines at the studied health care settings, excessive work load, majority of the studied nurses are diplome also lack of training programs and in service education regarding uterotonic drugs administration.

Therefore, the written guidelines for uterotonics administration based on current standards of practice should be available. These guidelines should be accurately established at each health care setting for all

nursing staff. Oxytocic induction guidelines are useful to secure the maternal and fetal wellbeing, prevent maternal and fetal complications, and ensure save delivery as well as safe guard the maternity nurses. In addition, continues providing of training programs and in service education about oxytocic administration for the maternity nurses should be done periodically.

Conclusion and Recommendations

Conclusion

Based on the findings of the present study, it can be concluded that the research hypothesis has been achieved after implementation of the instructional guidelines regarding uterotonic drugs administration which resulted in a statistically significant positive improvement of maternity nurses' performance and labor outcome immediately and three months later compared to pre guidelines implementation

Recommendations

Based on the findings of the present study, the following recommendations are suggested:-

Planning in-service training programs for all nurses regarding uterotonic drugs administration must be conducted in order to improve, update and refresh their knowledge and qualify their practices dependent on recent evidence based guidelines during labor.

Written policies, protocol of care and guidelines should be developed for improving the quality of nursing care rendered to parturient women during uterotonic drugs administration.

Investigate barriers of nurses' non-compliance with uterotonic drugs administration guidelines.

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Compassion, Self-efficacy and Perceived Stress among Nurses Working at Tanta Mental Health Hospital

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Abstract

Background: One of the most stressful professions in the world is psychiatric nursing. It is seen as a physically and psychologically demanding task for nurses. As a result, identifying effective solutions and factors that reduce stress and improve the mental health of nurses is critical. Aim of the study: was to assess relationship between compassion, self-efficacy and perceived stress among nurses working at Tanta Mental Health Hospital. Subjects and Method: Research design was a correlational descriptive research design. Setting: the study was conducted at the Tanta Mental Health Hospital which affiliated to Ministry of Health. Subjects: All available nurses working at previously mentioned setting at the time of data collection of the study and they were 75. Tools: Four tools were used. Tool 1: Socio-demographic characteristics structured questionnaire. Tool II: Compassion Scale. Tool III: Perceived stress scale. Tool VI: General Self-Efficacy Scale (GSE). Results: There are no statistically significant relation was found between psychiatric nurses' compassion and their perception of stress and highly negative statistically significant correlation was found between perceived stress and self- efficacy. Conclusion: The present study concluded that self-efficacy is important factor affecting on nurses" stress. Nurses who have more self-efficacy are more likely to tolerate perceived stress. Meanwhile compassion in present study has no effect on stress among nurses. Recommendations: Engaged psychiatric nurses periodically in training periods or workshops to enhance both their self- efficacy, and compassion which help them to acquired skills and positive facets of mental health.

Key words: Compassion, Stress, Self-efficacy, Psychiatric Nurses.

Introduction

Nursing is universally acknowledged to be a challenging profession and one of the most stressful occupations. Mental health nurses in particular are professionals high likely to experience stress which can negatively affect their physical and mental health. Mental health nurses make up one of the largest segments of the global mental healthcare workforce. Mental health nurses are on the front lines daily, delivering care to patients and serving as a lifeline of information, encouragement, and education to the patients' families [1, 2]. Inappropriate patient attitudes, the demanding nature of mental patients, violence, rising workload, working environment, insufficient resources, and ethical dilemmas are all major sources of stress for psychiatric nurses [3,4].

In recent years, the risk of stress has increased among psychiatric nurses, and it has a substantial impact on their well-being and can result in a wide range of adverse symptoms, including physical symptoms like insomnia, headaches, and sleep problems, behavioral problems like increased alcohol intake, strained personal relationships, and patient avoidance, and psychological symptoms like emotional exhaustion, professional helplessness, and depersonalization [5,6]. Stress may also have an impact on an organization's substructures, resulting in lower workplace productivity and a decline in the quality of provided healthcare, which can have a negative impact on the health-care system as a whole [7, 8]. As a result, if psychiatric nurses' physical and mental health are not protected, they are more likely to suffer from mental illnesses, which can have a negative impact on health-care services [5,8]. Hence, keeping nurses healthy and productive should be a top goal for health-care organizations. As a result, a greater understanding of the variables that can reduce stress in mental health nursing may enable for the development of strategies to improve the working conditions for these nurses, resulting in improved nursing care quality.

Compassion is a feeling for persons who is suffering and being motivated to act to help them. Compassion is openness to the suffering of others with a commitment to relieve it". It is not only as being aware of and moved by suffering and wanting to help, but also as involving the ability to adopt a non-judgmental stance towards others and to tolerate one's own distress when faced with other people's suffering [9,10]. Compassion

is an essential component of psychiatric nursing practice and it is a special characteristic of professional nurses. It has been widely recognized as the first principle of ethical caring and promotion of care quality [11, 12].

Compassion consisted of three facets: noticing, feeling, and responding. Being aware of a person's suffering, either cognitively or through an unconscious physical or emotive reaction to it, was referred to as 'noticing.' Feeling' was defined as responding emotionally to that suffering and experiencing 'empathic concern' through adopting the person's perspective and imagining or feeling their condition.' Finally, 'responding' meant wanting to do something to alleviate the person's misery [13, 14].

Compassion is considered a vital component of quality of psychiatric nursing care. It is documented that compassion is the positive aspect and potentially growth enhancing for psychiatric nursing. In psychiatric field compassion has wide- ranging benefits, for both patients and nurses: For patients, it can increase patient sense of responsibility, increase hope for recovery, control their over health, preserve the patient's independence and dignity and increase patient satisfaction with nursing care [10, 15]. For nurses, compassion helps nurse to deal objectivity with patients and respond appropriately to patient's negative emotions, anger and hostility and it also assists nurse to be not disturbed by the patients' symptoms and by having compassion nurses are expected to handle problems appropriately and cope with stressful situations [13, 16].

Compassion is thought to be a protective agent that can be used to alleviate or mediate the negative effect of stress. Studies of psychiatric nurses exposed to stress revealed that a higher level of compassion served as a protective factor against stress [11, 12]. Compassion is defined in the context of stress as the positive aspects and pleasures a caregiver gains despite any feelings of exhaustion and hardship), and compassion is the result of a transactional dynamic defined as the positive effects or 'payments' one gains as a result of caring for others, despite the 'cost' of helping [15, 17].

Self- efficacy is an important psychological resource in adjustment to the stress. It has positive effect on predicting adaptive coping strategy to dealing stress, staying optimistic and finds appropriate problem solving [18 19]. Self-efficacy is defined as a cognitive

attribute that helps to determine how well a person can organize and execute behaviors required to deal with prospective situations containing many ambiguous, unpredictable, and often stressful elements [20]. Self-efficacy also refers to an overall self-confidence that person respond to different environmental challenges or face new things. Furthermore, self- efficacy defined as a person's own judgment of capabilities to perform a certain activity in order to attain a certain outcome [18, 21].

An individual's decision to engage in and persist in performing a specific behavior or task is influenced by his/her level of perceived self-efficacy which in turn influences one's choices of activities, the amount of effort he/she will expend, and the amount of time he or she will invest in the task. From this perspective, nurses with better levels of coping self-efficacy to deal with professional obstacles are more likely to continue in nursing, and do their job tasks well, even when faced with challenges and high stress [22, 23].

Past researches have demonstrated that higher levels of self-efficacy facilitate healthier lifestyles and healthier coping behaviors for employees in high stress professions such as nursing. In psychiatric nursing, self-efficacy is a critical characteristic that can contribute to nurses feeling confidence in their ability to function successfully in difficult situations. [20, 21].

Person with high self-efficacy choose more challenging to moderately difficult goals, feel more relaxed, believe in him/herself more, and show more insistent efforts and are more successful. This is especially true in the psychiatric nurses where they always have to deal with unforeseen situations, which could be factors leading to stress. In addition, psychiatric nurses who feel that they are not very effective in the face of the demands of their surroundings exaggerate their deficits, producing negative thoughts that leads to stress and makes it more difficult for them to use the resources available to them [18, 22].

Self-efficacy performs a buffering role in the face of various job demands and had a positive psychological influence on individual's job performance [18, 24].

Significance of the study

Psychiatric nursing is regarded as one of the most stressful occupations in the world. It considered as a challenging task for nurses physically and psychologically. The psychiatric nurses' responsibilities are

primarily work with the suffering, grief, unhealthy or deviant behaviors. They often deal with clients who have experienced psychotic relapse, abused or emotional trauma. This can be stressful due to the emotional labor required to talk about these painful experiences. . Many Egyptian nursing studies carried out the topic of stress among nurses at different mental health hospital settings in Egypt and all agreement that stress is high and become epidemic among nurses and recommend for further and more strategies for reducing stress among nurses[25- 27]. Hence, it is vital to identify effective solutions and factors that reduce stress and improve mental health status of nurses. One of the hypotheses proposed in this regard indicates that nurses with higher levels of compassion and self-efficacy are more prepared to deal with stressful conditions in case of stressors and have a significant impact on patient outcomes. Therefore, it was important to assess stress, self- efficacy and compassion among nurses working in mental health hospitals for maintaining their mental health, and helping them to deal positively with their stressors, and achieving their role.

Aim of the study

The aim of the study was to assess relationship between compassion, self-efficacy and perceived stress among nurses working at Tanta Mental Health Hospital l

Research question:

1-What are the levels of compassion, self-efficacy, and perceived stress among nurses working at Tanta Mental Health Hospital?

2-What are the relations between compassion, self-efficacy, and perceived stress among nurses working at Tanta mental health hospital?

Subjects and Method

Research design:

The present study followed a correlational descriptive research design.

Setting:

The study was conducted at the Tanta Mental Health Hospital which affiliated to Ministry of Health. It has a capacity of 107 beds and provides health care services to three governments, namely Gharbya, El-Menofeya, and Kafr- El-sheikh. It works 7 days/ week, 24hrs/ day.

Subjects: -

All available nurses (75 nurses) were working at previously mentioned setting at the time of data collection of the study. The

total of nurses were 106 however six nurses didn't complete the questionnaires and withdraw from study, fifteen didn't not present during data collection of the study, 10 nurses who involved in a pilot study and75 nurses completed the questionnaires of the study and who involved in actual study.

Tools of the study:

Three tools were used in collection of the present data:

Tool 1: Socio-demographic characteristics structured Questionnaire

It was developed by researcher and aimed to elicit socio-demographic data of studied subjects. It included 7 questions age, sex, marital status, levels of education, occupation, years of experience in field of nursing and psychiatric nursing.

Tool 11: Compassion Scale:

This scale is adopted from Pommier (2011) (28) and designed to measure psychiatric nurses' compassion toward patients. It is self-report scale. It consisted of 24-items designed to evaluate three recognized aspects of compassion: kindness versus indifference, common humanity versus separation and mindfulness versus over disengagement. Each item of this scale was rated on a five point Likert Scale from (0) strongly disagree to (4) strongly agree. The items related to aspect: indifference, separation, disengagement had reversed scored. The total cored was summed; the higher score indicated a higher level of self-compassion. The score of this scale is divided according to validated cut-off point in three levels:

Scoring system:

Low level of compassion indicated to less than 50 % of total score.
Moderate level was between 50% to 75%.
High level of compassion referred to more than 75%.

Tool II1: Perceived stress scale.

It developed by Cohen (1988) (29). It used to measure the degree of stress that perceived by nurses. This scale consisted of 10-item. The items at five points Likert Scale from never =zero to usually = 4. Items No. 4,5,7, and 8 had reverse score. The total sore was summed and ranged from zero to 40. The higher score means higher perceived stress. The level of stress was determined by validated cut-off point in total score to three levels.

Scoring system:

- Low level of stress indicated to less than 50 % of total score.

-Moderate level was between 50% to 75%.

- High level of stress refereed to more than 75%.

Tool VI: General Self-Efficacy Scale (GSE). It created by Schwarzer and Jerusalem (1995)(30). The scale assessed optimistic self-beliefs to cope with a variety of difficult demands in life. Specifically, it assessed the belief that one's actions are responsible for successful outcomes. The scale composed of 10 items; each item rated in four Likert Scale from not all true (1) to exactly true (4). The total score was summed, and ranged from 10- 40, and the higher score referred to higher self- efficacy. The levels of self –efficacy determined by validated cut-off point in total score to three levels.

Scoring system:

-Low level (less than 50 % of total score).

-Moderate level (between 50 – less than 75 %).

-High level of self -efficacy (more than 75 %).

Method

- The Dean of the Faculty of Nursing issued an official letter to the head of the Mental Health Hospital, requesting permission to gather data for the current study.

- Ethical consecrations:

- Informed consent was obtained from the subjects after explanation purpose of the present study.

-The subjects were reassured about the confidentiality of obtained data and their privacy

- Informed the subjects about their right to withdraw at any time during data collection.

-Tools (II, III, VI) were translated into Arabic language and tested for internal validity by a jury composed of five experts in psychiatric nursing field and these tools were tested for reliability by used Cronbach's Aph test , the result was 0.81, 0.86 , 0.91 for tools (II ,III ,VI) respectively, it indicated higher reliability.

- **A pilot study:** it was carried out on 10% nurses. They were selected by using simple random sampling design. These subjects excluded later from actual study. Accordingly, a slight modification was done

such as changed some words with other more clarified to ensure understanding of studied subjects.

- Actual study: the tools of the study were distributed on the studied nurses on individual basis and asked them for filling the questionnaire in the presence of researcher for any clarification. The time that consumed for fill the tools ranged from 20- 25 minutes. The researchers collected data during morning shift. The duration of data collection was three months from September 2020 to November 2020.

Statistically analysis:

The study data were computerized and verified using the SPSS (statistical package for social science). Version 20 used to perform tabulation and statistically analysis. Quantitative data were summarized by percentage, mean, and stander deviation. Correlation between variables was evaluated using person Spearman's correlation test (r). Statistically significant was adopted at P > 0.05.

Results

Table (1) shows socio-demographic characteristics of the studied nurses, the most nurses are female (76%), the nurses' age with mean of years 32.99 ± 9.33, and the almost of them are married (92%). Regarding to their level of education, 40% graduated from nursing institute and 34.7% have baccalaureate. Concerning their nature of work, 49.3% of nurses are staff nurses, 48% are head nurse and only 2.7% were supervisor. Regarding to nurses' years of experiences in field of nursing are mean of 11.11 ± 6.97, and experiences in field of psychiatric nursing with mean of 10.53 ± 6.81.

Figure (1) describes the levels of nurses' compassion among the studied nurses. Figure illustrated that more than half of nurses (53.3%) have moderate level of compassion, 24% of them have mild level, and only 22.7% have high level of compassion.

Table (2) describes description of dimensions of compassion among studied nurses. The more frequency dimension is kindness whereby 46.7% of nurses have moderate, and 48% of them have higher level with mean 15.346± 2.668. The second dimension is mindfulness toward people emotions, need, and their problems. It is reported that 62.7% of nurses have moderate, and 34.7% have higher level with mean 14.466± 3.176. The third dimension is common humanity, the nurse report that

56% of them have moderate level, and 38.7% have lower levels with mean14.386±2.432. In another hand the table show that indifference toward people emotions, needs, and problems was report more than half of nurses with moderate level (57.3%), and around one quarter (25.3%) have higher level with mean 12.4±3.471, the second negative compassion toward other was disengagement, it is more than half of nurses had moderate level (53.3%), and 17.5% had lower level with mean 12.04 ± 3.67.

Figure (2) appears levels of perceived stress among the studied nurses, figure showed that the majority of nurses perceived moderate level of stress (68%), 18.7% nurses had low level of stress and 13.3% have high level.

Figure (3) reveals levels of self-efficacy among the studied nurses. Figure reported more than half of nurses (60%) had moderate level of self-efficacy, and 28% had high level of self-efficacy, and 12% them had mild level of self-efficacy.

Table (3) presents correlation between compassion, self-efficacy and perceived stress among the studied nurses. It was found that no statistically significant correlation between perceived stress and compassion, and highly negative statistically significant correlation was found between perceived stress and self- efficacy among the studied nurses.

Table (4) reveals relation between compassion and socio-demographic characteristics of the studied nurses, the table explored that there was no statistically significant relation was found between compassion and socio-demographic characteristics of the studied nurses.

Table (5) represents relation between perceived stress and socio-demographic characteristics of the studied nurses. There is a statically significant relation between perceived stress and nurses' age, levels of education, their occupation, and years of experiences in nursing filed and in psychiatric nursing. The table reported that mean score of nurse's stress increased with age, and decreased with level of education, and increased among staff nurse and those contact directly with patients, in addition, mean score of stress increased with years of experiences in nursing field and in psychiatric nursing field.

Table (6) describes the relation between socio-demographic characteristics of the studied nurses and their self- efficacy. Statistically significant relation was found between self-efficacy and only marital status, occupation and years of experiences in nursing

Table (1): Distribution of The Studied Nurses according to their of socio-demographic data (n=75)

Socio- demographic data	No.	%
Sex:		
Male	18	24
Female	57	76
Age:		
18- >25	17	22.7
25->35	36	48
35-	22	29.3
Mean ± SD	32.99 ± 9.33	
Marital status:		
Single	6	8
Married	69	92
Nurses' level of education:		
Secondary level education	19	25.3
Technical degree of nursing Instituted	30	40
Baccalaureate degree of nursing	26	34.7
Nursing position:		
Staff nurse	37	49.3
Head nurse	36	48
Supervisor	2	2.7
Years of experiences in nursing:		
Less than 5 years	13	17.3
5 to >10 years	22	29.3
10 - >20	32	42.7
20-	8	10.7
Mean ± SD	11.11 ± 6.97	
Years of experiences in psychiatric nursing:		
Less than 5 years	19	25.3
5 to >10 years	15	20
10 - >20	31	41.3
20-	10	13.3
Mean ± SD	10.53 ± 6.81	

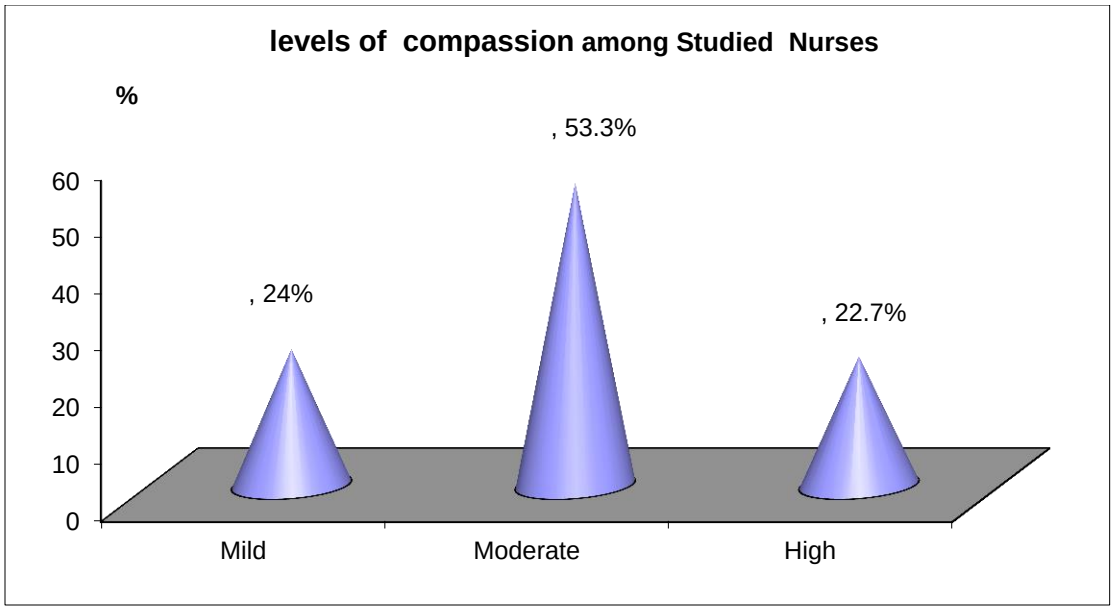

Figure (1) Levels of Compassion among Studied Nurses (n=75)

Table (2): Description of Dimensions of Compassion among Studied Nurses (n=75).

Dimensions of compassion	Mild		Moderate		Sever		Mean ± SD
	No.	%	No.	%	No.	%	
Kindness	4	5.3	35	46.7	36	48	15.346 ±2.668
Indifference	13	17.3	43	57.3	19	25.3	12.4±3.471
Common humanity	4	5.3	42	56	29	38.7	14.386±2.432
Separation	19	25.3	45	60	11	14.7	11.973±3.287
Mindfulness	2	2.7	47	62.7	26	34.7	14.466±3.176
Disengagement	22	29.3	40	53.3	13	17.3	12.04±3.674

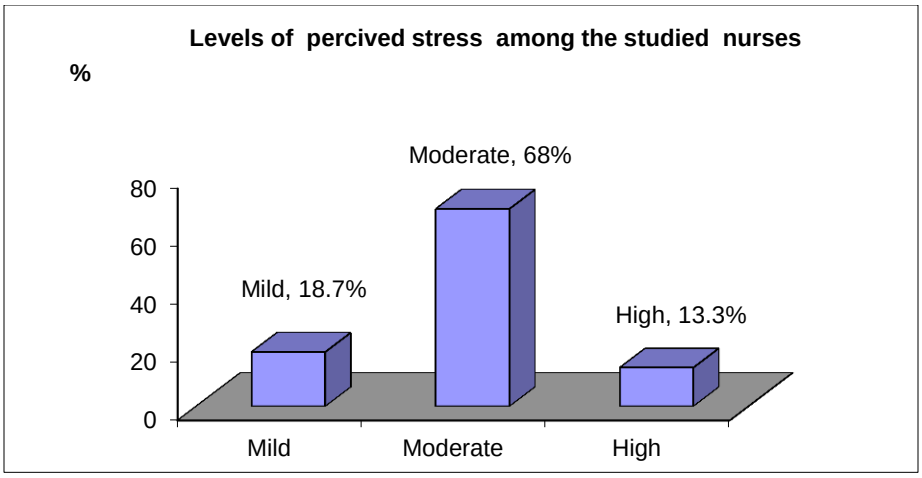

Figure (2): Levels of Perceived Stress among Studied Nurses.

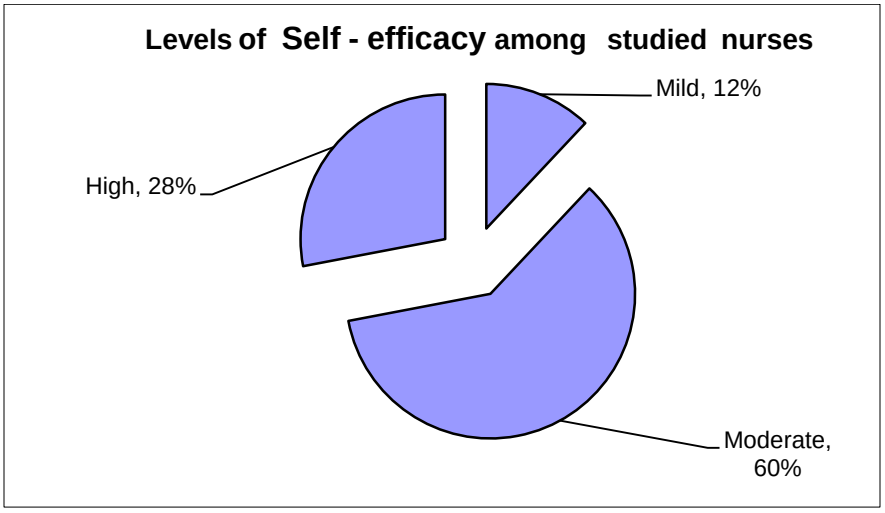

Figure (3): Levels of Self –efficacy among Studied Nurses. (n=75)

Table (3): Correlation between Compassion, Self-efficacy and Perceived Stress among The Studied Nurses

Variables	Perceived stress	
	R	P
Compassion	**0.127**	**0.278**
Self- efficacy	**-0.442**	**0.001***

*Highly statistically significant at > 0.05

Table (4): Relation between Compassion of The Studied Nurses and Their Socio-demographic Characteristics (n=75)

Socio- demographic characteristics	Compassion	Test	p value
	Mean ± SD		
Sex:			
Male	79.83 ± 6.14	0.103	0.749
Female	80.86 ± 13.09		
Age :			
18- >25	81.71 ± 7.47	0.172	0.842
25->35	79.81 ± 11.77		
35-	81.09 ± 14.57		
Marital status :			
Single	76.83 ± 5.12	0.670	0.416
Married	80.94 ± 12.14		
Nurses' level of education :			
Secondary level education	83.11 ± 14.13	0.757	0.474
Technical degree of nursing Institute	78.87 ± 7.79		
Baccalaureate degree of nursing	80.81 ± 13.68		
Occupation:			
Staff nurse	82.65 ± 11.98	1.095	0.340
Head nurse	78.64 ± 11.67		
Supervisor	78.50 ± 2.12		
Years of experiences in nursing:			
Less than 5 years	79.69 ± 5.33	1.715	0.172
5 to >10 years	85.23 ± 13.02		
10 - >20	78.09 ± 12.20		
20-	79.50 ± 12.18		
Years of experiences in psychiatric nursing:			
Less than 5 years	85.79 ± 11.40	1.768	0.161
5 to >10 years	80.07 ± 10.44		
10 - >20	78.48 ± 12.33		
20-	78.20 ± 11.08		

*Statistically significant at > 0.05

Table (5): Relation between Perceived Stress of the Studied Nurses and Their Socio-Demographic Characteristics (n=75)

Socio- demographic characteristics	Stress	Test	p value
	Mean ± SD		
Sex:			
Male	22.67 ± 5.14	0.301	0.749
Female	23.30 ± 3.95		
Age:			
18- >25	20.94 ± 2.70	14.168	0.001*
25->35	22.11 ± 3.50		
35-	26.55 ± 4.40		
Marital status:			
Single	20.00 ± 3.03	2.727	0.057
Married	23.42 ± 4.23		
Nurses' level of education:			
Secondary level education	24.89 ± 4.71	3.191	0.047*
Technical degree of nursing Institute	23.35 ± 2.81		
Baccalaureate degree of nursing	21.87 ± 4.64		
Occupation:			
Staff nurse	24.41 ± 4.66	3.731	0.029*
Head nurse	21.81 ± 3.46		
Supervisor	24.00 ± 1.41		
Years of experiences in nursing:			
Less than 5 years	20.54 ± 3.23	5.976	0.001*
5 to >10 years	23.18 ± 2.72		
10 - >20	23.00 ± 4.49		
20-	27.88 ± 4.73		
Years of experiences in psychiatric nursing:			
Less than 5 years	21.63 ± 2.14	3.849	0.001*
5 to >10 years	22.73 ± 4.11		
10 - >20	22.68 ± 4.29		
20-	28.10 ± 4.20		

*Statistically significant at > 0.05

Table (6): Relation between Self – efficacy of The Studied Nurses and Their Socio demographic Characteristics (n=75)

Socio- demographic characteristics	Self – efficacy Mean ± SD	Test	p value
Sex:			
Male	29.00 ± 5.91	0.076	0.783
Female	28.67 ± 3.92		
Age :			
18- >25	27.82 ± 4.38	1.357	0.264
25->35	28.42 ± 3.09		
35-	30.00 ± 6.03		
Marital status :			
Single	24.00 ± 3.35	3.180	0.006*
Married	29.16 ± 4.30		
Nurses' level of education :			
Secondary level education :	29.42 ± 5.62	0.453	0.638
Graduate from nursing Institute	28.20 ± 4.45		
Graduate from faculty	28.88 ± 3.44		
Occupation :			
Staff nurse	30.00 ± 5.45	3.624	0.032*
Head nurse	27.36 ± 2.47		
Supervisor	30.50 ± 6.36		
Years of experiences in nursing :			
Less than 5 years	27.77 ± 4.88	4.986	0.003*
5 to >10 years	29.27 ± 4.08		
10 - >20	27.56 ± 3.66		
20-	33.63 ± 4.66		
Years of experiences in psychiatric nursing:			
Less than 5 years	28.68 ± 3.38	1.849	0.146
5 to >10 years	28.33 ± 5.39		
10 - >20	28.03 ± 3.83		
20-	31.70 ± 5.77		

*Statistically significant at > 0.05

Discussion

A lot of studies have highlighted nursing as a stressful profession. Nurses pay a price for stress in terms of health, well-being, and job dissatisfaction which can have an influence on patient care quality [5,6]. Evidence supports that the psychiatric nurses are exposed to high stress during their work. It is seen as a physically and psychologically demanding responsibility for nurses, particularly those who are faced with specialized work needs such as working with persons with mental illness [4, 31].

The current study showed that the majority of studied nurses reported that they had stress. This goes with the study conducted by Shih et al. (2016) [32], that focused on " the relation of job stress and job exhaustion among nurses and found that the rate of stress among psychiatric nurses is high. In the same line Jordan study conducted by Masadeh et al. (2016) [19] using an Arabic version of Perceived StressScale-10 items (APSS10) and examined perceived stress for 310 nurses working in various departments (i.e. psychiatric, oncology, intensive care units, cardiac care units, emergency rooms, medical wards and surgical wards .The study revealed that psychiatric nurses had significantly higher stress levels. Additionally, Dawood Mitsu and Monice (2017) [33], studied the psychiatric nurses job stress and reacted to they have a moderate level of stress. An Egyptian study carried by Zaki and Barakat (2018) [27] who studied stress among nurses at Benha Mental Health Hospital, they found majority of studied nurses perceived stress.

The high level of stress among studied subjects may be related to work overload, the demanding nature of psychiatric patients and the complex ethical dilemmas in psychiatric nursing were the most common causes of stress, shedding light on the nature of psychiatric settings for patients as well as health professionals

From the previously mentioned studies, it seems that there is an agreement in the literature that inappropriate patient attitudes, violence, aggression, increasing workload, working environment, in-adequate resources and ethical dilemmas faced by psychiatric nurses are the major causes of their high stress levels.

In this respect An Egyptian study by El-Azzab (2019) [34] on "work related stress, burnout, and self- efficacy among psychiatric nurses" In Beni Suef Governorate, she found that the more than half of participants had moderate level of stress, and explained these results by lack of preparation, and proficiencies to deal with psychiatric patients, which have enforced stress on nurses' work and thus they lost the abilities to perform their job tasks perfectly. Unfortunality the present study was limited to measure stress levels without giving any etiological explanation for the reasons for high stress reported by psychiatric nurses.

Compassion is a conscious process of making decisions that is known as "Clinical judgment" among professional health care specialist, and they ability to offer safe and high quality care depend on reasoning ability and thinking [22]. The present study revealed that more than half of studied psychiatric nurses have a moderate level of compassion toward psychiatric patients and less than one quarter has high level. This may be attributed to most of studied subjects in the present study reported that "kindness", "mindfulness" and "common humanity" as most diminution components of their compassion in dealing with patients.

The "kindness" is most common dimension of compassion reported by almost of psychiatric nurses, they agreed that the kindness involved caring patients if need, support patients during difficult times, their heart goes toward them if they are unhappy. In this context Curtis (2015)[35] studied compassion and nurses responsibility in caring psychiatric patients, they reported that nurses showed their compassion through looking at patients, responding to their emotions, expressing their feeling, and putting themselves into the patients' position. In the same line Tehranineshate et al.(2019) [11] studied nurses, patients, and family care givers' perceptions of compassionate nursing care, and found that nurses supported patient emotionally and utilized communication skills.

Another dimension of compassion reported by studied psychiatric nurses in the present study was " mindfulness " the almost of studied nurses reported between moderate to high level of mindfulness in caring with psychiatric patients, they perceived mindfulness such as: interested with patients when talk, noting when patients are upset even if they don't saying anything, honest with patients when talking about their problems, and have a balanced perspective

on dealing with clinical situations. In this context, Babaei et al. (2017) [36] stated that a compassionate nurse is sensitive to patients' condition, and they have the ability in interpret or anticipate their needs.

Self-efficacy is defined as believing in one's own ability to succeed. It is concerned with assessing one's own capabilities in specific settings and activities. It has the potential to reduce overall stress levels. [25]. With the agreement of this statement ,results of the present study come .The results revealed there is significant negative relation between self-efficacy and perceived stress among studied subjects. Three explanations have been proposed by which self-efficacy can reduce nurse's stress. To begin with, self-efficacy may evoke positive emotions that might help person relax. Second, self-efficacy can influence how a negative experience is perceived as a stressor; persons who doubt their abilities to control a negative event are more likely to dwell on their coping flaws and exaggerate the severity of the event. These ineffective thoughts impede their ability to cope with stress and heighten their stress perception. This finding was line with Murphy and Walsh (2015) [37], they stated a significant negative correlation between psychiatric nurses' work stress and their self- efficacy. Additionally some studies such as Jack and Tetley (2016) [21] and Rayan (2017) [38] show that self- efficacy can effectively adverse effects caused by stress and nurses with high self-efficacy tend to perceive less stress and make more effective use of coping resources to challenges greater stress.

Surprisingly, the unexpected finding discovered in the present study was that there was no statistically significant relation between nurse' perceived stress and compassion. The explanation of this result may be due to the demands of working in in mental health nursing; unsafe working environment and shortage of staff make nurses have no opportunity and time to express compassion toward patients. Additionally high perceived stress by nurses strained ability of the nurses to provide compassion care for their patients and also emotional suffering of the nurses may be another rationalization affects nurses' compassion. Being able to manage emotionally challenging circumstances enables nurses to continue to demonstrate compassion in practice.

In this respect Franza et al. (2015)[39] stated frequent contacts with patients who are

suffering are generally considered to be significant stressors that can limit the capacity for compassion. Also, Wang et al. (2020) (40), reported that compassion was significantly and positively correlated with physical health and health behavior and negatively correlated with perceived stress.

It is important to mention that, the present study revealed there are statistically significant relation between stress that perceived by studied nurses and their work that occupied, whereby the staff nurses who provide direct contacted with patients were more stressed than supervisors, this can be explained by caring for psychiatric patients always caused workload pressure on nurses regarding to patients' care demands, especially with different psychiatric patients' diagnosis, and characteristics which caused emotional exhaustion to nurses .

In addition to, the present study explored that statistically significant relation between psychiatric nurses' stress and their years of experiences. The increased of years were experienced in nursing and psychiatric nursing field, the more stressed was perceived by nurses. This is consisted with the study by Shih et al. (2016) [(41)], they found a positive correlation between years of experiences and work related stress among their participants from psychiatric nurses. In the same line the study by El-Azzab et al. (2019) [(34)] explained that, nurses with six to ten years of experiences had higher levels of job stress than nurses with less than five years or more than eleven years' experiences.

It is important to mention that, the present study explored that a statically significant relation between psychiatric nurses self - efficacy and their marital status whereby means score of self- efficacy among married nurses were more than single, in addition to, there statistically significant relation between nurses self-efficacy and their occupation . The mean score of self-efficacy of psychiatric nurses who bed side or others who direct contact with psychiatric patients were more than those who are just supervisors. Furthermore, years of nurses' experiences have statically relation with their self- efficacy. The more years of experiences the more increased self-efficacy. This could be due to the psychiatric nurses who had the greater length of nursing experiences may have a higher amount of maturation which ultimately lead to possess emotional and social competencies and lead to find better

strategies to improve their performance over time, thus increasing their sense of self-efficacy. The greater exposure to the experience, the greater the level of self-efficacy. In this respect, Mahalizadeh et al. (2016) [19] mentioned that, the past experiences was either positive or negative, and the process of learning from those past experiences will affect self - efficacy of future experiences. This agreement with Masa'Deh (2018) [19] and El- Azzab et al. (2019) [34] who reported a significant positive relationship between self-efficacy and years of experiences among their participants from psychiatric nurses. Furthermore, Soudagar (2015) [42] discovered that the nurses who had more than 16 years of working experience in the field of nursing reported a better self-efficacy score.

Conclusion:

The present study concluded that self-efficacy is important factor affecting nurses' stress. Nurses who have more self-efficacy are more likely to tolerate perceived stress. Meanwhile compassion in present study has no effect on stress among nurses.

Recommendations:

Based on results of the present study the following recommendations are suggested:

-Educational program about stress management should be implemented to learn psychiatric nurses the effective coping strategies to dealing with daily life and work stressors.

-Engaged psychiatric nurses periodically in training periods or workshops to enhance their self- efficacy and compassion which help them to acquired skills and positive facets of mental health.

-Periodically assessment level of stress among psychiatric nurses and determine its sources regularly for early detection and dealing with it effectively.

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Effect of Receptive Music Therapy on Stress and Coping Strategies among Patients with Schizophrenia

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Abstract

Background: For individual living with schizophrenia, music therapy will help them to overcome deficits in coping skills and provide them with the important skills to be able to deal proficiently with daily hassles, solve life challenges and stressors and promote their coping. **Aim of the study** was to evaluate the effectiveness of receptive music therapy on stress and coping strategies among patients with schizophrenia. **Subjects and Method: Setting of the study**:The study was conducted at inpatients ward at the Psychiatric and Mental Health Hospital in Meet-khalf at Menoufia that affiliated by the Ministry of Health and Population, Egypt. **Subjects**: A convenience Tool (1): sample of patients with schizophrenia (50 patients). **Tools of the study**: - Socio-demographic and clinical characteristics structured Interview Questionnaire. Tool (II): Perceived Stress Scale (PSS) and Tools (III): The Brief COPE Inventory. **Results:** The findings of the study revealed that, there was a highly statistically significant reduction in perceived stress post receptive music therapy. Also, there was a highly statistically significant improving in coping strategies post receptive music therapy**. Conclusion:** It was concluded that receptive music therapy proved to be effective on decreasing perceived stress and improving coping strategies among patients .with schizophrenic**. Recommendation:** Receptive music therapy should be provided as intervention for patients with mental illness.

***Keywords*:** Patients with schizophrenic, Music therapy, Perceived stress, Coping

Introduction

Worldwide, schizophrenia is associated with considerable disability and result in considerable burden to the individual and society. It affects about 1.1% of the world's population. The disorder, being responsible for 7% of total years lived with disability and is now ranked in the top 20 causes of years lived with disability worldwide. As a result of these factors, schizophrenia is a major public health concerns and a global mental health priority [1, 2].

Schizophrenia is a neurodevelopmental disorder with a hereditary proclivity, and stress has long been linked to its causation. While stress has an impact on all stages of the disease, new evidence suggests that stress at crucial periods of development may be more deleterious and increasing a person's predisposition to psychosis [3,4]. Because of the significant and remarkable stressors that persons with schizophrenia face such as chronicity, illness management, unemployment, loss of productivity, rejection from society, isolation, homelessness, and stigma, the risk of patients' vulnerability to experience stress is increasing [5, 6].

A lot of research strongly support the notion that perceived stress correlated positively with symptoms severity in patients with schizophrenia and stress triggers the exacerbation of psychotic symptoms of schizophrenia which lead to drop the follow-up treatment, relapse and poor outcome. As a result, stress is a significant concern among people living with schizophrenia, and it has a significant detrimental influence on their well-being [1, 5].

Coping is described as the cognitive and behavioral efforts to master, tolerate, or lessen the external and/or internal stresses imposed by a stressful transaction. Three basic types of coping strategies are emotion-focused coping, problem-focused coping, and avoidance-focused coping. Emotion-focused coping, for example, involves expressing feelings to others and is typically aimed at managing affect in response to a stressful circumstance. Avoidance Coping aims to avoid dealing directly with stressful demands by rejecting, diminishing, or otherwise avoiding them. Meanwhile, problem-focused coping is aimed at reducing or managing stressful situations, and may

include activities such as problem-solving planning and strategy [6, 7].

People with psychotic disorders, such as those with schizophrenia, have been found to adopt mostly maladaptive coping methods. According to studies individuals with schizophrenia often have persistent trouble coping effectively with both substantial and minor stresses, and they tend to avoid instead of actively strive to solve problems [8-,9].

Coping influences patients' compliance to therapy and the course of the disease. Patients with schizophrenia often have poor outcomes partly because of their reduced use of positive coping strategies. The inability to manage and respond to stress appears to be widely accepted as the primary leading reasons of relapse and impaired quality of life. Thus, stress and coping styles among individuals with schizophrenia are a key issue in psychiatric nursing [6,9]. Treatments for people with schizophrenia consist mainly of physical treatment, which is typically antipsychotic treatment. Although antipsychotic medications are actually basic in suppress some symptoms of schizophrenia, they cannot cure deficits in patient's socials skills as coping with stress. As a result, new intervention approaches for improving patient coping have been established, one of which is music therapy (MT) [6,10]. Music therapy is a therapeutic approach that employs music's inherent mood-lifting properties and relaxing effect to assist people in improving their mental health and overall well-being [11,12]. Music therapy can be divided into two categories: active and receptive. Active music therapy involves patients participating in some form of music-making, such as, rapping, chanting, singing, playing instruments, improvising, song writing, composing, and conducting, whereas passive or receptive music therapy involves the client listening to music – live or recorded – and responding silently, verbally, or through another modality, such as dancing or drawing.

Music therapy has been shown to be an effective adjuvant treatment for psychoses, and it is deemed to be more beneficial than standard therapy alone because it improves the patient's overall health, mental state, negative symptoms, and social functioning [13,14]. For individual having schizophrenia, music therapy will help them to overcome deficits in coping skills and

provide them with the important skills to be able to deal proficiently with daily hassles, solve life challenges and stressors and promote their coping. Recent related studies that are concerned with evaluating the effect of music therapy on coping abilities of patients, studies showed that MT has a positive influence on self-perception, and it can strengthen the ego of patients with schizophrenia, increased patients' participation in vocational and recreational activities, and significant improvement from base line levels on conversation and assertiveness skill to the general social performance [15,16]. As a result of these protective effects of MT, it is classified as a support intervention to reduce stress and improve coping, with a variety of outcomes such as stabilizing their illness, improving medication adherence, and promoting recovery progress.

Significance of the study

While pharmacological treatment for schizophrenia is the first line of defense in reducing main symptoms, many antipsychotics are associated with poor quality of life and debilitating side effects. As a result, health care practitioners have turned to complementary treatments such as music therapy. While music therapy have a positive effect as a potential tool to mitigate stressful environmental factors and enhance coping, it therapy appears to favour the expression of emotions, strengthen self-awareness, social connection, and a sense of personal support [15,17].

As a result of this association, there is a greater interest in researching the impact of music therapy on improving coping, controlling stress, and supporting individuals with schizophrenia in remaining well in the community. Nurses with this understanding can utilize techniques like music therapy to assist patients improve their coping styles and deliver the kind of care they need to integrate individuals with schizophrenia into society.

The aim of the study

Evaluate the effectiveness of receptive music therapy on perceived stress and coping strategies among patients with schizophrenia.

Research Hypothesis:

Patients with schizophrenia who participate in the receptive music therapy are expected to have low stress

level and improvement in their coping strategies.

Subjects and Method

Design:

Quasi experimental research design (one group pre-test post-test) was used.

Setting:

The study was conducted at inpatients ward at the Psychiatric and Addiction Treatment Hospital in Meet-khalf at Menoufia that affiliated by the Ministry of Health and Population, Egypt.

Subjects:

A convenience sample of patients with schizophrenia (50 patients) who admitted in the above previously mentioned setting and selected according to Epi-Info software statistical package created by World Health Organization and Center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002. The criteria used for sample size calculation were as follows: 95% confidence limit. The subjects meet the following criteria

Inclusion Criteria of the subjects:

- Patient who aged 18 or older

-- Patient who willing to participate in the study

- **Exclusion Criteria of the subjects:**

-Patient in a cute phase of schizophrenia.

-Patient diagnosed with intellectually disability or other psychiatric disorder.

-Chronic medical illness that may affect psychological state of the patient.

Tools of the study:

.To fulfill the study's goal, three tools were used.

Tool (1): Socio-demographic and Clinical Characteristics Structured Interview Questionnaire

It was developed by the researchers based on the review of the relevant literatures to elicit data about socio-demographic data of patients (age, sex, occupation, marital status, level of education, income, residence as well as clinical characteristics of patients (family history of psychiatric illnesses, history of previous hospitalization, and medication adverse effect.

Tool (II): Perceived Stress Scale (PSS)

It was adopted from Cohen et al. [18]. PSS was used to assess the degree to which people perceive their lives as stressful and to ask about feelings and thoughts during the last month. It's a four-point Likert scale that ranges from

0 (never) to 4 (very often). It had ten items, four of which were positive and six of which were negative (1, 2, 3, 6, 9, and 10). The total score ranges from 0 to 40, with higher numbers indicating higher levels of perceived stress.

Scoring System:

- 0-13 indicated low perceived stress
- 14-26 indicated Moderate perceived stress.
- 27-40 indicated High perceived stress.

Tools (III): The Brief COPE Inventory

It was adopted by Al Mansoori (2014)[19]. It is a four-point Likert-type scale, ranging from one ("I haven't been doing this at all") to four "I've been doing this a lot"). This questionnaire includes 28 items that explore the following The dimensions of coping strategies and were labeled according-to their constitutive items:

-Social support strategies; (8 items)which include items number 5,9,10,15,21,22,23,27

-Problem solving strategies; (4 items) which include items number 2,7,14,25

-Avoidance strategies; (10 items) which include items number 1,3,4,6,8,11,13,16,19,26

-Positive thinking strategies; (6 items) which include items number 12,17,18,20,24,28

Higher scores indicate a greater likelihood of using the appropriate coping mechanisms.

Method of data collection

-Administrative approval:

An official permission to conduct the study was obtained from the directors of the psychiatric and addiction treatment hospital in meet-khalf at Menoufia, Egypt and the committee for research ethics of the general secretariat of mental health hospitals.

-Ethical consideration:

-Informed consent to participate in the study was obtained from the patient.

-Assure the participants about their privacy and confidentiality of the obtained data and it was used only for the purpose of the study.

-Emphasizing the right to withdraw from the study at any time.

-Nature of the study didn't cause any harm or pain to subjects of the study.

- The subjects' anonymity was guaranteed.

-The validity of the Tools:

The tools were tested for content validity by jury of 5 experts in the field

of Psychiatric and Mental Health Nursing and Medicine to ascertain relevance and completeness of study tools.

-Reliability of the instruments:

The internal consistency of the tools (II&III) was done by using Cronbach's alpha with high test re-test reliability and seemed to be strongly reliable at 0.84 for tool II and 0.81for the instrument III.

-A pilot study:

A pilot study was carried out to assess the tools' usability and applicability, as well as to estimate the time required to fill the instruments. A pilot study was conducted on 10% of the subjects. The subjects of the pilot study were chosen at random and afterwards excluded from the study participants.

-Actual study

The actual study was divided into four phases:-

- **Phase one: Assessment phase (pretest phase)**

- The aim of this phase was to create a connection between the researchers and the patients, as well as to explain the study's purpose and intervention schedule.

- The researcher went through all of the inpatients' records to find individuals who fit the inclusion criteria, then conducted the interview in the ward.

- Using the three study tools as a guide, the researcher interviewed each patient individually to obtain a baseline assessment (pre-test). Each patient interview lasted between 40 and 60 minutes, depending on the patient's ability to understand and speak.

Phase two: Implementation phase

-This phase was aimed to provide studied patients with firstly by theoretical knowledge about receptive music therapy such as definition and benefits of receptive music therapy with the aim of gaining optimal participation and cooperation of the patients and then applying receptive music therapy.

- The studied subjects were divided into subgroups. Each subgroup was homogenous in terms of sex. Each subgroup consisted of 6-8 patients and attended 8 sessions. 2 sessions per week for one month. Each session was lasted from for 45-60 minutes.

- From the beginning of February to the end of May (2021), application of the receptive music therapy was done.

- The sessions were carried out at the meeting room of the setting of the study.

- Patients' individual differences, levels of understanding, willingness and response of patients were taken into consideration during the sessions for better patient's participation.
- In the sessions, the researcher was the initiator, provider of the information, and the encourager for the patients. He also acted as the group leader who operated as a facilitator, teacher and trainer.
- Begin a group session by going around the circle and asking everyone to answer a question regarding their current feelings (sometimes called a round or a check-in).
- Using receptive interventions, first researcher heard to the participants different type of music such as soft and loud music, and then then researcher asked the participants what kind of music they preferred to listen. They preferred soft music. The participants becoming recipients of the musical experience rather than active music makers. During or after the listening experience, clients discuss evoked thoughts, feelings, and emotions.
- Each session was structured as follows: within the first 5 minutes, the researcher stated the session theme and planned activities. After that, 40 minutes were spent finishing the session work, and the final 10 minutes were spent summarizing, soliciting feedback, thanking patients, and reminding them of the next session's schedule.
- Group discussions, flip charts, Pictures, lap top, head phones, sound system and musical CDs were used in the study.

Sessions are scheduled as following:

-Session 1: The aim of this session was to encourage patients to participate actively in receptive music therapy. This is accomplished by acquainting the researcher with the patients, outlining the group rules as confidentiality, as well as purpose and nature of the study.

-Session 2: This session aimed to acquiring the subjects' knowledge about definition, importance, types and benefits from it, and problems which can be treated by receptive music therapy. The researcher presented by a video and power point.

Session 3: This session was designed to educate the participants about the concept of stress, as well as its causes and symptoms. The researchers showed a film depicting stress symptoms as well as the medical complications associated with anxiety and stress. During this session, the

researchers inquired about the source of their stress as well as the symptoms of stress. The participants benefited from the presentation of reality models of patients' stress experiences and the problems that stress causes.

- Session 4: It aimed to identifying the studied subjects the concept of coping to identify different coping skills and strategies which can be used when there is a stress and also aimed to clarify the relationship between stresses and coping, teach the importance and the factors affecting coping.

- **Session 5**: The participants were allowed to listen to music and sing songs during the session.

The subjects are encouraged to talk with others and sharing their memories and express their emotions with each other's that require personal interaction and cooperation. During listening to music patients response differently, some by sing with songs and others dancing and swaying their bodies.

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Session 6 and 7: aimed to teach patients the meaning of relaxation and its benefits accompany to listening music in these sessions music selected and played with the intention of creating a relaxing and calming experience. Training the patients on different relaxation techniques accompanied by listening to music (deep breathing exercises - mental relaxation– progressive muscle relaxation - meditation exercises), explain and apply the steps several times, ensure that patients master the application of relaxation techniques (demonstration and re-demonstration).

Session 8: this session designed to provide a summary of previous skills, gain insight into the patients' experiences, and receive feedback on receptive music therapy and relaxation techniques sessions the researcher congratulated the patients who took part in the receptive music therapy session at the end of the session.

Evaluation phase:

The training was evaluated by immediately reapplying the study tools (tool II & tool III) as (post-test).

Statistical analysis

For coding, entering and analyzing data SPSS (version 20) was used. The range, mean, and standard deviation were calculated for quantitative data. Comparison was done using chi-square for qualitative data. For comparison between means of two parametric variables student t-test was used. Spearman's correlation coefficient was used for evaluation between variables of the study. Significance was adopted at P value < 0.05 and at P value < 0.01 for significance and high significance was adopted respectively.

Results

Table (1) illustrates socio-demographic characteristics of the studied patients. Result revealed that the range age in years of the studied patients were (20-49) with mean age 29.7±5.97 and more than half of them (54%) were male and (52%) were from rural residence. Regarding educational level, one third of the studied patients 34% had primary education and more than three quarters of them (76%) were married. Concerning occupation 42% had free work and more than half (52%) had enough income. Relating to medication side effects, around two thirds of them (64%) have medication side effects and the mean of the disease duration was 3.34 years.

Figure (1) shows mean score of perceived stress and coping strategies pre and post implementation of receptive music therapy among the studied patients. It can noticed that the mean score of perceived stress was decreased from 24.9 pre- the intervention to 19.8 post the intervention and mean score of coping strategies was increased from 58.6 to 68.5 post the intervention. There was a highly statistically significant difference in the mean score of studied patients regarding their perceived stress and coping strategies at pre and post implementation receptive music therapy.

Table (2) prescribes levels of perceived stress and coping strategies pre and post implementation receptive music therapy among the studied patients. There was a highly statistically significant difference in the studied patients at pre and post implementation receptive music therapy regarding their stress and coping strategies levels. Before implementation receptive music therapy low level of stress was 0% which increased to 28.0% after and high level of stress decreased from

decreased from 52.0 % to 20.0. Concerning coping strategies, before implementation receptive music therapy low appropriate coping strategies changed from 96.0 % to 44.0% meanwhile moderate appropriate increased from 4.00% to 56.0% after implementation receptive music therapy.

Table (3) emphasizes on mean score of coping strategies subscales pre and post implementation receptive music therapy among the studied patients. Results showed that there was a highly statistically significant difference among the studied patients at pre and post implementation receptive music therapy regarding their coping strategies subscales at P-value (<0.001). The mean scores of social supports, problem solving and positive thinking coping strategies were increased post implementation receptive music therapy meanwhile the mean score of avoidance coping strategies was decreased.

Table (4) presents correlation between perceived stress and coping strategies among the studied patients. Results revealed that there was a highly statistically significant negative correlation between perceived stress and total coping strategies post intervention at P-value (0.003). It means when the perceived stress decreases the total coping strategies increase.

Table (5) reveals relation between socio demographic characteristics of the studied patients and perceived stress and coping strategies .There was a statistically significant relation between high perceived stress and male gender at P-value (0.05), there was a statistically significant relation between high perceived stress and duration of disease more than 3 years at P-value (0.001), and there was a highly statistically significant relation between high coping strategies and male gender at P-value (0.001).

Table (1): Socio-demographic Characteristics of The Studied Schizophrenic Patients (N= 50)

Socio-demographic characteristics	No.	%
Age / years		
Mean ±SD	29.7±5.97	
Range	23 – 49	
Sex		
Male	27	54.0
Female	23	46.0
Residence		
Urban	24	48.0
Rural	26	52.0
Educational level		
Illiterate	11	22.0
Primary	17	34.0
Preparatory	10	20.0
Secondary	4	8.00
University or higher	8	16.0
Marital state		
Single	5	10.0
Married	38	76.0
Divorced	7	14.0
Occupation		
Governmental work	13	26.0
Free work	21	42.0
Not work	16	32.0
Income		
Enough	26	52.0
Not enough	24	48.0
Medication side effects		
Present	32	64.0
Absent	18	36.0
Disease duration / years		
Mean ±SD	3.34±1.64	
Range	1.00 - 8.00	

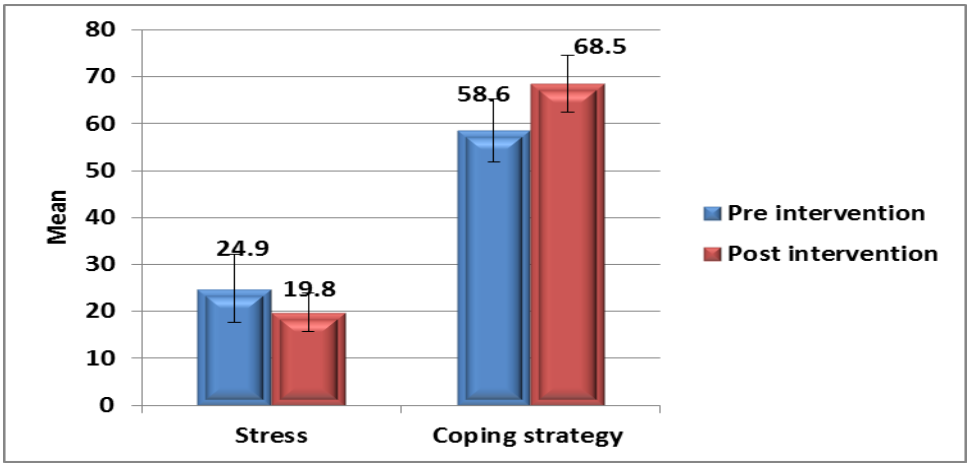

Figure (1): Mean score of Perceived Stress and Coping Strategies Pre and Post implementation of Receptive Music Therapy among the Studied Patients (N= 50)

Table (2): Levels of Perceived Stress and Coping Strategies Pre and Post Implementation Receptive Music Therapy among The Studied Patients (N= 50)

Studied variables	Pre-intervention		Post-intervention		Mc Nemar test	P-value
	No.	%	No.	%		
Perceived stress						
Low	0	0.00	14	28.0	5.00	**<0.001****
Moderate	24	48.0	26	56.0		
High	26	52.0	10	20.0		
Coping strategies						
Low	48	96.0	22	44.0	24.0	**<0.001****
Moderate	2	4.00	28	56.0		

*High significant # Marginal homogeneity test

Table (3): Mean score of Coping Strategies Subscales Pre and Post Implementation Receptive Music Therapy among The Studied Patients

coping strategies subscales	Pre-intervention	Post-Intervention	Ch-	P value
	Mean ±SD	Mean ±SD		
Social support	14.6±2.17	20.4±3.51	6.03	**<0.001****
Problem solving	6.30±1.54	12.4±2.01	5.96	**<0.001****
Avoidance	24.0±3.48	19.8±3.71	6.17	**<0.001****
Positive thinking	13.7±1.61	15.8±1.54	6.24	**<0.001****

Table (4): Correlation between Perceived Stress and Coping Strategies among the Studied Patients

Coping	Perceived stress	
	R	P-value
Social support	-0.258	0.071
Problem solving	-0.123	0.394
Avoidance	-0.273	0.055
Positive thinking	-0.210	0.143
Total coping strategies	**-0.412**	**0.003****

Table (5): Relation between Socio demographic Characteristics of the Studied Patients and Perceived Stress and Coping Strategies

Socio demographic characteristics	Perceived stress	Test of sig P-value	Coping strategies	Test of sig P-value
	Mean ±SD		Mean ±SD	
Age / years		t-test=		t-test=
≤ 28	19.2±6.95	0.719	69.5±5.35	1.26
>28	20.5±6.39	0.475	67.3±6.77	0.211
Sex		t-test=		t-test=
Male	21.9±7.16	2.54	70.6±5.98	2.76
Female	17.3±5.20	**0.014***	66.2±5.29	**0.008****
Residence		t-test=		t-test=
Urban	19.7±7.25	0.029	69.7±6.31	1.37
Rural	19.8±6.25	0.977	67.4±5.69	0.176
Educational level		F=		F=
Illiterate	20.5±6.00	0.435	67.9±5.55	0.577
Primary	18.4±7.82	0.783	68.6±6.74	0.681
Preparatory	21.8±5.15		70.0±6.86	
Secondary	19.0±6.32		71.0±3.16	
University or higher	19.7±7.62		66.4±5.55	
Marital state		K=		K=
Single	22.2±9.06	0.691	67.6±5.77	0.165
Married	19.4±6.36	0.708	68.5±6.15	0.921
Divorced	20.2±6.68		69.4±6.42	
Occupation		F=		F=
Governmental	18.0±7.35	0.714	69.1±7.57	0.615
Free work	19.9±5.91	0.495	69.2±5.42	0.545
Not work	21.1±7.19		67.1±5.61	
Income		t-test=		t-test=
Enough	20.1±7.23	0.364	69.0±4.93	0.507
Not enough	19.4±6.16	0.717	68.1±7.15	0.615
Medication side effects		t-test=		t-test=
Present	19.4±6.72	0.580	68.8±6.06	0.407
Absent	20.5±6.74	0.565	68.1±6.17	0.686
Disease duration / years		t-test=		t-test=
≤ 3 years	18.0±6.01	2.60	68.6±6.17	0.144
> 3 years	22.7±6.0	**0.012***	68.4±6.00	0.886

Discussion

Despite many people have found adaptive ways to appropriately manage with stress and its harmful consequences, a substantial number of people still appears to struggle to cope with life stressors. This may be especially true for people with schizophrenia, who have been shown to endure significantly more stress in daily life than people without mental illness and to have fewer resources to cope with stress. As a result, more research into the effectiveness and applicability of therapeutic interventions for stress reduction in people with schizophrenia is critical[18,20]. One of these approaches is music therapy. Music therapy is an effective tool for helping people manage stress and improve coping abilities.

Along this line, the current study was undertaken to assess the effect of receptive music therapy on stress reduction and enhancing coping among people with schizophrenia, and the findings revealed that receptive music therapy had a positive effect on stress reduction and coping among the participants. The results of the current Study showed that the mean score of perceived stress among studied subjects was significantly decreased post the receptive music therapy.

This may be attributable to various possibilities, one of which being the biological influence of music on the brain. Music stimulates activity in parts of the brain that release dopamine, the body's natural pleasure chemical, which is a big reason why people like music so much. In this regard music has been demonstrated to modulate the activity of brain areas involved in the initiation, creation, maintenance, termination, and regulation of emotions [21, 22]. Another explanation is that the distraction effect of music is involved, as MT captures people's attention and diverts them away from stimuli that can contribute to negative emotions like worry, anxiety, and stress.

Furthermore, one of the most essential attributions of music therapy as a stress-relieving agent for people with schizophrenia is that music influences a person's emotions immediately without requiring the use of an intellectual process. In other words, neuronal codes transmitting music from the hearing organ travel straight

to the brainstem. Because music therapy does not need patients to be able to communicate verbally, it is often appropriate for people with chronic schizophrenia who have communication problems. They improved their capacity to communicate with others, decreased their social isolation, and enhanced their interest in external events, all of which reduced stress.

The current study finding is consistent with **Amigo and Mariati (2020)** [23] studied" the effect of music in reducing stress among persons with mental disorders. They found a significant result in stress reduction among their studied subjects. Also, this finding was in harmony with the results obtained by **Georgiev et al. (2012)** [24] who studied" Effects of music therapy in chronic patients with schizophrenia. However, the findings of the current study are in contrast with **Artemiou et al. (2017)** [25] found that there were no significant baseline differences between the music and no music groups for DASS-21 depression, anxiety, or stress scores. In addition to **Alagha and Ipradjian (2017)** [26] came in contrast with current study.

The fact that music is involved in so many various kinds of mental wellbeing interventions reinforces the belief that being affected or touched by music cannot be viewed solely as a metaphor, which renders music as mere embellishment of individual's daily lives. The current study findings presented that coping of studied subjects was a highly statistically significant improved after attendance receptive music therapy. These findings are similar **Hakvoort et al. (2015)** [27] who studied" Influence of Music Therapy on Coping Skills and Anger Management in Patients with schizophrenia: They found that an improvement of positive coping skills and reduction of avoidance coping skill in music therapy participants. Additionally a lot of researches have shown that music therapy can increase self-awareness and strengthen coping skills for individuals with mental disorders [20, 21].

This may be due to the fact that music therapy can aid in the identification and labeling of emotions in a safe environment, which can lead to improved communication of feelings and needs in other situations, particularly in the case of schizophrenia patients who have

difficulty expressing their emotions. Music therapy can help people learn to securely communicate their feelings, both verbally and nonverbally, in order to improve emotional regulation. Another plausible justification is that music therapy might provide opportunity for people to practice social skills that can be transferred to daily relationships and help them cope better. According to clinical accounts, MT has traditionally been thought of as a way to improve group cohesion, acceptance, and interpersonal interactions in psychiatric settings [28,29]. Another supported rationalization of effect of music therapy is music therapy has a positive influence on self-perception and it can strengthen the ego of schizophrenic patients. In this respect, **Soumitra (2021)** [5] added that when music therapy used therapeutically, music can provide a wide range of coping skills such as breathing techniques, relaxation, distraction, and emotional expression. It has been reported that music therapy has been found to be useful for improving coping of schizophrenia.

Concerning the types of coping strategies, the findings of the present study indicated that the studied patients were using negative coping strategies at pre-receptive music therapy. This is may be due to regulating emotions can be challenging with schizophrenia that prevent the patient from coping effectively. This finding was in the same line with **Kommescher et al. (2017)** [30] who studied "Coping in people at risk of psychosis". They found that the subjects depend significantly more on the negative coping strategies than on the positive one. Also, findings of **Holubova et al. (2015)** [28] were in the same harmony.

According to the present study, a statistically significant relationship was found between high perceived stress and male gender. This could be because men are unable to express their emotions as openly as women, and hormones play a significant part in the difference in stress perception between men and women. This result was inconsistent with **Lavoie and Douglas' (2021)** [31] and **Kneavel (2021)** [32] who reported that females had significantly higher levels of perceived stress than males.

The result of the current study revealed that there was a statistically significant relation between high perceived stress level and duration of disease that subjects have more duration of illness;

they are more likely to have more stress. The attribution for this may be increasing duration of disease leading to a high state of distress, chronicity more hospitalization and more experienced stigma. This result was consistent with **Salleh (2018)** [33] who studied " Life Event, Stress and Illness". He found that the relationship between psychiatric illness ad stresses is strongest in neuroses, which is followed by depression and schizophrenia.

The results of the current study found that there was a highly statistically significant negative correlation between perceived stress and total coping strategies. It means when the perceived stress decreases the total coping strategies increase. This result was consistent with **Zadwornaetal (2020)** [34] who observed negative relationships were between the level of stress and the coping strategies among patients with schizophrenia.

Conclusion

According to the findings, receptive music therapy was found to be useful in reducing perceived stress and enhancing coping mechanisms among schizophrenic patients.

Recommendations

1-The effect of utilize receptive music therapy as intervention for patients with mental illness should be included in student's nurses' curriculum.

2- In services training program for nurses about the importance of receptive music therapy and how to use it to reduce stress and improve coping strategies.

3-Establishing of workshop for nurses about utilize receptive music therapy as effective coping strategies for patients.

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Aggressive Behavior and Psychosocial Adjustment among Port Said University Adolescent Students

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Abstract

Background: Globally, aggressive behavior has become a major problem with a variety of multidimensional serious consequences. It causes varying extent of impairment to the social, emotional, and psychological adjustment of adolescents. **Aim:** This study intended to explore the correlation between aggressive behavior and psychosocial adjustment among Port Said university adolescent students. **Subjects and Method**: **Design:** A descriptive correlational research design was employed. **Subjects**: The study subjects comprised a sample of 509 adolescent students enrolled in the first grade at faculties affiliated to Port Said University in Port Said Governorate during academic year 2019-2020. **Tools:** Instruments of data collection: Two tools were utilized to collect data, which were Buss-Perry Aggression Questionnaire, and Psycho-Social Adjustment Scale, in addition to personal characteristics of the studied adolescent students. **Results**: Four fifths of the studied adolescent students had a high level of aggression. The vast majority the studied students had a mild level of psychosocial adjustment, while the rest of them had a moderate level. **Conclusion**: There was a statistically significant negative correlation between overall aggression and overall psychosocial adjustment among the studied university adolescent students at $p \leq 0.05$. **Recommendations**: Designing and applying multimedia intervention programs for students regarding training in coping strategies, stress-control techniques, cognitive restructuring and problem-solving techniques, that may help to cope with stressful life events in an adaptive way and without having to use aggression to solve problems or conflicts. Moreover, Faculties should develop student orientation programs, and seminar sessions for the inclusion of formal and informal training on aggressive behavior.

Key words: Adolescent Students, Aggressive Behavior, Psychosocial Adjustment.

Introduction

Adolescence is one of the critical stages of human development during which individuals are challenged to develop healthy responses to stress. It is a time of tremendous growth, and discovery characterized by transitions across numerous developmental spheres, comprising significant challenges in physical, cognitive, psychological, and socio-emotional domains [(1)]. This period is characterized by its own complexities that can affect the psychological well-being of adolescents, interfere with their advancement and their ability to assume everyday life accountabilities and could have a lasting destructive impact into adulthood [(2)].

Late adolescence involves transition into adulthood; it begins at the age of 17 to 19 years. It is characterized by the development of a strong personal identity. It is the time when adolescents encounter problems as self- doubt, confusion and powerlessness associated with resolving the identity-related conflict involved in defining who one is, what one wants to achieve in the future and what one believes in terms of personal values. Confronting these dilemmas can produce periods of despair, drifting, hostility, or negative identity. As a result, they are at a great risk for emerging a variety of mental health problems [(3)].

Aggression is one of the major psychological problems that affect psychological well-being during adolescence. Although aggression begins at an early stage of development and remains throughout life, its beginning can be generally attributed to adolescence [(4)]. In this period of life, aggression may probably predict delinquency, drug abuse, depressive symptoms, and academic disappointment. In fact, the anger associated with aggression is among the main motives for referral of adolescents to counseling centers [(5)].

Aggressive behavior is a prevalent behavioral phenomenon that community seeks through multidimensional institutions to reduce it. It is no longer limited to individuals only; but expanded to include schools, universities, institutions, and countries [(6)]. Aggression is defined as "an intentional behavior with the potential to cause destruction or harm, it may manifest as verbal threats or attacks, negative use of objects, or physical assaults on known people, strangers, or self." Also, it can be defined

as any behavior intends to harm self or others, or ruins property of others [7].

Aggression is a term used to describe any behavior by an individual against another with a sole purpose of inflicting psychological or physical pain. Aggressive behavior takes various forms, including physical aggression, verbal aggression, relational aggression, anger, and hostility. Physical aggression is a behavior causing physical harm to others, it expressed by threatening gestures, hitting, pushing, pulling hair, and biting. Verbal aggression focuses on the speech in which an individual used foul language insulting people, it includes shouting, arguing, cursing, and sarcasm in order to hurt others psychologically and hurt their emotions [8]. Even though relational aggression comprises intentional manipulation of and mutilation to another's social relations, it includes gossiping, giving dirty looks, social exclusion, and friendship manipulation [9].

Hostile aggression has been conceived as being impulsive, unplanned, uncontrolled, driven by anger, hot-blooded, reactive, overt, defensive, destructive, having the ultimate motive to harm the target, and occurring as a reaction to some perceived provocation [10]. Hostility is an unfriendly attitude or behavior showing characteristics of an enemy; it includes feelings of suspicious, resentment, and alienation. Whereas anger is a natural, emotion or the feeling of being threatened or mistreated which everyone usually experiences. Anger refers to negative reactions that differ in strength from minor annoyance or modest bother to rage [11].

Aggression is a problematic behavior accompanying with plain penalties in and psychosocial adjustment, functioning, and personality development [12]. Adolescent aggression is an important determinant of adolescent psychosomatic health problems and their quality of life [13]. Studies revealed that aggressive behavior among adolescents is openly interrelated to a psychosocial or behavioral adjustment [14]. Aggressive response amongst colleagues represents a difficult in the bulk of adolescents' development. Results indicated that, a negative relation amid aggressive behavior and comprehensive gratification with life plus psychosocial adjustment was detected [15].

Psychosocial adjustment can be revealed as individuals strive to get along or pull through in their social and cultural environment. It is a practical term summarizing both the overall physical

condition of a person and series of changes taking place in a definite manner in reaction to situations [16]. Psychosocial adjustment or adaptation denotes individual's capability to adjust to the environment; involving that the individual is sufficiently feeling good, integrate, react sufficiently to the difficulties of the atmosphere, besides accomplish his or her intentions. In late adolescence, psychosocial adjustment frequently denotes adaptation and working in some of the chief zones that portray this phase including family plus university settings [17].

The increasing attention on aggressive adolescents has been mainly due to their suffering from adjustment difficulties [18]. Adjustment difficulties include low self-esteem, low life satisfaction psychological distress, elevated risks for depression and anxiety, reluctance to participate in group activities, fear of negative evaluation, loneliness, the presence of frequent intense conflicts in the family, of affective cohesion among the family members and low academic achievement [19, 20]. Adolescents with high levels of aggression seem to have low social competence and problem-solving skills, poor cognitive processing and peer interactions. Amongst numerous undesirable consequences of aggression substance abuse, suicidal ideation and criminality were conveyed [21].

Significance of the Study:

The university stage is one of the prickly important stages that contribute to building and shaping the identity of the university student for the future. University students have been considered as the upcoming power of their society and psychological problems such as aggression could disturb their health and create numerous difficulties for them **[22]**. Aggression is one of the supreme important trepidations of counselors, and highly impacts adolescents' behavior and personality. Aggression is prevalent among university adolescent students due to their developmental characteristics; almost, one in every 10 adolescents suffered from chronic aggressive behaviors or is harassed by peers [23]. Approximately 30 % of all students annually experienced some type of aggression at university **[24]**.

There is no doubt that adolescent entering into the world of university advances strongly the problems of adjustment and interaction with such community. Considering several negative consequences of adolescents' aggressive behavior on the psychosocial adjustment and functioning, their concerns, attitudes,

and motivations, remind us that understanding and investigation the issue seem to be necessary. Through better understanding, it will be easily to plan preventive intervention programs of this phenomenon.

Aim of the study

This study aimed to explore the correlation between aggressive behavior and psychosocial adjustment among Port Said university adolescent students.

Research Questions:

The research questions for which the researchers tried to find out the answers were:

What are the predominated types of aggressive behavior among Port Said university adolescent students?

What are the levels of psychosocial adjustment among Port Said university adolescent students?

Is there a correlation between aggressive behavior and psychosocial adjustment among Port Said university adolescent students?

Subjects and Method

Design:

This study followed a descriptive correlational research design, which relies on the study of a particular phenomenon by describing and showing its relationship to other phenomena.

Setting:

The present study was conducted in all faculties affiliated to Port-Said University in Port Said Governorate; Faculties were classified into various disciplines including human sciences (Sciences, Commerce, Physical Education, Education for Early Childhood, Arts, Education, Laws, and Specific Education), healthy sciences (Medicine, Pharmacy, and Nursing), and mathematical sciences (Engineering, and Administration and Computer Sciences).

Subjects:

The study participants encompassed a convenient sample of 509 adolescent students enrolled in the first grade at Port-Said University during academic year 2019-2020. They were chosen with the following inclusion criteria:

Students aged from 17 to19 years.

From both sexes.

Free from mental or physical disability.

Accept to participate in the study.

Sample Size:

The sample size was estimated by using the following equation [(25)].

Sample size (n) = Z2 p (1 - p)/d2

Where:

Z = A percentile of standard normal distribution determined by 95% confidence level = 1.96.

P = Prevalence of aggression among adolescents in Egypt= 18.48% [26].

d = 0.05.

Sample size (n) came out as 231.5 ≈232. Adding 10% for incomplete pro forma and rounding off the value, the sample size was 254.5≈ 255. As we have compared the urban and rural population, so a minimum of 509-sample size was decided for the current study.

In relation to recruitment of the studied subjects form every faculty. An identified number of the first grade students from each faculty estimated by using the subsequent equation:-

$$\frac{\text{Total number of the first grade students in the faculty} * \text{Total sample size}}{\text{Total number of all faculties' first grade students}}$$

Tools:

The study data were collected by using the following instruments:

Tool (I): Buss-Perry Aggression Questionnaire (BPAQ):

This questionnaire was revised by Buss & Perry (1992) [27] in an English language and translated into an Arabic language by Bushashy & Al- Hussien (2013) [28], it is a self-reported questionnaire contained 29 items which measured four subtypes of aggression, physical aggression (9 items), verbal aggression (5 items), anger (7 items), and hostility (8 items). An Arabic version of (BPAQ) showed validity and high Internal consistency, with Cronbach's Alpha and split-half coefficients α = 0.88, and 89%, respectively. Validity was done by a jury of 8 professional judges in educational psychology who decided that the scale is valid [28].

Scoring System:

Each item ranked by participants along five-point continuum scale, ranged from "extremely characteristic of me (5) to extremely uncharacteristic of me at all (1). Two items (9 and 16) were scored inversely. The score of the overall items were summed; the advanced score indicates a high level of aggressive conduct. The whole score fluctuated from 29-145. It was categorized as follows: mild (29-58), moderate (59-77), and high level (78-145). For every subtype, the scores of the items were summed-up and the entire was distributed by the number of the items, attaining a mean score for every type.

Tool (II) : Psychosocial Adjustment Scale :

This scale was developed by Al-Gemee (2009) [29] in an Arabic language. It was used to measure levels of psychosocial

adjustment among the study subjects. The scale is a self-reported questionnaire which encompasses 82 items divided into six domains: family adjustment (17 items), academic adjustment (15 items), social adjustment (14 items), emotional adjustment (13 items), physical adjustment (8 items), and moral adjustment (15 items). The Psychosocial Adjustment Scale was submitted to a panel of experts in the branch of educational psychology, to test it for face and content validity and decided that the scale is valid. The Cronbach Alpha reliability for it was $\alpha = 0.93$ [29].

Scoring System:

Psychosocial Adjustment Scale is a five-point Likert Scale extending from strongly disagree (1) to strongly agree (5). The notching was reversed in the negative items (9-17, 25-32, 42-46, 54-59, 63-67, and 74-82). For every domain, the scores of the items were summed-up and the whole was distributed by the number of the items, attaining a mean score for every domain. A total score ranged from 82 to 410. Scores ranged from 82 to 275 suggested a mild level of psychosocial adjustment, scores ranged from 276 to 315 showed a moderate level, while scores from 316 to 410 indicated a high level.

In addition to **A Structured Interview sheet:** This structured sheet was developed by the researcher in an Arabic language. It was used to collect data about personal characteristics of the studied adolescent students: This structured sheet was developed by the researcher in an Arabic language. It comprised personal characteristics as age, sex, faculty name, parental job status, parental educational level, and household income.

Pilot Study:

A pilot study was conducted on 10% of the studied adolescent students that represent 51 students. The purposes of the pilot study were to test the lucidity, applicability and the possibility of the instruments and to appraise the time needed to complete it. It also helped to find out any obstacles and problems that might interfere with data collection procedure. Conferring to the pilot study, no changes were done. Hence, the pilot students not excluded from the main study sample. The pilot study was carried out on the mid of October 2019 for one month.

Field Work:

To recruit the participants and collect data for this study, firstly, different faculties of the Port-Said University were

considered as clusters. Then, based on faculty size, an identified number of first grade students in each faculty were involved in the study. Any student registered in the first grade of above-mentioned faculties was suitable for inclusion in the study. In every faculty, the research team attended the faculty dean's office to duly inform the purpose and duration of the study and pursue for permission. Subsequently, the dean referred the team to the coordinator of the first academic year to detect proper day for data collection.

Prior to the administration of the instruments, the researchers assured that all students in the lecture theater were meeting the inclusion criteria, the researchers approached the students and granted, verbal consents were obtained from them afterward explaining the purpose and nature of the study. In addition, they were guaranteed that their information will keep in secret and their responses will only be used for the research purpose.

The instruments filled by the students in their lecture theater using a self-report technique in the presence of the research team to answer any query to the subjects. Each questionnaire took about 20 minutes to be filled out. After the collection of data, the students were thanked and acknowledged by the researchers for their precious donations in the study. The process of data collection was stopped for approximately two months due to the spread of Covid-19 pandemic. Collection of data covered a period of 6 months from the mid of November 2019 to the mid of March 2020.

Administrative Design:

Preliminary, official letters were issued from the dean of the Faculty of Nursing to Deans of all faculties in Port-Said University requesting their collaboration and promise to carry out the study, after clarifying the aim of the study.

Ethical Considerations:

Firstly, the research proposal approved by the Scientific Research Ethical Committee of the Faculty of Nursing, Port- Said University. Secondly, an approval was obtained from the selected settings from which the data were collected. Thirdly, a verbal agreement was obtained from the studied adolescent students afterwards a plainly overview about the intention of the study, fourthly, anonymity and voluntary participation in the study were guaranteed. Finally, confidentiality was affirmed to all participants in the study and researchers

confirmed that information would be used merely for the research purpose.

Data Analysis:

Data entry and statistical analysis were done using statistical package for social science (SPSS) version (24.0). Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables. Qualitative categorical variables were compared using chi-square test. Fisher Exact and Monte Carlo correction for chi-square when more than 20% of the cells have expected count less than five. Moreover, Pearson coefficient test was used to correlate between aggressive behavior and psychosocial adjustment among university adolescent students. The P-value is the degree of significance. The statistical significance value was considered at P-value ≤ 0.05.

Results

Table 1: Reveals the studied adolescent students' personal characteristics, the study group encompassed 509 university adolescent students, more than half of them (63.9 %) were males. As for adolescents' age, more than half (52.3%) of the students aged 19 years. Regarding to type of faculty, more than half (54.8%) of the students were in human science faculties. The results indicated that, the highest percentage (90%) of the studied students were from Port Said governorate. Concerning students' fathers, less than half (47.3%) of them had a university level of education, and the vast majority (97.1 %) were working. Also, less than half (45.2%) of the students' mothers had a university level of education, and 57. 4% were working. Looking at monthly income, the highest percentage (86.8 %) of the studied students had enough income.

Based on Buss-Perry aggression questionnaire, apparently, **table (2)** discloses the means and standard deviations of aggressive behavior subtypes among the studied university adolescent students. The highest mean score was for physical aggression followed by anger with means ± SD of 25.66 ± 4.01 and 22.75 ± 4.61 respectively. Whereas the lowest mean score was related to verbal aggression with a mean ± SD of 14.29 ± 3.36. It was noted that overall aggressive behavior among the studied adolescent students was with a total mean ± SD of 84.58 ± 11.54.

Figure 1: It was clear from the figure that, nearly four fifths of the studied adolescent students (78 %) had a high level of aggression, while only 19.0 %

had a moderate level, and the rest of them (3.0%) had a mild level.

Table 3: As elicited, the overall psychosocial adjustment among the studied university adolescent students was with a percent mean ± SD of 48.18 ± 4.30. Among psychosocial adjustment domains, it was found that the highest percent mean scores were for academic adjustment followed by physical adjustment, which constituted 51.21 ± 11.01, and 51.05 ± 11.71 respectively. While the lowest percent mean score (45.79 ± 10.50) was related to emotional adjustment.

Figure 2: Illustrates levels of psychosocial adjustment among the studied adolescent students, the vast majority the studied students (96.0%) had a mild level of psychosocial adjustment, while the rest of them (4.0%) had a moderate level.

Table 4: Describes the relation between levels of aggression and personal characteristics of the studied adolescent students. It was evidenced that there was a statistically significant difference in levels of aggression between males and females, and between the studied adolescent students whose mothers were working and those were not working whereby p-value ≤ 0.05. While no statistically significant difference was detected with other personal characteristics.

Table 5: Elicits that there was a statistically significant difference between levels of psychosocial adjustment and personal characteristics among the studied adolescent students in relation to type of faculty, where p= 0.049. While no statistically significant difference was noticed with other personal characteristics.

Table 6: Illustrates the correlation between psychosocial adjustment domains and subtypes of aggression among the studied university adolescent students. In the light of this table, there were statistically significant negative correlations between all psychosocial adjustment domains except emotional adjustment and subtypes of aggression including hostility, anger, and physical aggression where (r= -0.146, -0.107, -0.221, -0.194, -0.188, 0.216, -0. 204, -0.263, -0.109, -0. 132, -0.141, and -0.161) respectively.

The results also disclose that statistically significant positive correlations were noted between social adjustment and hostility, anger, and physical aggression where (r= 0.189, 0.227, and 0.121) respectively. As for verbal aggression, the table indicates that there were no

statistically significant correlations between all psychosocial adjustment domains and verbal aggression.

Table 7: It was evidenced that there was a statistically significant negative correlation between overall aggression and overall psychosocial adjustment among the studied university adolescent students as (r= - 0.207)

Table 8: Reveals Multivariate linear regression model for factors affecting psychosocial adjustment levels, data indicated that the most predictor had a significant effect on psychosocial adjustment levels was anger (p= <0.001), followed by physical aggression, hostility, and overall levels of aggression (p= 0.007, 0.018, 0.021) respectively

Table (1): Frequency and percentage distribution of the studied university adolescent students according to their personal characteristics (n=509)

Personal Characteristics	No.	%
Sex		
Male	325	63.9
Female	184	36.1
Age (years)		
17- <19	243	47.7
19	266	52.3
Min. – Max.	17.0 – 19.0	
Mean ± SD.	0.53±18.53	
Type of Faculty		
Human sciences	279	54.8
Mathematical sciences	165	32.4
Healthy sciences	65	12.8
Residence		
Port Said	458	90.0
Ismailia	23	4.5
Damietta	14	2.8
Alexandria	5	1.0
Arish	1	0.2
Suez	1	0.2
Dakahlia	7	1.3
Father's level of education		
Not read and write	3	0.6
Read and write	24	4.7
Primary	37	7.3
Secondary	204	40.1
University level	241	47.3
Mother's level of education		
Not read and write	21	4.1
Read and write	19	3.7
Primary	41	8.1
Secondary	198	38.9
University level	230	45.2
Father's job status		
Working	494	97.1
Not working	15	2.9
Mother's job status		
Working	292	57. 4
Housewife	217	42.6
Income (month)		
Enough	442	86.8
Not enough	67	13.2

Table (2): Mean scores of overall aggressive behavior and its subtypes among the studied university adolescent students (n = 509)

Aggressive Behavior	Total Score	Percent Score
Hostility		
Min. – Max.	8.0 – 33.0	0.0 – 78.13
Mean ± SD.	21.88 ± 4.34	43.38 ± 13.55
Anger		
Min. – Max.	10.0 – 34.0	10.71 – 96.43
Mean ± SD.	22.75 ± 4.61	56.24 ± 16.45
Verbal aggression		
Min. – Max.	6.0 – 25.0	0.0 – 79.17
Mean ± SD.	14.29 ± 3.36	34.53 ± 14.0
Physical aggression		
Min. – Max.	13.0 – 36.0	11.11 – 75.0
Mean ± SD.	25.66 ± 4.01	46.28 ± 11.15
Overall aggression		
Min. – Max.	38.0 – 114.0	6.67 – 70.0
Mean ± SD.	84.58 ± 11.54	45.48 ± 9.61

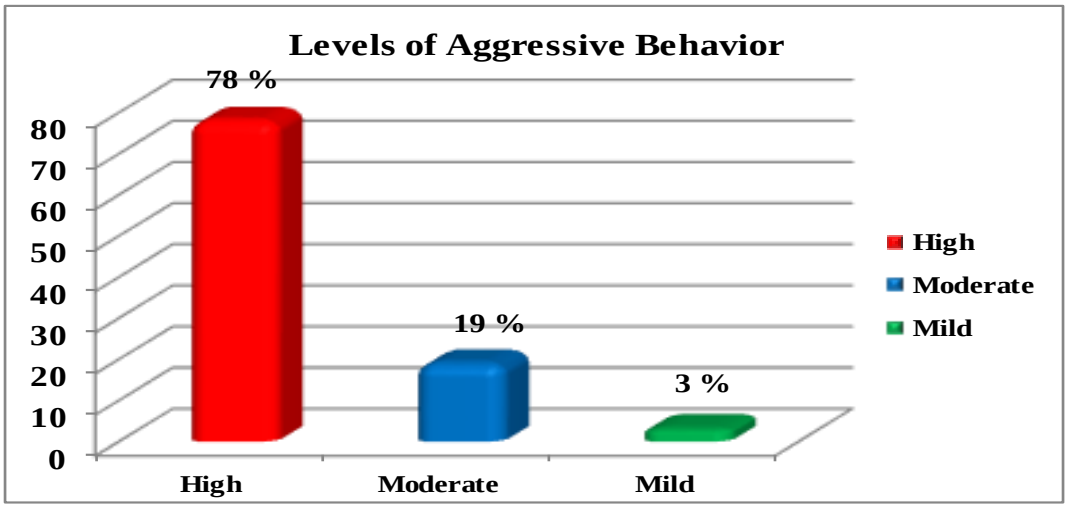

Figure (1): Percentage distribution of levels of overall aggressive behavior among the studied university adolescent students

Table (3): Percent mean scores of psychosocial adjustment domains among the studied university students (n = 509)

Psychosocial Adjustment Domains	Percent Score	
	Min. – Max.	Mean ± SD.
Family adjustment	23.53 – 76.47	46.45 ± 8.45
Academic adjustment	21.67 – 86.67	51.21 ± 11.01
Social adjustment	21.43 – 83.93	49.44 ± 10.43
Emotional adjustment	15.38 – 78.85	45.79 ± 10.50
Physical adjustment	12.50 – 78.13	51.05 ± 11.71
Moral adjustment	15.0 – 81.67	46.47 ± 11.19
Overall psychosocial adjustment	35.06 – 63.41	48.18 ± 4.30

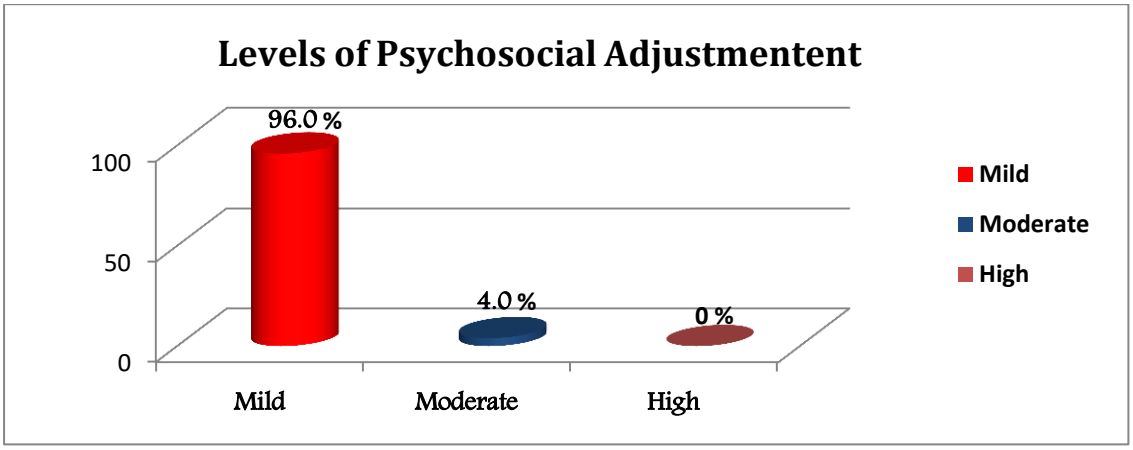

Figure (2): Percentage distribution of levels of psychosocial adjustment among the studied university adolescent students

Table (4): Relation between personal characteristics of the studied university adolescent students and their levels of aggression (n = 509)

Personal Characteristics	Levels of Aggression						χ^2	P
	Mild (n = 14)		Moderate (n = 99)		High (n = 396)			
	No.	%	No.	%	No.	%		
Sex								
Male	7	50.0	48	48.5	270	68.2	14.509*	0.001*
Female	7	50.0	51	51.5	126	31.8		
Age (years)								
<19	7	50.0	43	43.4	193	48.7	0.922	0.631
19	7	50.0	56	56.6	203	51.3		
Type of Faculty								
Human sciences	5	35.7	48	48.5	226	57.1	5.735	MCp= 0.203
Mathematical sciences	7	50.0	39	39.4	119	30.1		
Healthy sciences	2	14.3	12	12.1	51	12.9		
Father's level of education								
Not read and write	0	0.0	1	1.0	2	0.5	3.547	MCp= 0.906
Read and write	0	0.0	4	4.0	20	5.1		
Primary	2	14.3	7	7.1	28	7.1		
Secondary	5	35.7	38	38.4	161	40.7		
University level	7	50.0	49	49.5	185	46.7		
Mother's level of education								
Not read and write	0	0.0	3	3.0	18	4.5	6.037	MCp= 0.567
Read and write	1	7.1	6	6.1	12	3.0		
Primary	2	14.3	5	5.1	34	8.6		
Secondary	5	35.7	37	37.4	156	39.4		
University level	6	42.9	48	48.5	176	44.4		
Father's job status								
Working	13	92.9	97	98.0	384	97.0	1.713	MCp= 0.398
Not working	1	7.1	2	2.0	12	3.0		
Mother's job status								
Working	13	92.9	62	62.6	217	54.8	9.398*	0.009*
Housewife	1	7.1	37	37.4	179	45.2		
Income (month)								
Enough	13	92.9	86	86.9	343	86.6	0.461	0.794
Not enough	1	7.1	13	13.1	53	13.4		

χ^2: Chi square test MC: Monte Carlo
P: p value for comparing between the studied categories *: Statistically significant at $p \leq 0.05$

Table (5): Relation between personal characteristics of the studied university adolescent students and their levels of psychosocial adjustment (n = 509)

Personal Characteristics	Levels of Psychosocial Adjustment				χ^2	p
	Mild (n = 490)		Moderate (n = 19)			
	No.	%	No.	%		
Sex						
Male	314	64.1	11	57.9	0.303	0.582
Female	176	35.9	8	42.1		
Age (years)						
<19	230	46.9	13	68.4	3.383	0.066
19	260	53.1	6	31.6		
Type of Faculty						
Human sciences	272	55.5	7	36.8	5.986*	0.049*
Mathematical sciences	154	31.4	11	57.9		
Healthy sciences	64	13.1	1	5.3		
Father's level of education						
Not read and write	3	0.6	0	0.0	2.668	MCp= 0.573
Read and write	24	4.9	0	0.0		
Primary	37	7.6	0	0.0		
Secondary	197	40.2	7	36.8		
University level	229	46.7	12	63.2		
Mother's level of education						
Not read and write	20	4.1	1	5.3	1.418	MCp= 0.806
Read and write	19	3.9	0	0.0		
Primary	39	8.0	2	10.5		
Secondary	192	39.2	6	31.6		
University level	220	44.9	10	52.6		
Father's job status						
Work**ing**	15	3.1	0	0.0	0.599	FEp= 1.000
Not working	475	96.9	19	100.0		
Mother's job status						
Working	210	42.9	7	36.8	0.271	0.603
Housewife	280	57.1	12	63.2		
Income (month)						
Enough	427	87.1	15	78.9	1.075	FEp= 0.297
Not enough	63	12.9	4	21.1		

χ^2: Chi square test MC: Monte Carlo FE: Fisher Exact
P: p value for comparing between the studied categories *: Statistically significant at $p \leq 0.05$

Table (6): Correlation matrix between psychosocial adjustment domains and subtypes of aggression among the studied university adolescent students (n = 509)

Psychosocial Adjustment Domains		Subtypes of Aggression			
		Hostility	Anger	Verbal aggression	Physical aggression
Family adjustment	r	-0.146*	-0.188*	0.030	-0.109*
	p	0.001*	<0.001*	0.496	0.014*
Academic adjustment	r	-0.107*	-0.216*	0.035	-0.132*
	p	0.016*	<0.001*	0.436	0.003*
Social adjustment	r	0.189*	0.227*	0.035	0.121*
	p	<0.001*	<0.001*	0.429	0.006*
Emotional adjustment	r	0.024	0.039	-0.015	0.020
	p	0.582	0.384	0.733	0.650
Physical adjustment	r	-0.221*	-0.204*	0.018	-0.141*
	p	<0.001*	<0.001*	0.678	0.001*
Moral adjustment	r	-0.194*	-0.263*	0.007	-0.161*
	p	<0.001*	<0.001*	0.870	<0.001*

r: Pearson coefficient *: Statistically significant at $p \leq 0.05$

Table (7): Correlation matrix between overall psychosocial adjustment and overall aggression among the studied university adolescent students (n = 509).

Items		Overall Aggression
Overall Psychosocial Adjustment	r	- 0.207*
	p	< 0.001*

r: Pearson coefficient *: Statistically significant at $p \leq 0.05$

Table (8): Multiple linear regression model for factor affecting psychosocial adjustment levels

	B	SE	Beta	t	P
(Constant)	52.501	0.923		56.881*	<0.001*
Hostility	-0.066	0.028	-0.209	2.373*	0.018*
Anger	-0.088	0.020	-0.338	4.484*	<0.001*
Physical aggression	-0.082	0.030	-0.213	2.706*	0.007*
Overall level of aggression	0.162	0.070	0.361	2.318*	0.021*
$R^2 = 0.080$, adjusted $R^2 = 0.073$, SE = 4.146, F = 10.932, p <0.001*					

F, **p:** F and p values for the model
R^2: Coefficient of determination
R: coefficient of regression
B: Unstandardized Coefficients
SE: Estimates Standard error
Beta: Standardized Coefficients
t: t-test of significance

Discussion

The university years offer a chance for new experiences, personal freedom, and identity development, however, this period went along with many psychological distresses, noted for the emergence of risky health behaviors such as aggression [30]. Globally, aggression among adolescent students has become one of the most considerable worries to public health professionals, clinicians, policy makers, educators, and the public. In addition, it is a multidimensional problem with biological, psychological, social, and environmental backgrounds [31]. It is estimated that 246 million adolescents around the world experience at least one type of aggression, such as physical, verbal, anger, and hostility [32].

An appropriate psychosocial adjustment encompasses a defense indicator factor against behavioral problems and aggressive reactions occurred throughout adolescence in the family and university fields. Concurrently, psychosocial mal-adjustment is a brilliant forecaster of aggressive conduct during this period [33]. Consequently, the aim of this study was to explore the correlation between aggressive behavior and psychosocial adjustment among Port Said university adolescent students.

The current study results indicated that overall aggressive behavior among the studied university students was high, as nearly four fifths of the considered university students exhibited high level of aggression. This may be due to that, university students unable to cope with the troubles they were facing in the university, and due to their developmental characteristics, they found by aggression an easy way to solve their difficulties, and achieve their social status, social identity, imposition of social control, justice, and adventure. Aggressive behavior also can occur by learning it through environment by imitating others. This result may be also explained by that, university stage is a stressful sensitive stage of the human life, and students demonstrated great level of burden in theoretical and clinical constituents of their educational programs.

Aggressive behavior is related to frustration once students do not acquire what they want, need, or anticipate from life or others, or developed in a reaction to undesirable acts of other individual who is supposed to be rude, demeaning, and intimidating. Thus, there's a crucial need to design preventive intervention programs to reduce aggressive behavior

and to improve psychological health among college students. This result was in line with Alradaydeh and Alorani (2017) [34] who studied 919 students from the University of Jordan and reported that, above half of university undergraduates had high level of aggression. Equally, Mirzaei-Alavijeh et al. (2015) [35] in their study of aggression among Medical College Students in the western Iran, reported a high level of aggressive behavior. Similarly, an Egyptian study conducted by Abo- Elyzeed (2016) [36] publicized that, nearby half of considered nursing students have a modest level of aggression, and about one quarter exhibited high level.

Conversely, Qaisy (2014) [37] in the study of aggressive behavior among 690 of the university students at Tafila technical university, Hashemite Kingdom of Jordan, revealed that the prevalence of aggressive behavior among students was low. Besides, an Egyptian study of Hassan et al. (2013) [38], who studied health risk behaviors among Port Said university students, reported that a small proportion of the university students (12.3%) had participated in aggressive behaviors. Moreover, a study by Khurshid, et al. (2020) [39] indicated that the bulk of the university colleges showed low level of aggression.

The present study concerned with determining the predominated types of aggressive behavior among Port Said university adolescent students. The results publicized that, the highest mean score was for physical aggression followed by anger, and hostility respectively whereas the lowest mean score related to verbal aggression. This may be owing to that, the highest proportion of the present studied subjects was males, and they were more physically aggressive, and tended to have higher level of anger than females, while females are more emotional and show their aggression in verbally aggressive and hostile way.

This finding was confirmed by a study conducted by Alradaydeh and Alorani (2017) [34] who reported that the major type of aggressive behavior among university students in Jordan was physical aggression, followed by hostility, anger, and verbal aggression. Moreover, Acharya, et al. (2019) [40], mentioned that physical aggression was the most prominent type of aggression among 235 university students from Nepal. In this respect, Bukhari et al. (2017) [41] concluded that male was higher in anger and physical aggression, however, females exhibited higher verbal aggression and hostility. Differently, a study conducted in Moroccan university

by Chafaki (2014) [42] measured aggression among university students showed that, verbal aggression was depicted by the highest percentage of the participant, followed by physical aggression and hostility respectively. The results of the existing study publicized that, there was a statistically significant difference in levels of aggression between males and females. It was found that aggression was more among male students. A possible acceptable explanation of this finding would be that, aggression was strongly connected with cultural norms and societal values, social customs in Egyptian society strengthened aggressive conducts among males where they had a great domination and utilized their power in a form of aggression, and correspondingly there were negative attitudes when aggression committed or expressed by females.

In addition, males had the willingness to ventilate or expressed their anger by any way. Another explanation may be attributed to the fact that, females in Egyptian society had a tendency to suppress aggressive conduct and not to show it, truthfully, as their nature and socializing were subjecting them to be not capable to express their feelings and emotions evidently, and thus making them less aggressive. Besides, males were short tempered, and became emotional and angry at nothings and began to fight physically and use of abusive and foul language. Their tolerance level with their colleges is far less as compared with the females.

In line with the foregoing, the results of Fatima and Malik (2015) [43] revealed that, aggression among both males and females is a prevailing phenomenon. Yet, males were found comparatively highly aggressive than the females. Similarly, an Egyptian study carried out by Abo-Elyzeed (2016) [36], pointed out that female college students were less liable to commit aggressive behaviors than male college students were. In the same direction, Senabre et al. (2017) [33] revealed that sex was an inequitable factor, as males seem to be more aggressive than females with the intent to trigger harm and expressed in a defensive manner. Besides, the result of Qaisy (2014) [37], indicated a high male aggressive behavior compared with females among the university students at Tafila Technical University, Hashemite Kingdom of Jordan.

In contrast to the existing study findings, Ahsan (2015) [11], reported in a study entitled "Physical, verbal, and hostility aggressiveness in university's physical

education students", that males were less aggressive than females. Furthermore, a study conducted by Balakrishnan (2015) [44] indicated that the gender variable does not have any effect on engaging in victimization behavior. Accordingly, Yönet et al. (2016) [45], revealed that, there was no significant difference between the aggression levels of students and their gender. In this regard, Eroğlu et al. (2015) [46] emphasized that, the relationship between gender and attitude towards violence should be studied.

As derived from the present study, a statistically significant difference was found between university students' levels aggression and their mother's working status, as the highest percentages of all levels of aggression was found in students of working mothers. In addition, the highest percentage of all levels of aggression was found in students of working fathers with no statistical differences.

This may be for the reason that, working parents have many stressors and little time and effort for caring their children which seemed to be damaging to children. Parents' work perhaps restrain them from supervising and monitoring their children's actions and are more probable to be ineffective in modifying their children's behaviors. The child feels deprived of many of the good things in life and being alone much of the time and consequently may ventilate their feelings in a maladaptive way.

The authors highlighted the effective role of parents in regulating their adolescents' behaviors. The behavior of parents is necessary to be well adjusted, neither too strict nor too merciful. They must give appropriate appreciation on good behavior, time, attention, and disapproval on wicked behavior too. Parents must sensibly observe their children's behavior and performance and take direct act if any unfamiliar action is perceived. If a child is emotionally distressed, parents had a necessity to give additional time for emotional gratification. Parents must preserve a friendly relation with their children.

Similar to the foregoing current study results, Estévez et al. (2018) [19] demonstrated that, aggressive children had working parents and low parental supervision, low scores in open communication with parents, and family cohesion in comparison with non-aggressive children. Moreover, Fatima and Malik (2015) [43] emphasized the role of parents at home in preventing aggressive behavior among adolescents

as students start learning discipline at home. Consequently, parents must evade arguments and fights in front of children. They can show love, care, and avoid harsh punishment. Parents can improve a friendly relationship with their children, particularly teenagers. If inevitable, the punishments seeking to modify their bad behavior must be minimized. It is better to evade punishment; nevertheless, the parents must be strong, carefully monitor their children's activities and behaviors to deal with any misconduct.

However, a study carried out by Shim (2004) [47] found that maternal employment did not predict children's aggressive behavior. Additionally, Okon et al. (2011) [48] revealed that parental work and neglect did not independently influence aggression among undergraduates students in South-South Geo-Political Zone in Nigeria. In that concern, Attar (2015) [49] publicized that; maternal psychological control plays a noteworthy role in the development of aggressive behavior.

Concerning the levels of psychosocial adjustment among the studied university students, the contemporary study findings clarified that, the vast preponderance the studied undergraduates had a mild level of psychosocial adjustment, while the rest of them had a moderate level. This may be related to that, adolescence is a transitional stage characterized by tremendous developmental challenges in biological, cognitive, psychological and social spheres, elevated psychosocial stressors, and high vulnerability to emotional instability which may be associated with poor psychosocial well-being. Additionally, a larger number of adjustment difficulties such as low self-esteem, low life satisfaction, psychological distress, poor social initiative problems, feelings of loneliness, anxiety, depression, deficits in empathic skill, low academic engagement, and negative social relations with colleagues, the presence of frequent intense conflicts in the family.

In the same track, a study carried out by Fateel (2019) [50] indicated that, more than half of 121 surveyed Ahlia University students in Bahrain had an average level of psychosocial adjustment, and more than one third of them reported a low level. Meanwhile, Jain (2017) [51] revealed that, among 300 college students, the majority had a high psychosocial adjustment level.

The present study also demonstrated that, there were statistically significant

positive correlations between social adjustment and hostility, anger, and physical aggression. This may be explained by that, involvement of adolescents in aggressive behaviors can be the expression of a strong desire to be socially recognize as popular, powerful and rebellious. These adolescents are more likely to develop friendships with others that are similar to them in values, attitudes, and behaviors. Therefore, they usually had a set of friends, who admire and support them, and are even often the central figures in their peer group, thus, enjoying benefits of social inclusion with the consequent positive influence on their self-perception, and social adjustment. Oppositely, Attar (2015) [(49)], clarified that, aggression was not correlated with feelings of loneliness and social adjustment. Besides, results of Sailo (2020) [(52)], showed no correlation between aggression and social adjustment. In addition, in this sense, Wright (2018) [(53)] revealed that, both hostility and anger had strong negative correlations with both social adjustment among colleagues.

The ultimate goal of the existing study was to discovery a correlation amid aggressive behavior and psychosocial adjustment among Port Said university adolescent students. The findings revealed a statistically significant negative correlation between overall aggression and overall psychosocial adjustment. By the means of, the higher the aggressive behavior was, the lower the adjustment in family, academic, social, emotional, and moral compatibility was. Therefore, it is essential to put into consideration psychosocial adjustment when bearing in mind the impact of aggressive behavior on the adolescents. This result denoted that, aggression was a problem interconnected to plain concerns in individuals' development and psychosocial adjustment.

This current result was in congruence with the results of Senabre et al. (2017) [(33)] clarified that; aggression was correlated negatively with psychosocial adjustment. Besides, Frietas et al. (2017) [(54)] pointed out that, aggression had undesirable consequences on psychosocial adjustment among adolescents, aggressive behavior be associated with anxiety, depression, suicidal attempts, attention problems, diminished physical health. Aggression was also accompanying with diminished cognitive functioning, self-efficacy, self-worth, besides increased levels of isolation. Additionally, Plenty and Jonsson (2017) [(55)] publicized that, adolescents who conveyed frequent aggression, exhibited impaired

psychosocial adjustment. Noteworthy, developmental requirement for social recognition and relationship was a fundamental issue of adolescence. Thus, at this period of development, aggressive behavior and social rejection might unfavorably influence adolescents' psychological well-being and social functioning.

Similarly, Vaillancourt (2018) [56] pronounced that, persistent aggression is a fatal stressor jeopardizing the psychological, social, plus physical adjustment of individuals. In the equivalent direction, Fullchange and Furlong (2016) [57] clarified that, a significant relationship between peer aggression and diminished global psychological welfare of the participants was detected. As well as Adejinmi and Subocz (2020) [58] disclosed that, adolescents' aggression by means of physical assault, bullying, relational aggression, and verbal aggression meaningfully anticipated adolescents' psychosocial maladjustment.

In this sense, a study by Moreno et al. (2021) [59] showed significant relationships between social integration difficulties, life dissatisfaction, and higher rates of aggressive behavior. However, a study conducted among university students in district Faisalabad in Pakistan by Naoreen et al. (2018) [60] reported a significantly positive correlation amid aggressive behavior and psychological adjustment.

The findings of this study broadcasted that, the most predictor had a significant influence on psychosocial adjustment levels was anger, followed by physical aggression, hostility, and overall aggression respectively. It is noteworthy that the combination of anger, physical aggression, hostility, and overall aggression shown to be significantly the greatest predictor of the psychosocial adjustment of Port Said university adolescent students. In other words, when the studied adolescents experienced anger, hostility, and physical aggression, they were considerably more probable to experience adverse influences on their psychosocial adjustment. In agreement with this, Adejinmi and Subocz (2020) [58] demonstrated that, the model of the mixture of physical and relational aggressively behaviors were the excellent forecaster of the psychosocial adjustment of African adolescents.

Noteworthy, this existing study is significant, as it shed light on aggressive behavior and its negative consequences on adolescents' psychosocial adjustment.

There is no the least doubt that, this study has momentous constructive consequences on the psychological, social, and emotional welfare of adolescents. This owed to its influence on individuals' knowledge. The knowledge of the factors affecting psychosocial adjustment will help to develop interventions to support positive aspects and benefit adolescents to adapt during conflict or evolutionary times.

No one can deny that the existing study findings can be utilized to provide a vision for universities in the direction of recognizing the likely signs and consequences of exposure to diverse categories of aggression exhibited by university adolescent students. Also, may guide universities and clinicians in planning interventions for university students that could advance healthy handling approaches, upgraded interpersonal and social interactions skills, besides heightened self-efficacy and self-perception. The phenomenon of aggression may be more effectively treated and eliminated well not quite, but close enough.

Conclusion

In deduction, it is evident from the current study results that, psychosocial adjustment amongst university adolescent students had a direct relation with aggressive behavior. There was a statistically significant negative correlation between overall aggression and overall psychosocial adjustment among the studied students. Additionally, the most predictor had a significant effect on psychosocial adjustment levels was anger, followed by physical aggression, hostility, and overall levels of aggression.

Recommendations

From the existing study results, the following recommendations were proposed:

Designing and applying multimedia intervention programs for students regarding training in coping strategies, stress-control techniques, cognitive restructuring and problem-solving techniques, that may help to cope with stressful life events in an adaptive way and without having to use aggression to solve problems or conflicts.

Faculties should develop student orientation programs and seminar sessions for the inclusion of formal and informal training on aggressive behavior to raise awareness and increase sensitivity to aggressive behavior, along with resolutions to the problem.

Special recreational and social activities such as participation in academic activities and academic community

campaigns and joining some team sports should take portion in the students' faculty schedule and be accessible to all undergraduates to enhance socialization, abilities of assertiveness, and expression of feelings.

There is a necessity to address aggressive behavior among students at faculties on top priority basis by encouraging the presence of a counseling center in each faculty to provide psychological counseling services for students and enhance emotional self-esteem, as adolescents with greater emotional self-esteem have advanced self-control in challenging situations. Thus, they confront upcoming outcomes and have a reduced amount of involving in aggressive behavior at the university.

Strategies to upgrade adolescent students' awareness of aggressive behavior and its probable penalties are crucial, such as the development of written policies and rules with a vibrant statement of a "Zero Tolerance" attitude to any undesirable behaviors.

Future studies should be conducted using large probability samples to gain awareness about the long-term impact of aggression on adolescents' life satisfaction, psychological well-being, and quality of life.

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Head Nurses Time management Skills for Provision of Caring to Staff Nurses

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Abstract

Background: Time management is a method for head nurses to increase their work performance effectiveness to achieve the balanced lifestyle and increase job satisfaction. Aim: the study aimed to assess head nurses time management skills for provision of caring to staff nurses. Research design: Descriptive correlational research design was used in the study. Setting: The study was conducted at Tanta University Hospitals, which includes (Emergency hospital and Main hospital). The study subject: Consisted of two groups 62 head nurses and 100 staff nurses. Tools: Two tools were used to collect the data; Head Nurses' Time Management Assessment Questionnaire, and Head Nurses' Caring Staff nurses' Questionnaire. Results: More than half of head nurses had high level in time management skills. While, more than one quarter of them had moderate level of time management skills. In addition, more than half of head nurses had high level in caring behavior. While, more than one quarter of them had moderate level in caring behavior .Conclusion: There was a statistically significance positive correlation between total time management skills and head nurses' caring behavior. Recommendation: Enhance hospital administration to provide suitable supportive environment for staff nurses to create new ideas, express their ideas and opinions and encouraging staff nurses to attend training courses to keep them updating knowledge and practice regarding time management

Keywords: *Caring for staff nurses, Head Nurses, Time management skills*

Introduction

Head nurses are the secondary caregivers and the biggest group of health care providers in the hospitals. The efficient use of their time is critical and important for the quality of health care services specially the working environment. However, increased nurse workload and the growing nursing workforce shortage have negative impact on the number of head nurses' available time for caring activities. (1)

Nursing is a profession requiring skills in performing different tasks during the course of day for coping with time limitations and pressure. Time management is a crucial requirement for head nurses to attain their objectives during managing nursing departments because time lost is lost forever. (2)

Time management includes goal setting, prioritization, managing interruption, procrastination, scheduling and delegation (3). Goal setting can be used to empower and encourage nurses. It gives head nurses a sense of accomplishment. Prioritization is the ability to make the best and most effective use of head nurses time, ability, and resources. It helps head nurses to spend time wisely and move forward on the goals that are the most important. Managing interruption is appropriate use of techniques to reduce interruption commonly occurring on the job such as unscheduled visitors, telephone calls and meetings. (4)

Scheduling is actually form of organization and helps head nurses to prevent any wasted time in exchange for making time for things that are truly important. Avoid procrastination is the ability of head nurses to postpone things that should do and feel guilty about not doing it. This may be because fear of outcome and lack of motivation. Finally, delegation is a process that permits the transfer of authority from superior to subordinate. It is a high-level skill essential to head nurses, which improved with practice. (5)

Head nurses need to meet the expectations of patients, peers, nurses, along with completing the nursing activities. Effective time management can increase head nurses' productivity. Job and personal responsibilities are the important key area in time management, where most head nurses know how to spend their time in caring for their unit and staff nurses (6)

Caring is an instrumental and expressive behaviors that, when used in the context of shared professional interactions, facilitate understanding, learning, comfort, human dignity, security, self-confidence, hope, and encouragement. Caring involves actions such as being sensitive, compassionate, and honest which are

relevant to nurses' unique needs. Caring of head nurses are composed of four main dimensions; Genuine concern, respect, interest and effective listening [7]. Genuine concern is the development of effective working relationship, promoting nurses' growth as well as, peer and supervisors. [8]

Respect means acknowledging and accepting the wishes, preferences, inferences, needs and desires of staff nurses and feeling good about them. Respect for wishes of staff nurse, for what they wish to reveal or discuss is necessary to honesty. It is inherent in caring and it is first for the humanness of nurse managers. With respect to humanness comes a reverence for life and reduce individuality and separateness and a nonjudgmental attitude. Interest head nurses must be interested with improving staff nurses' condition in all aspects and proving more attention for their physical and psychological status. Effective listening of head nurses build rapport and contributes to the quality of a relationship with their staff nurses. Head nurses need to let their nurses know that head nurse listens to what they're saying [6]

Significance of the study

Inadequate time management of head nurses has shown delay in patient care and patient safety. Whenever, time limitations are more, head nurses may not be able to think critically, prioritize and tend to make more errors. So, planning the patient care for the day, prioritization and delegation is very essential. Head nurses need to good time management skills and different time management strategies [7]

Caring is universal as well as central in the art and science of nursing practice that includes all aspects of caring for their staff. Caring is a basic head nurses' attitude and daily life events, when a head nurse comes in contact with their staff nurses with proper, manner staff nurses take more incentives to complete their duties carefully. Thus, caring requires the spiritual, moral, personal and social engagement of head nurse with a commitment their staff and hospital. [9]. So, the current study was carried out to investigate time management skills of head nurses for provision of caring to staff nurses.

Aim of the Study

The study aimed to assess head nurses' time management skills for provision of caring to staff nurses.

Research question:

1-What are the levels of head nurses' time management skills?

2-What are the levels of caring behavior for head nurses as perceived by staff nurses?

3-What are the relation between time management skills of head nurses and caring behavior as perceived by staff nurses?

Subjects and Method

Study design: A descriptive correlational study design.

Setting: The study was conducted at Tanta University Hospitals, which includes (Emergency Hospital and Main Hospital). The capacity of Tanta University Hospitals (596) bed divided into Internal Medicine (112), Neurology and Psychiatric (74), Neonatal and Pediatric (150), Obstetrics (60), Oncology (40), Surgery (70), Tropical (50), and Cardiology (40) bed.

Subject: Two group were included:

1-Head nurses: Included all (62) head nurses working in above mentioned setting. They divided into 36 from Emergency Hospital and 26 from Main Hospital.

2- Staff nurses: Included 100 staff nurse working in above mentioned setting. They divided into 52 from Emergency Hospital and 48 from Main Hospital and selected by simple random sampling technique. The sample size was calculated using Ep-info software package created by World Health Organization and center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002. The criteria used for sample size calculation where study design was descriptive study, 95% confidence limit, expected outcome relationship between head nurses and time management skills was 50% with a margin of error 5% .

Tools of data collection

To fulfill the purpose of the study, two tools were used:

Tool I: Head Nurses' Time Management Assessment Questionnaire:

This tool was developed by the researcher guided by AbouRamadan (2015) [(4)], Murray (2011) [(10)] and Cherry (2011) [(5)]. It was used to assess head nurse time management skills, and included 50 items and consisted of two parts as follow:

Part 1: Head Nurses' characteristics data included, hospital name, age, marital status, sex, years of experience ,educational level, attendance of courses , and number of children.

Part 2: Head nurses time management skills, and divided into:

- Goal setting 7 items.
- Prioritization 6 items.
- Managing interruption 6 items .
- Avoid Procrastination 6 items .
- Scheduling 6 items .

-Delegation 8 items.

Scoring system

Head nurses' responses were measured on a five points Likert Scale. Scale ranging from (1) never to (5) always. Never= 1, rarely= 2, sometimes= 3, often= 4, and

always= 5. The total scores were calculated by summing of all categories at cutoff point and classified into three levels as follow:

High level of total time management skills >75% (>146)

Moderate level of total time management skills 60-75% (117-146 points)

Low level of total time management skills <60% (<117 points)

Tool II: Head Nurses Caring for Staff Nurse's Questionnaire

This tool was developed by the researcher guided by El-Demerdash (2006)[11] and Duffield (2011) [12]. It was used to assess head nurses caring as perceived by staff nurses. It was consisted of two parts as follow:

Part 1: Staff nurses' characteristics data included, hospital name, department, age, sex, marital status , years of experience and educational level.

Part 2: Head nurses caring questionnaire, it was consisted of (28 item) in four dimensions:

Genuine concern 9 items .

Respect 10 items.

Interest 3 items .

Listening 6 items.

Scoring system

Staffs nurses' responses were measured on a five points Likert Scale ranging from (1) strongly disagree to (5) strongly agree. The total scores were calculated by summing of all categories at cutoff point and classified into three levels as follow:

High level of caring >75% (>105 points)

Moderate level of caring 60-75% (84-105 points)

Low level of caring <60% (84 points)

Method

1-Official permission to conduct the study was obtained from the dean of Faculty of Nursing to Emergency Hospital and Main University Hospital Director.

2-Ethical consideration:

Approval of ethical committee at faculty of nursing was obtained.

Nature of the study will not cause any harm or pain to the entire subjects.

Oral formal consent for participation was obtained after explanation of the nature and the purpose of the study.

Confidentiality and privacy were taken into consideration regarding data collection.

3-The tools were translated into Arabic and presented to a jury of five experts in the area of specialty to check content validity and clarity of the questionnaire. The experts were four assistance professors of Nursing Administration, Tanta University, and one professor of Nursing Administration, Minofia University. Necessary modification was done,

clarification, omission of certain items and adding others and simplifying work related words.

4- Suitable statistic test was done for its reliability, reliability of the study tools was used tested using Cronbach's alpha coefficient test, where reliability of tool (1) = 0.953, reliability of tool = 0.906, and it's both value = 0.942 and the content validity value was 0.985.

5- Pilot study was carried out on a sample (10%) n=7 head nurses and n=10 staff nurses to test the tools for its clarity, applicability estimate time needed to fulfill it and this sample was excluded from the total study subjects.

6- Data collection phase: the researcher was met the respondents in small groups during their work shifts to distribute the questionnaires. Nurses were recorded the answer in the presence of the researcher to ascertain all questions were answered. The average time taken to collect data from nurses ranged from 20 -30 minutes.

7- The appropriate times for data collection varied according to the type of work and work load for each department, sometimes it was in the morning shift and other times at afternoon shift. The data was collected from the beginning of June, 2019 to end of December, 2019.

Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 23, SPSS Inc. Chicago, IL, USA). For quantitative data, mean and standard deviation were calculated. For qualitative data, a comparison between two groups and more was done using Chi-square test (χ^2). Significance was adopted at $P < 0.05$ for the interpretation of the results of tests of significance.

3. Results

Figure (1): Shows levels of time management skills dimensions for Head nurses. More than half (56.5%) of head nurses had high level in all time management skills domain especially nearly sixty percent (59.7%) for goal setting and delegation.

Figure (2): Shows levels of total time management skills for Head nurses. more than half(56.5%) of head nurses had high total time management skills. While, more than one quarter (29.0%) of them had moderate level of time management skills and minor (14.5%) of head nurses had low level in time management skills.

Figure (3): Demonstrate levels of caring behaviors as perceived by staff nurses. Equal percent (60%) of head nurses had

high level in genuine concern and interest dimensions of caring. Also, equal percent (56%) of them had high level in respect and listening.

Figure (4): Shows levels of caring behaviors as perceived by staff nurses .It can be noticed that more than half(58%) of head nurses had high level in caring behavior. While, more than one quarter(25%) of them had moderate level in caring behavior and minor percent(17%) of head nurses had low level in caring behavior dimensions.

Figure (5): Show correlation between study time management skills and caring behavior .There was a statistic significant correlation between caring behavior and time management skills when r= 0.834 with p-value <0.001**

Table (1): Reveals distribution of head nurses according to their personal characteristics. The head nurses' age ranged between 30 –50 or more years with mean age 42.5±5.59, more than half (54.8%) of them fall in the age group 40 - <50 years. The highest percentage (58.1%) of head nurses working in Emergency Hospital. All of them (100%) were female and the majority of them (82.3%) were married. Regarding to education level, majority (91.9 %) of them had BSN, while equal percent (1.6%) of them had diploma and doctoral degree. Regarding to years of experience more than half (53.2%) of head nurses had 10-<20 years of experience, and little percent (3.2%) <10 years. The majority of head nurses (75.8%) attended training on time management and more than two third of them (71%) had 3or more children

Table (2): Shows distribution of staff nurses according to their personal characteristic**s**. Staff nurses' age ranged between 30 –50 or more years with mean age was 35.98 ± 8.78, the highest percentage (38%) of them fall in the age group 30 - <40 years old. According to their work hospital, the highest percentage (52%) of staff nurses working in Emergency Hospital. More than half (57%) of nurses were from medical departments, (34%) from surgical departments and (9%) form ICU. The majority (98%,95%) of staff nurses were female and married. Regarding to years of experience, the highest percent (40%, 37%) had 10-<20, <10 years of experience respectively. About two-third (66%) of them had diploma degree in nursing and (34%) had Baccalaureate in Nursing.

Table(3): Represents relation between personal characteristics and their time management skills. A statistically significance relation were found between

total time management skills and head nurses age and years of experience at p-value <0.05* About (100.0 %) of head nurses whose age 50 or more years old had high level of total time management skills. According to years of experience. The majority (85.2%) of head nurses whose years of experience ranged from 20-30 years old had high level in total time management skills.

Table(4): Shows relation between staff nurses personal characteristics and their perception of caring behavior This table shows a statistically significant relation between total caring behavior and age, marital status and year of experience when(p-value <0.05*) .About (100.0 %) of nurses whose age 50 or more years old had high level of caring behavior and according to marital status more than half (61.1%) of nurses were married had high level of caring behavior. According to years of experience about (100.0%) of nurses whose years of experience ranged from 30 or more years old had high level in caring behavior.

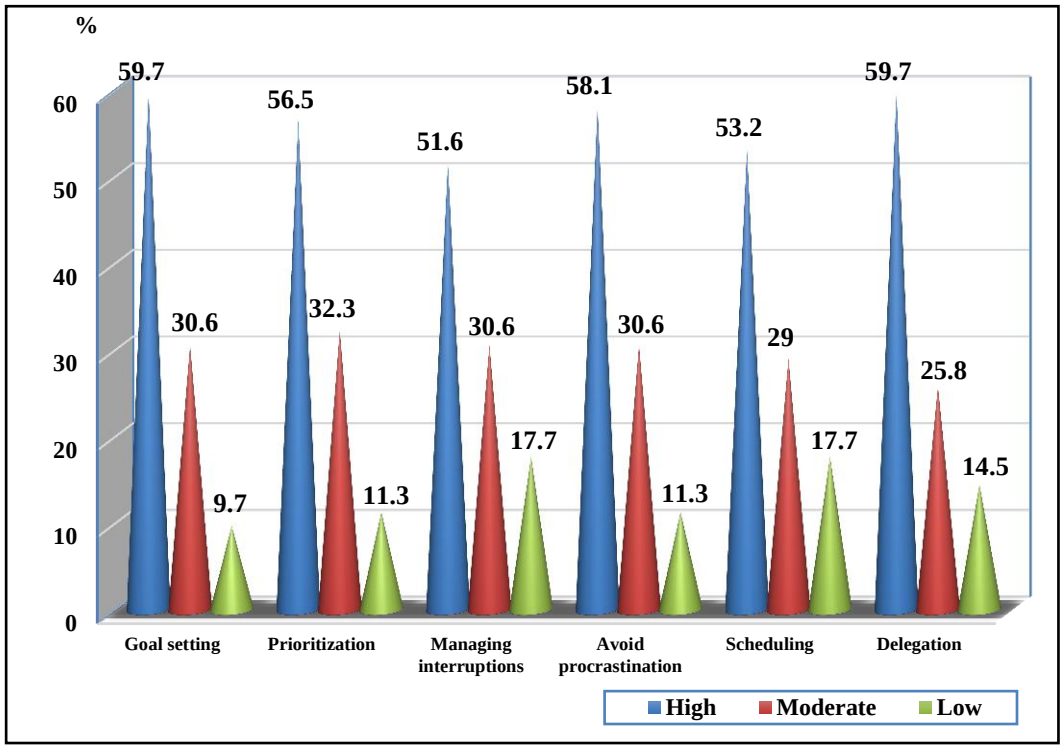

Figure (1): Levels of time management skills dimensions for head nurses (n=62)

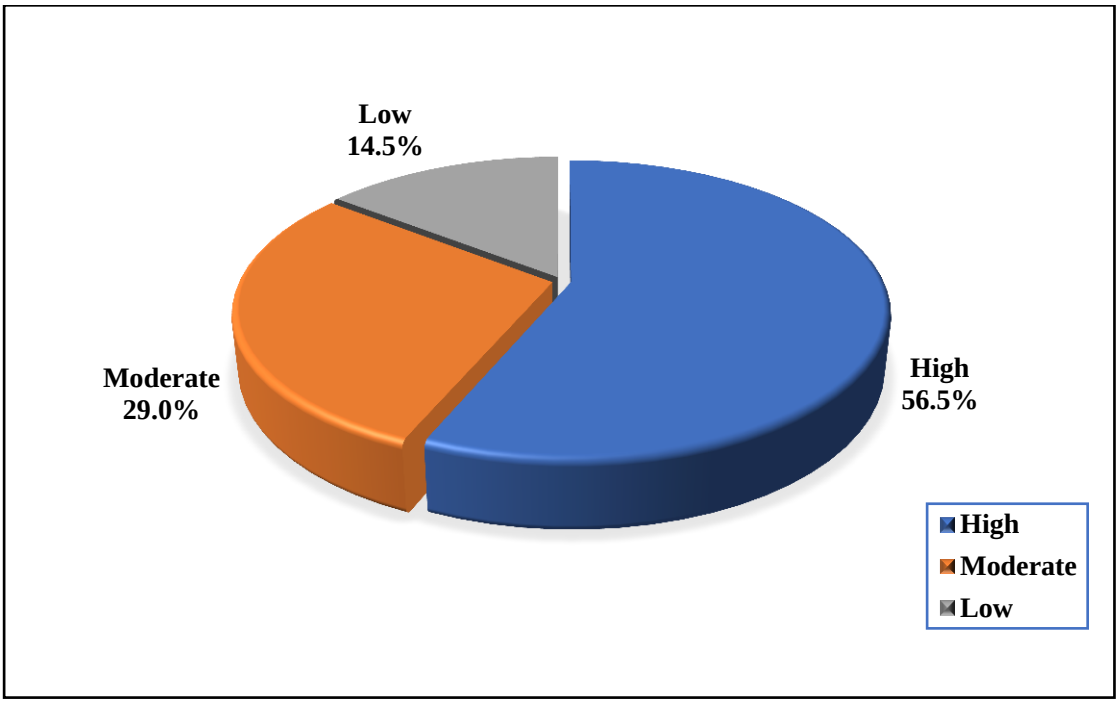

Figure (2): Levels of time management skills for head nurses (n=62)

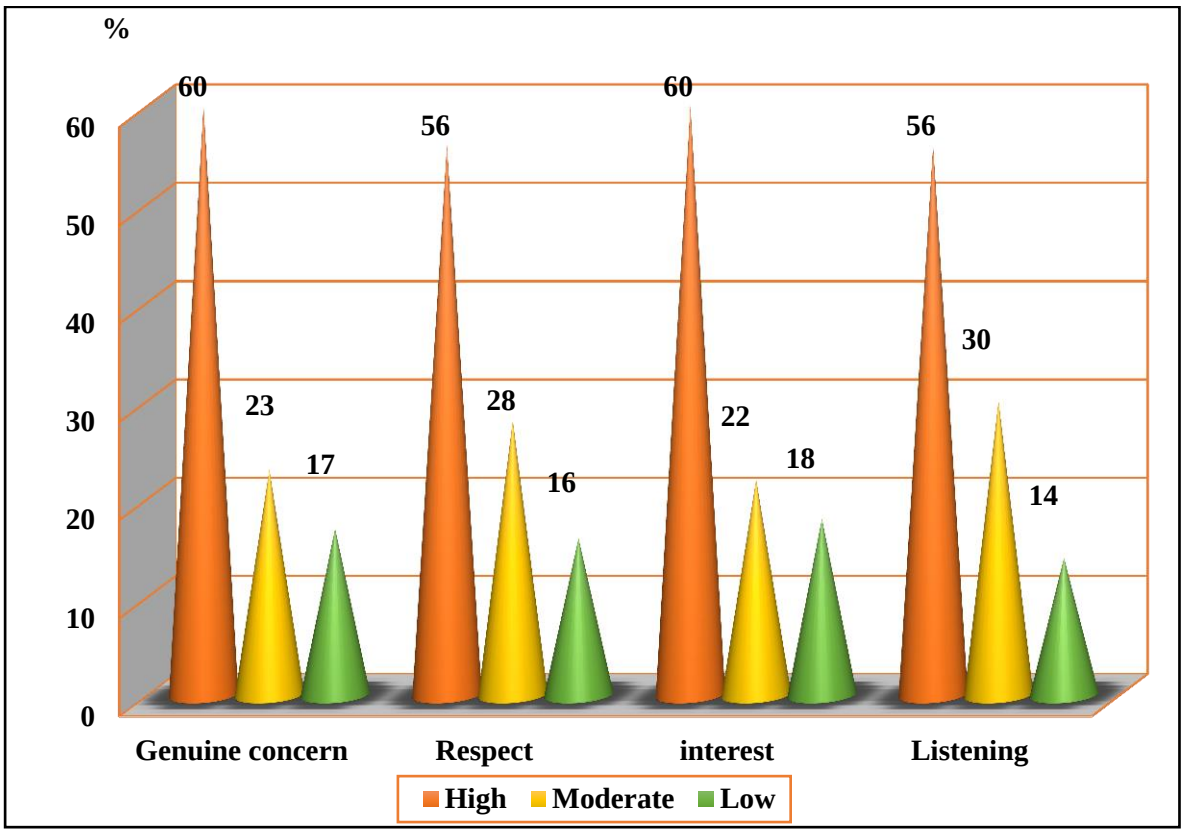

Figure (3): Levels of caring behaviors dimensions as perceived by staff nurses

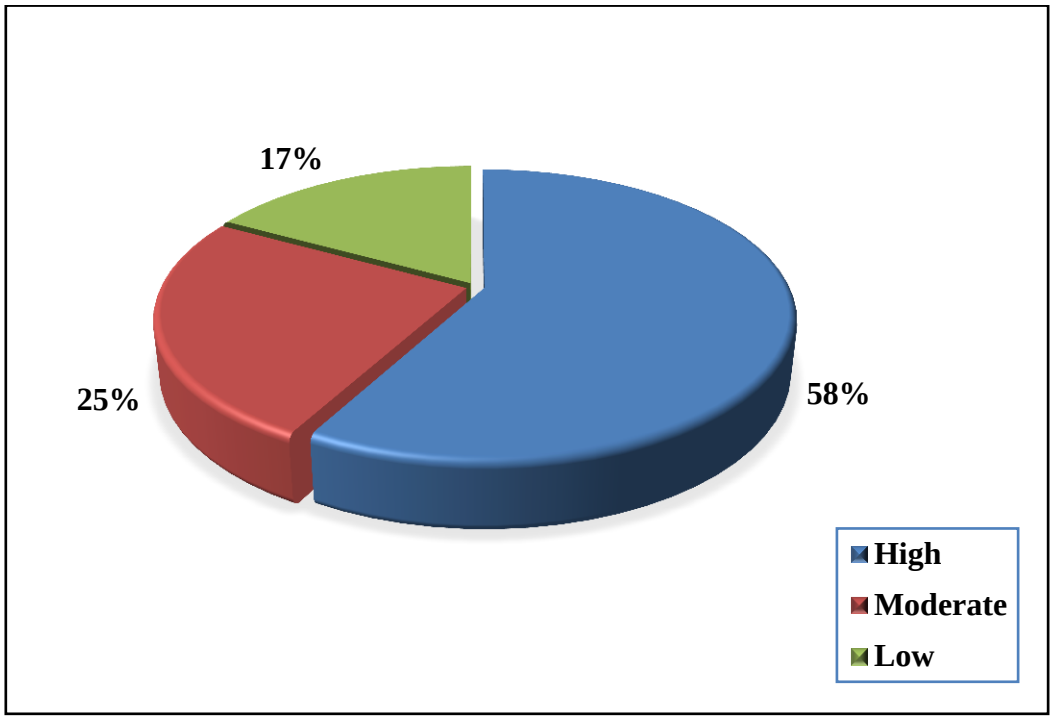

Figure (4): Total levels of caring behaviors as perceived by staff nurses.

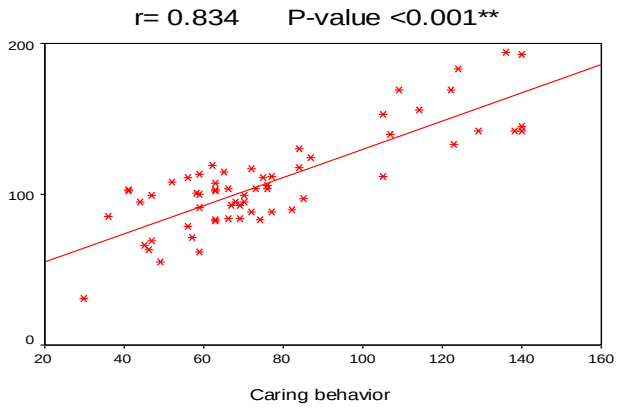

Figure (5): Show correlation between study time management skills and caring behavior

Table (1): Distribution of head nurses according to their personal characteristics (n=62)

Personal characteristics	No.	%
Age		
30- <40	22	35.5
40- <50	34	54.8
50 or more	6	9.7
Mean ± SD	42.5±5.59	
Hospital name		
Emergency Hospital	36	58.1
Main Hospital	26	41.9
Gender		
Female	62	100
Marital status		
Married	51	82.3
Single	5	8.1
Other	6	9.7
Years of experience		
<10	2	3.2
10- <20	33	53.3
20- 30	27	43.5
Mean ± SD	19.26±4.98	
Educational level		
Diploma Degree in Nursing	1	1.6
Baccalaureate Degree in Nursing	57	91.9
Master Degree in Nursing	3	4.9
Doctoral Degree in Nursing	1	1.6
Attendance of training on time management		
Yes	47	75.8
No	15	24.2
Number of children's		
1	5	8
2	13	21
3 or more	44	71

Table (2): Distribution of staff nurses according to their personal characteristics (n=100)

Personal characteristics	No.	%
Age		
<30	31	31
30- <40	38	38
40- <50	25	25
50 or more	6	6
Mean ± SD	**35.98 ± 8.78**	
Gender		
Female	98	98
Male	2	2
Marital status		
Married	95	95
Single	3	3
Other	2	2
Educational Level		
Diploma Degree in Nursing	66	66
Baccalaureate Degree in Nursing	34	34
Hospital name		
Emergency Hospital	52	52
Main Hospital	48	48
Department		
Medical departments	57	57
Surgical departments	34	34
ICU	9	9
Years of experience		
<10	37	37
10- <20	40	40
20- 30	19	19
30 or more	4	4
Mean ± SD	**15.9±8.42**	

Table (3): Relation between personal characteristics of head nurses and their time management skills

Personal characteristics	Total time management skills								
	High		Moderate		Low		Total	Chi-square	
	No.	%	No.	%	No.	%		x^2	P-value
Hospital name									
Emergency hospital	21	58.3	10	27.8	5	13.9	36	0.124	0.940
Main hospital	14	53.8	8	30.8	4	15.4	26		
Age									
30- <40	7	31.8	10	45.5	5	22.7	22	**11.001**	**0.027***
40- <50	22	64.7	8	23.5	4	11.8	34		
50 or more	6	100.0	0	0.0	0	0.0	6		
Marital status									
Married	26	51.0	16	31.4	9	17.6	51	4.024	0.403
Single	4	80.0	1	20.0	0	0.0	5		
Other	5	83.3	1	16.7	0	0.0	6		
Years of experience									
<10	0	0.0	0	0.0	2	100.0	2	**27.685**	**0.0001****
10- <20	12	36.4	16	48.5	5	15.2	33		
20- 30	23	85.2	2	7.4	2	7.4	27		
Educational level									
Diploma	0	0.0	0	0.0	1	100.0	1	9.154	0.165
BSN	31	54.4	18	31.6	8	14.0	57		
Master degree	3	100.0	0	0.0	0	0.0	3		
Doctoral degree	1	100.0	0	0.0	0	0.0	1		
Number of children's									
1	2	40	1	20	2	40	5	5.631	0.086
2	4	30.8	3	23.1	6	46.1	13		
3 or more	29	65.9	14	31.8	1	2.3	44		
Attend of courses									
Yes	23	48.9	16	34.0	8	17.0	47	4.463	0.107
No	12	80.0	2	13.3	1	6.7	15		

***** Statistically significant difference at (P < 0.05) ** High statistically significant difference at (P < 0.001)

Table (4): Relation between staff nurses personal characteristics and their perception of caring behavior

Personal characteristics	Total caring behavior as perceived by staff nurses								
	High		Moderate		Low		Total	Chi-square	
	No.	%	No.	%	No.	%		x^2	P-value
Hospital name									
Emergency hospital	31	31	11	11	10	10	52	1.007	0.604
Main hospital	27	27	14	14	7	7	48		
Age									
<30	8	8	11	11	12	12	31	**26.361**	**0.0001****
30- <40	24	24	10	10	4	4	38		
40- <50	20	20	4	4	1	1	25		
50 or more	6	6	0	0	0	0	6		
Gender									
Female	57	57	24	24	17	17	98	0.880	0.644
Male	1	1	1	1	0	0	2		
Marital status									
Married	58	58	24	24	13	13	95	**16.711**	**0.002***
Single	0	0	1	1	2	2	3		
Other	0	0	0	0	2	2	2		
Years of experience									
<10	8	8	16	16	13	13	37	**33.390**	**0.0001****
10- <20	31	31	6	6	3	3	40		
20- 30	15	15	3	3	1	1	19		
30 or more	4	4	0	0	0	0	4		

*** Statistically significant difference at (P < 0.05)**

**** High statistically significant difference at (P < 0.001)**

Discussion

Effective time management is considered important for head nurses for achieving goals in an organization head nurses for achieving Head nurses can improve their efficiency and performance with effective use of time. Its application can either reduce a lot of daily work pressures or eliminate them **(13).** Caring for nurses as caregiver force is a major concern to head nurses to enable them to discover nurses' problems, recognize and implement suitable solutions. Interactive caring process requires head nurses to be responsive to staff nurse needs as a crucial element for their health, human development, and human relationship. As role model of caring nursing manager has to perceive that role and integrate caring values and principals of ethics in usual nursing practice [(14)]. So, the current study aimed to assess head nurses time management skills for provision of caring to staff nurses.

Head nurses time management skills the current study demonstrated that more than half of head nurses had high level in time management skills. This result is due to majority of head nurses attended training on time management. This result is accordance with **Hidayat, et al., (2021) [(15)]** who found that more than half of head nurses had high level of time management. This is dis agreement with the study done by **Fekry and Moustafa (2019) [(16)]** found that more than half of head nurses had moderate level of time management .

Study result revealed that more than half of head nurses had high level in scheduling and more than one third of head nurses often schedule their time in total. Also, equal percent of head nurses often plan a time in their day for the unexpected events and prepare a daily or weekly to do list. This result is supported with **Dhaini, et al., (2018)** [(17)] who found that more than half of registered nurses prepare schedule to organize their tasks in hospital. In contrast, this result is in disagreement with **Hamid, et al., (2020**) [(18)] who found that majority of head nurses had problems in preparing schedule and had stress in organizing schedule .

Result of this study showed that nearly sixsty percent of head nurses had high level in delegation. This is due to more than two-fifths of head nurses often repeat the details of the task to delegate, give person authority for accomplishing task, provide adequate resources and select the best person for the task. While, more than thirty percent of them often identify exactly what is to be

delegated and why, evaluate the process and progress of the delegate and give appropriate reward. This result is in agreement with **Elsayed, et al., (2018)** [19] who found that the highest percentage of head nurses had delegation in their tasks with subordinates. Also, this result is accordance with **Younes, et al., (2018)** [20] who reported that more than half of head nurses give their subordinates authority and responsibility during delegate tasks to other persons .

Caring behavior dimensions

Regarding total levels of caring behaviors dimensions for staff nurses, the current study showed that more than half of staff nurses perceive level of caring behavior. This result is due to head nurses provided their staffs with the best interest, listen, and respects to complete tasks. This result is supported with **Tran, et al., (2018)** [21] who found that there is good relationship between all nursing staff in workplace. This result is congruence with **Boafo, (2018)** [22] who found that more than half of nurse head nurses had respect for staff nurses, and more than one third of staff nurses had high level of self -esteem and confidence. Also, this result is in agreement with **Park**, et al., (2019) [23] who found that more than two thirds of nurse head nurses were interested with nurses, and staff nurses had intentions with others in work setting. This result is in disagreement with **Hermann, et al., (2019)** [24] who found that more than half of nurses had low level of confidence, and more than two thirds of head nurses had low trust and respect with their nursing staff .

Regarding staff nurses' listening, the current study clarified that more than half of head nurses had high level. This is due to more than two-fifths of the nurses agreed that head nurses listening to them in total and nearly half of nurses agreed that head nurses give them full attention. Additionally, equal percent of them agreed that head nurses listen to nurses calmly, be aware of their feelings, while listening to nurses and end speaks with nurses with best manner. While, more than one third of them agreed that head nurses look to nurse's eye when speaking with them and ask nurses to explain words when do not understand . This result is accordance with **Oxelmark, et al., (2018)** [25] who found that the majority of head nurses were good listener with staff nurses. In contrast, this result is in disagreement with **Hermann, et al., (2019)** [24] who found that more than half of head nurses not interested to deal with staff nurses.

Correlation between caring behavior and time management.

Regarding the correlation between caring behavior and time management skills, result of the current study revealed that there is a statistically significant correlation between caring behavior and time management skills. This result may be due to the fact that caring behavior and time management skills affecting each other as caring behavior make head nurses organize times of caring for their staff and consequently affecting their time management skills.

This result is consistent with **Peng, et al., (2021)** [13] who found there is a highly statistically significant correlation between caring behavior and management functions if head nurses that include time management. Moreover, this result is in agreement with **Markey, et al., (2018)** [26] who indicate that presence of statistically significant correlation between time management skills of head nurses and their caring behavior.

Relation between personal characteristics of head nurses and time management skills and caring behavior

Regarding relation between personal characteristics and total time management skills, the current study showed that there is a statistically significance positive relation between total time management skills and head nurses age and years of experience of head nurses whose age 50 or more years old had high level of total time management skills. According to years of experience; the majority of head nurses whose years of experience ranged from 20-30 years old had high level in total time management skills .

This result is in agreement with **Rakhshan, et al., (2019)** [27] who found that a significant relation between time management skills of head nurses and their ages. Conversely, this result is in disagreement **Aggar, et al., (2018)** [28] who found that majority of head nurses had low improvement in time management skills .

Regarding relation between personal characteristics and caring behavior, the current study showed that statistically significant positive relation between total caring behavior and age, marital status and year of experience. This result may be due to caring behavior with head nurses age, marital status and experience in work setting, they establishing good relation with staff and become more familiar with work areas problems

This result is in agreement with **McCay, et al., (2018)** [29] who and found that there is

positive relation between head nurses and staff nurses. Also, this result was supported with **Markey, et al., (2018)** [26] who found that there is improvement of caring behaviors of staff nurses and their personal characteristics.

Conclusion

Based on the findings of the present study it was concluded that:

The majority of head nurses had high level in time management skills, and more than one quarter of them had moderate level. In addition, more than half of head nurses had high level in caring behavior, and more than one quarter of them had moderate level in caring behavior and minor percent of head nurses had low level as perceived by staff nurses. There is a statistically significant correlation between caring behavior and time management skills.

Recommendations

Based on the results of the present study, the following recommendations are suggested for:

For hospital administration

Encourage open door policy and uses two-way communication on a regular basis

Empower nurses through advocating their right for respect

Conduct continues training programs for nurses about their rights and methods of advocating it

Involve nurses to be involved in hospital committees to respect their opinions and participate in decision making

Develop system to eliminate of time wasters with the working areas.

For head nurses

Conduct continues training programs for head nurses about time management and caring behavior

Develop strategies for time management with full resection of humanity of staff nurses.

Provide more opportunities for staff nurses to express their ideas and opinions.

Setup an orientation programs for newly staff nurses about the importance of time management and its role in developing heath care systems.

Conduct Interview with staff nurses' periodically, listen to their needs and solve their problem.

For further research

Investigating the effect of caring behavior on staff nurses’ retention.

Asses the administrative strategies for enhancing newly head nurses' supportive role to their nursing staff.

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Knowledge, Self-Reported Practices, and Believes of Rural Women about Household Solid Waste Management at El Gharbia Governorate

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Abstract

Background: Household solid wastes disposal and management represents a major public health and environmental issue. Improper waste management harms not only human, but also the environment, plants and animals. Women play an important role in the process of household solid waste management. **The aim** of the study was: to assess knowledge, self-reported practices, and believes of rural women about household solid waste management at El Gharbia governorate **Subjects and Method: Study design:** A descriptive analytic cross-sectional study design was used in this study. **Study settings:** This study was conducted at four rural villages in El Gharbia Governorate. **Study subjects:** A convenience number of 1000 rural women were included in the study through home to home visit **Tools of data collection**: A structured interview schedule was developed by the researchers. It consisted of four parts: Part 1: Socio-economic status of rural women. Part (II): knowledge of rural women about household solid waste disposal. Part (III): reported practices of rural women about household solid waste disposal and management. Part (IV): Beliefs of rural women about solid waste disposal and management. **Results**: the results of the present study revealed that, 62% of the studied women had fair and poor knowledge about solid waste management, and only 38% of them had good knowledge. About two-thirds (63%) of them reported un-satisfactory practice, and 82% of them had positive believes about solid wastes management. There were significant positive correlation between women's Knowledge, reported practice, and socio- demographic characteristics. **Conclusion and recommendations:** Although the majority of the studied rural women had positive believes about solid wastes management, about two thirds of them had fair and poor knowledge and un-satisfactory practice. Therefore, rural women need more attention from local and higher authorities to enhance their knowledge about solid wastes and in turn improve their practices toward household waste management.

Keywords: Solid waste, Management, Rural women, Practice, Knowledge, Believes

Introduction

Household solid wastes disposal and management represents a major public health and environmental issue that face community either in developed or developing countries and either in rural or urban area throughout the world. Solid waste management is considered one of the sustainable development goals that aim to maintain the ecological system that every country works toward achieving it, maintain family, child safety and improve public health [1-3].

In Egypt, at 2012 a according to the annual country report about solid wastes, Egypt generated 89.03 million tons of solid waste, the majority of which were municipal solid waste calculated at 21 million tons. El Gharbia governorate generates about 3,500 million tons of municipal solid wastes daily according to Egypt report [4]. In 2016, around 21.7 million tons of municipal solid waste was generated in Egypt result from growth of population and changing patterns of consumption and waste generation is expected to increase at a rate of 3.4% per year [5]. The improper waste handling, storage, collection, treatment and disposal practices still have serious environmental and public health risks, despite the great efforts exerted by national and local authorities to tackle solid wastes crisis [4]. Household solid wastes are wastes that result from every day family members activities. Solid waste has different forms. It may be in the form of household garbage, leftovers of food and other wastage that include old house hold items such as broken glass, papers, old clothes or plastic waste in the form of kitchen equipment, bottles or any other products that are consumed during every day activities [2,6].

Solid-waste management means that collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful. Proper disposal and management of household solid wastes affect positively in the community health, welfare and in the environment [1,7].

Household participation in solid waste management starts from storage of solid wastes. Storage should be in bin with lid or in thick plastic bag that doesn't leak. Storage process is accompanied by separation and sorting of household wastes such as leftovers of food are placed in separate

containers, bottles should collected in separate bag, broken glass in special container and so on. Reusing is considered another method of household waste management in which items can be used more than one time for the same purpose [3,7-9].

Household can indirectly participate in the process of recycling of solid wastes by sorting solid wastes such as bottles, metals, tin cans and cardboards then selling these items and at the same time make profit. Wastes of food can be managed either by feeding to chicken and animals or placed in an open pit and is decomposed by natural biological processes. This is considered composting, which is another way of solid wastes management especially in rural areas. The final step of solid waste management is its disposal. Waste disposal must be managed by the government and local authorities and not by households as it needs special land and specific procedures [7-9].

Improper waste disposal practices such as burning outside doors or dumping of waste at roadsides and vacant lands leads to destroy of natural beauty and create unsanitary condition that leads to spread of flies, mosquitoes, insects and rodents which considered means of spreading diseases to man such as malaria, diarrhea and cholera and many other diseases. In addition, it leads to the release of toxic gases which cause air pollution and the spread of respiratory diseases. Furthermore, improper waste management harms the environment, plants and animals. Finally, it leads to social, administrative and economic problems that need control and management [1,9-12]. Improper household waste management and disposal in the community result from several reasons. These reasons may be due to lack of well-designed and enough infrastructures, insufficient coverage of collection system, lack of awareness and less involvement of the household key stakeholder. So, it is crucial and more important for the community health nurse to raise awareness of the community, especially rural women about the proper waste disposal and management [1,9-12].

Households, especially women play an important role in the process of household solid waste management as they considered the primary generators of solid wastes. Rural women in Egypt have traditionally known to be preoccupied with child rearing and all household tasks. These are considered the primary responsibilities for

them. Household tasks include different tasks such as preparing food, laundering, shopping and among these tasks housekeeping which include managing and disposal of household solid wastes [13,14].

Community health nurse should provide rural population, especially women with sufficient information about the process of solid wastes management. In addition, the nurse alert them about danger of improper waste disposal on their families' health and on the environment [1,9-12].

Significance of the study

Improper household waste management has serious consequences on human health as it leads to spreads of diseases such as respiratory diseases, allergies, malaria and other diseases. It also affect badly in the environment as it pollute air and soil. Finally it affects negatively on the economy of the countries. Traditionally, rural women have low level of education and have less health education facilities and at the same time they assumed the responsibility toward maintenance of health of their families, so that it is necessary to concentrate this study on rural women. As there are few researches conducted in Egypt about household solid wastes management among rural women. So, the aim of this study was to assess knowledge, self-reported practices, and believes of rural women about household solid waste management at El Gharbia governorate

Aim of the study

The aim of this study was to:

Assess Knowledge, self-reported practices, and believes of rural women about household solid waste management at El Gharbia governorate

Research questions:

What is the level of Knowledge of rural women about household solid waste management?

What is the level of self-reported practices of rural women about household solid waste management?

What are the believes of rural women about household solid waste management?

Subjects and Method

Study design:

A descriptive cross sectional research design was utilized in this study.

Study setting:

This study was conducted in four rural villages in El Gharbia Governorate. El Gharbia Governorate divided into 10

districts. Two districts were selected randomly (El Mehlla El Kobra and El Santa districts). Two rural villages were selected randomly from each district, From El Mehalla El Kobra, Elhaitem and Bolkina rural villages were selected and from El Santa, Shandalat and Elqurishiah rural villages were selected.

Study subjects:

A convenience number of 1000 rural women were included through home to home visit. The sample size and power analysis was calculated using Epi-Info software statistical package created by World Health organization and center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002. The sample size was found at N > 383. The sample was increased to 1000 rural women.

Tools of the study: An interview schedule was used to collect the necessary data. It consisted of four parts:

Part (1): Family socio-economic status of rural women:

Family socio-economic status was measured by using the scale for measuring family socioeconomic status (SES) for health research in Egypt which was developed by Fahmy and El-Shrbini ,1983[15] and updated by Fahmy et al., 2015 [16]. The scale included ten variables such as (couple education and occupation, number of children, family income and mothers' age). The total score is 48, a higher score indicating better SES.

The total score of family socioeconomic status (SES) was categorized as follows:

-High socioeconomic status: ≥ 70% (33.5-48)

-Medium socioeconomic status: 40 to <70% (19.2 to < 33.6)

-Low socioeconomic status: < 40% (< 19.2)

Part (II): Knowledge of rural women about household solid waste management:

This part was developed by the researchers based on related literature [1,7-9] to assess rural women knowledge about solid waste management. It composed of four questions that covered the following points: types, problems and methods of household solid wastes management and characteristics of household solid waste management.

The scoring system: All items of this part were checked with a model key answer, which prepared by the researchers. Correct answer was given score one while incorrect or don't know answer was given score zero.

- These scores summed up and the total score converted into a percent score

The total score of knowledge was calculated by summation of the score of all questions related to knowledge about solid waste management and it equaled (24) points.

The scoring system for knowledge was as following:

Poor knowledge < 60 % of the total score. (< 14)

Fair knowledge 60 - < 75 % of the total score. (14 - < 18)

Good knowledge ≥ 75 of the total score.(≥ 18)

Part (III): Reported practices of rural women about household solid waste disposal management:

This part was developed by researchers based on relevant tools [1,8,17] to assess rural women practices of solid household management. It composed of 23 statements that covered women' reported practice such as means of solid waste storage, methods of solid wastes disposal and management, means of dealing with ordinary house hold wastes and ways of dealing with medical and infectious solid households

The scoring system of reported practices:

A four point Likert scoring was used as follows: not practiced items was scored (0), slightly practiced was scored (1), moderately practiced was scored (2) and fully practiced all time was scored (3).

These scores were summed up and the total score equal (69) points then it was converted into a percent score and classified as follows:

Satisfactory reported practice: ≥ 70 % of the total practice score. (≥ 48)

Unsatisfactory reported practice: < 70 % of the total practice score. (< 48)

Part (IV): Believes of rural women about solid waste disposal and management:

This part was adapted from the instrument developed by Limon, Vallent and Corales in 2020 [17]. It consisted of 12 statements to assess believes of rural women about solid waste management and disposal.

The scoring system

The statements were measured using a three – point likert scale. Positive statements were given a score of two (agree), one score (neutral) and zero score for the statements that were disagreed by rural women. Scores of negative statements were inversed as follows: a score of zero (agree), one score

(neutral) and two score for the statements that were disagreed by rural women. These scores were summed up and equal to 24 points.

The total score was classified into:

Positive believes ≥ 70 % of the total believes score. (≥ 17)

Negative believes < 70 % of the total believes score. (< 17)

Method:

An official permission to conduct the study was obtained from the Dean of the faculty of nursing directed to Mayors of the villages to facilitate data gathering.

Ethical considerations:

Approval of the ethical committee of the faculty of nursing was obtained.

Informed consent was taken from all studied women after providing suitable explanation about the aim of the study.

The study did not cause any risks or pain for the studied women and their safety was ensured.

Privacy and confidentiality were put into consideration regarding the collected data.

Developing the tool:

Part one was adapted from the tool developed by Fahmy and El-Shrbini, 1983 and updated by Fahmy et al., 2015, while part two and three was developed by the researchers based on literature review and part four was adapted from the instrument developed by Limon, Vallent and Corales in 2020.

The **reliability** of the study tool was tested by Chronabach's alpha test and it was found to be = (0.738) for all the study parts.

A five expertise from the community health nursing department test the study tools for its face and content **validity**.

The researcher carried out **a pilot study** on 10% of the subject for testing the tools for its applicability, clarity, and to identify obstacles that may be encountered with the researcher during data collection and these subject not included in the study.

The actual study:-

The data were collected over a period of 5 months starting from first of June to the end of October 2021. Home visit was used to reach the studied women.

The researchers used good communication skills through introducing themselves to each studied women. Also the purpose and the importance of the study were explained.

Confidentiality of the studied women information was considered from the beginning of the interview. So that, they cooperated in the study.

Statistical analysis of the data:

The data were organized, tabulated and statistically analyzed using statistical package for social studies (SPSS) version 23. The mean, standard deviation and range were calculated for quantitative data. Pearson's correlation coefficient r was used to identify correlation between variables. A significance was adopted at $P<0.05$ for interpretation of results of tests of significance.

Results

Table (1) shows distribution of the studied women according to their socio-demographic characteristics. The table reveals that, about one third (31.3% & 28.1%) of the studied women their age ranged from 31 to less than 41 years with a mean of 37.03 ±11.862, and had secondary education respectively. Slightly less than half of the studied women (43.7%, 40.8%. 46.3 %& 46.9%) not worked ,not using computer all times, their family members less than five and their house consisted of three rooms respectively, while most (86.3%) of their husband were working and more than one quarter (28.1%) of them had completed secondary education. Also, more than half (58.4%) of them reported that, their family income were just enough.

Table (2) shows distribution of the studied women according to their knowledge about solid waste managements. The table illustrates that, most of the studied women (81.9%, 82% & 86.2) agree that improper disposal of solid wastes can cause contamination of water and soil with pathogenic germ, air pollution with unpleasant odors and toxic gases resulting from its combustion and spread of insects that transmit microbes and dirt such as flies, mosquitoes, cockroaches respectively. On the other hand, about one third and one quarter (30.3%& 24.4%) of the studied women, didn't know that improper waste disposal can cause global warming, widening of the ozone layer hole, acid rain and distortion of the urban environment and can cause skin diseases, like skin allergies respectively.

Regarding characteristics of solid waste collection container, slightly more than three quarters of the studied women (79.2%, 83% & 78.6%) respectively agree that the container should made of a strong, cleanable material such as iron and plastic, do not allow the liquids resulting from the leftovers of food to leak out and the pole cover should be tight to prevent insects from reaching the litter respectively. While, about one fifth

(20%) of them didn't know that the container should be free of sharp corners, to prevent the accumulation of waste on its sides, and it is preferable to have a cylindrical shape to facilitate washing and cleaning and it should be of an appropriate size so that it is easy to transport outside the home.

In relation to management of house wastes, it is observed that, more than three quarters and more than half (83.2%, 65.5%, 59.3%, 59.6% & 61.8%) of them agreed about putting waste into a special container, not throw household waste outside the house, burning household waste in an open place, bury household waste in a large pit and reusing some household waste, such as empty containers respectively. In the opposite, half (50%) of them didn't agree about throwing household waste into canals. Also, about one fifth and more than one quarter of them (20% & 27.3%) didn't know that determining appropriate times for disposal and collecting waste to avoid random dumping, use of a large number of plastic bags and preliminary sorting of some household waste before disposal were considered methods of management of house wastes respectively.

Table (3) represents distribution of the studied women according to their reported practice about solid waste managements. The table illustrates that, more than half of the studied women (52.9 %& 60.4%) reported that they were putting household wastes in a closed bin and they were putting household waste in plastic bags respectively. Concerning disposing of house wastes, about two-thirds(63.1%) of the studied women reported that they practiced all the time the act of disposing of house wastes according to the acceptable methods recommended by the government, such as participating in the project of collecting waste from homes in the village. On the contrary, a higher percentage of them (77.5%, 86.35 & 83.2%) respectively reported that they didn't burn outside the house, they didn't bury hazardous waste such as empty flash cleaners, grease solvents, pesticides and other hazardous materials underground and they didn't throw empty containers such as flash cleaners, grease solvents, pesticides and other hazardous materials into canals

Regarding means of dealing with ordinary household wastes, it is observed that slightly less than half of the studied women (47%, 46% & 44.3%) reported that they sorted

household waste like putting food leftovers in a separate bag, putting the broken glass in a separate bag from the rest of the garbage and selling of bottles, plastic, tin cans, carton boxes and other scraps of paper. While more than one third and about two-thirds (38.7& 63.6) of them reported that they didn't practiced putting the empty containers of flash bottles, grease solvent, etc. in a separate bag from the rest of the garbage and they didn't practiced putting the paper in a separate bag respectively. Also higher percentage of them (81.9%) reported that, they didn't practice the disposing of food leftovers into the compost pit.

In relation to the reported practices of rural women about disposal of medical infectious households wastes, it is observed that, slightly less than and more than half of the studied rural women (46.1%, 45% , 63.8% &52.9%) didn't performed the practice of putting sharp contaminated materials such as insulin syringes, needles, scalpels, razors, blood-contaminated razors, in thick plastic or metal containers, didn't performed the practice of putting the needles directly into the plastic bottle without re-cap and didn't practiced covering the bottle (containers) tightly after it is three-quarters full and did not wrap it with a strong adhesive tape and writing on it "Hazardous Medical Waste", then throw the bottle in the regular waste bags. In addition to that more than one quarter (17.1%) of the studied rural women didn't put wound dressings, cotton, blood-contaminated gloves in tightly closed bags before putting it in the ordinary waste.

Table (4) it represents the distribution of the studied women according to their believes about solid waste managements. It is observed that, a higher percentage of the studied women agreed about all items of the believes about solid wastes except more than one-quarter of them (25.6%, 26% & 27.3%) didn't agree that safe disposal of household waste is not their responsibility, reuse of empty containers helps in the proper management of household waste, and reusing some waste makes life more convenient/safe respectively.

Table (5) shows correlation between studied women total score of their knowledge, reported practice, socioeconomic, and believes about solid waste managements. It is observed that women total knowledge scores were significantly positively correlated with total practice scores, with socio-economic status and also with total believes scores of the

studied women as (p= 0.000 and 0.001 respectively). In addition, total practice scores of the studied women were significantly positively correlated with socio-economic status of the studied women as (p= 0.000). Furthermore, women socio-economic status was significantly positively correlated with total practice scores, total knowledge scores and total believes scores as (p= 0.000 and .031 respectively).

Figure (1) shows the distribution of the studied women according to their total level of socio- demographic. The figure illustrates that, more than half (56%) of the studied women had medium socio-economic status followed by more than one third (35%) had high socio-economic status and only 9% had low socio-economic status.

Figure (2) represents the distribution of the studied women according to their total score of knowledge about solid waste managements. It is observed that more than one-third (38% &37%) of the studied women had poor and good knowledge scores respectively and one-quarter (25%) of them had fair knowledge score.

Figure (3) illustrates the distribution of the studied women according to their total score of reported practice about solid waste managements. The figure illustrates that, about two-thirds (63%) of the studied women had un-satisfactory practice scores and the rest more one-third (37%) had satisfactory practice scores.

Figure (4) shows the distribution of the studied women according to their total score of believes about solid waste managements. The figure illustrates that, a higher percentage (82%) of the studied women had positive believes about solid wastes management while less than one fifth (18%) of them had negative believes about solid wastes.

Table (1) Distribution of the studied women according to their socio- demographic characteristics

Socio-demographic characteristics	Studied women (n=1000)	
	No	%
Age in years		
19-	371	37.1
31-	313	31.3
41-	165	16.5
51-	123	12.3
61-	28	2.8
Mean ±SD	37.03 ±11.862	
Educational level of the woman		
Illiterate or just read and write	145	14.5
Literacy Certificate	37	3.7
Elementary	176	17.6
Secondary	291	29.1
University	243	24.3
Post graduate	108	10.8
Educational level of husband		
Illiterate or just read and write	102	10.2
Literacy Certificate	64	6.4
Elementary	169	16.9
Secondary	281	28.1
University	321	23.1
Post graduate	63	6.3
Occupation of woman		
Yes	437	43.7
No	563	56.3
Occupation of husband		
Yes	863	86.3
No	137	13.7
Computer use		
No at all	408	40.8
Some times	367	36.7
Most of time	225	22.5
Income		

Enough and save	217	21.7
Enough	584	58.4
Not enough	199	19.9
Number of family members		
Less than five members	463	46.3
Five members	302	30.2
Six members	163	16.3
Seven and more	72	7.2
Number of house rooms		
Two rooms	297	29.7
Three rooms	469	46.9
Four rooms	157	15.7
Five rooms	56	5.6
Six rooms	21	2.1

Table (2): Distribution of the studied women according to their knowledge about solid waste managements.

Variables	Studied women (n=1000)					
	Yes		No		Don't know	
	No	%	No	%	No	%
Environmental problems resulting from improper waste disposal - Contamination of water and arable soil with pathogenic germ	819	81.9	81	8.1	100	10.0
Air pollution with unpleasant odors and toxic gases resulting from its combustion	820	82	50	0.5	130	1.3
Global warming, widening of the ozone layer hole, acid rain and distortion of the urban environment	594	59.4	100	10.0	306	30.6
Risks of house wastes on health Wounds caused by sharp objects and broken glass.	708	70.8	92	9.2	200	20.0
Spread of toxic gases, which cause serious diseases such as: respiratory diseases, heart diseases, and asthma.	668	66.8	132	13.2	200	20.0
Skin diseases, like skin allergies.	606	60.6	150	15.0	244	24.4
Spread of insects that transmit microbes and dirt such as flies, mosquitoes, cockroaches	862	86.2	38	3.8	100	10.0
Gathering of animals that carry epidemics and diseases (dogs, stray cats and mice)	721	72.1	82	8.2	197	19.7
Unpleasant odors resulting from rotting household waste due to germs, bacteria and parasites	721	72.1	100	10.0	179	17.9
Characteristics of waste collection container It should be made of a strong, cleanable material such as iron and plastic.	792	79.2	50	5.0	158	15.8
It should be free of sharp corners, to prevent the accumulation of waste on its sides, and it is preferable to have a cylindrical shape to facilitate washing and cleaning.	719	71.9	81	8.1	200	20.0
Do not allow the liquids resulting from the leftovers of food to leak out	830	83.0	60	6.0	110	11.0
The pole cover should be tight to prevent insects from reaching the litter	786	78.6	50	5.0	164	16.4
The container (pole) should be of an appropriate size so that it is easy to transport outside the home	659	65.9	141	14.1	200	20.0
Management of house wastes Putting waste into a special container	832	83.2	65	6.5	103	10.3
Determining appropriate times for disposal and collecting waste to avoid random dumping.	732	73.2	68	6.8	200	20.0
Use of a large number of plastic bags	619	61.9	181	18.1	200	20.0
Preliminary sorting of some household waste before disposal.	527	52.7	200	20.0	273	27.3
Do not throw household waste outside the house	655	65.5	200	20.0	145	14.5
Burning household waste in an open place	593	59.3	400	40.0	7	0.7
Bury household waste in a large pit	596	59.6	400	40.0	4	0.4
Reusing some household waste, such as empty containers	618	61.8	300	30.0	82	8.2
Throwing household waste into canals	433	43.3	500	50.0	67	6.7

Table (3): Distribution of the studied women according to their reported practice about solid waste managements

Reported practice	Studied women (n=1000)							
	Not at all		Slightly		Moderately		All times	
	No	%	No	%	No	%	No	%
Storage of household waste at home								
Putting household waste in a closed bin (has a lid)	171	17.1	105	10.5	195	19.5	529	52.9
Putting household waste in plastic bags	142	14.2	126	12.6	128	12.8	604	60.4
Methods for disposing of solid household waste								
Throwing in canals or in uninhabited places and buildings	726	72.6	94	9.4	95	9.5	85	8.5
Disposing of waste according to the acceptable methods recommended by the government, such as participating in the project of collecting waste from homes in the village	134	13.4	85	8.5	150	15.0	631	63.1
Burning outside the house	775	77.5	128	12.8	57	5.7	40	4.0
Burying hazardous waste such as empty flash cleaners, grease solvents, pesticides and other hazardous materials underground.	863	86.3	57	5.7	43	4.3	37	3.7
Throwing empty containers such as flash cleaners, grease solvents, pesticides and other hazardous materials into canals.	832	83.2	89	8.9	46	4.6	33	3.3
Throwing empty containers such as flash cleaners, grease solvents, pesticides, agricultural pesticides containers and other hazardous materials together with normal household waste.	451	45.1	182	18.2	96	9.6	271	27.1
Means of dealing with ordinary household waste								
Sorting household waste like putting food leftovers in a separate bag.	217	21.7	154	15.4	159	15.9	470	47.0
Putting the broken glass in a separate bag from the rest of the garbage.	211	21.1	143	14.3	186	18.6	460	46.0
Putting the empty containers of flash bottles, grease solvent, etc. in a separate bag from the rest of the garbage.	387	38.7	150	15.0	145	14.5	318	31.8
Put the paper in a separate bag.	636	63.6	146	14.6	84	8.4	134	13.4
dispose of food leftovers into the compost pit	819	81.9	70	7.0	60	6.0	51	5.1
feed leftover foods to domestic birds such as chicks, ducks, etc.	172	17.2	66	6.6	136	13.6	626	62.6
selling of bottles, plastic, tin cans, carton boxes and other scraps of paper	217	21.7	116	11.6	224	22.4	443	44.3
Reusing of empty containers for storing food and drinks.	556	55.6	189	18.9	148	14.8	107	10.7
Disposal of medical infectious household waste								
Putting of contaminated sharp materials as insulin syringes, needles, scalpels and razors contaminated with blood, with the rest of the household waste.	461	46.1	159	15.9	131	13.1	249	24.9
Putting of sharp contaminated materials such as	450	45.0	190	19.0	144	14.4	216	21.6

insulin syringes, needles, scalpels, razors, blood-contaminated razors, in thick plastic or metal containers.								
Putting the needles directly into the plastic bottle without re-cap	638	63.8	147	14.7	98	9.8	117	11.7
Covering the bottle (containers) tightly after it is three-quarters full and wrap it with a strong adhesive tape and writing on it “Hazardous Medical Waste", then throw the bottle in the regular waste bags.	529	52.9	177	17.7	122	12.2	172	17.2
Putting wound dressings, cotton and blood-contaminated gloves in tightly closed bags before putting it in the ordinary waste.	271	27.1	158	15.8	194	19.4	377	37.7
Putting menstrual pads for women and children's diapers (especially those with diarrhea) in tightly closed bags before disposal	162	16.2	102	10.2	165	16.5	571	57.1

Table (4): Distribution of the studied women according to their believes about solid waste managements

Believes	Studied women (n=1000)					
	Agree		Neutral		Dis agree	
	No	%	No	%	No	%
Safe disposal of waste is a healthy environmental requirement	973	97.3	25	2.5	2	0.2
Improper disposal of waste leads to health risks to family	902	90.2	83	8.3	15	1.5
Places for the collection of household waste are allocated correctly.	889	88.9	96	9.6	15	1.5
Safe disposal of household waste is not my responsibility.	589	58.9	155	15.5	256	25.6
Safe disposal of household waste benefits society and the environment.	908	90.8	79	7.9	13	1.3
Lifestyle modification helps reduce waste generated in homes.	800	80.0	165	16.5	35	3.5
Burning waste outside the home poses health and environmental risks.	816	81.6	110	11.0	74	7.4
Reuse of empty containers helps in the proper management of household waste	528	52.8	212	21.2	260	26.0
Reusing some waste makes life more convenient/safe	500	50.0	227	22.7	273	27.3
The safe disposal of waste leads to a better environment for present and future generations.	889	88.9	90	9.0	21	2.1
Each person is responsible for the safe disposal and control of waste	851	85.1	135	13.5	14	1.4
The government is mainly responsible in addressing solid waste problems and in ensuring that the environment is properly cared for	845	84.5	139	13.9	16	1.6

Table (5): correlation between studied women total score of their knowledge, reported practice, and believes about solid waste managements

Variables	Women reported practice r P	Women knowledge r P	Women believes r P
Women knowledge	0.364 0.000**	-	--
Women believes	- 0.043 - 0.170	0.106 0.001**	-
Women socioeconomic status	0.167 0.000**	0.280 0.000**	0.068 0.031*

** Correlation is significant at the 0.01 level (2 tailed).

*Correlation is significant at the 0.05 level (2 tailed).

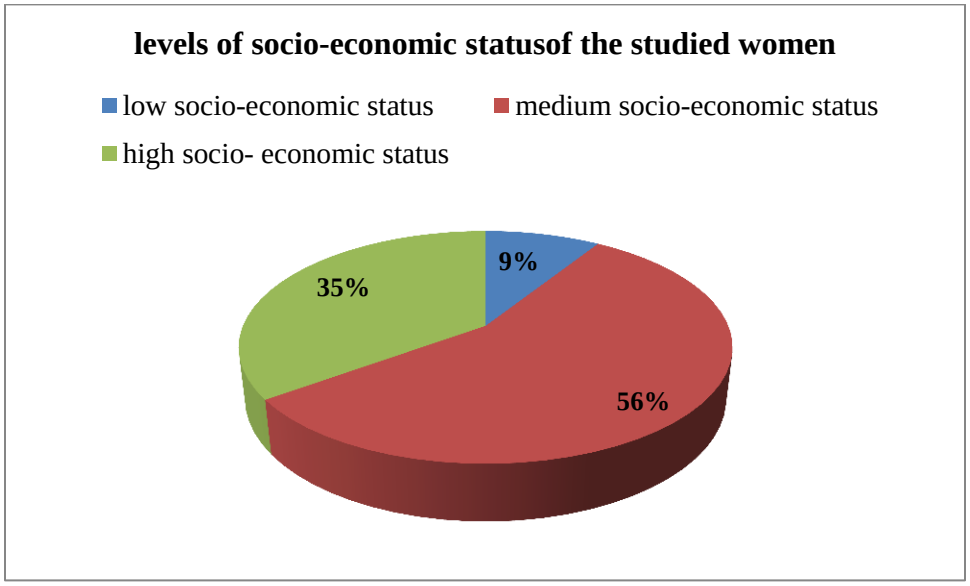

Figure (1): Distribution of the studied women according to their total level of socio-demographic.

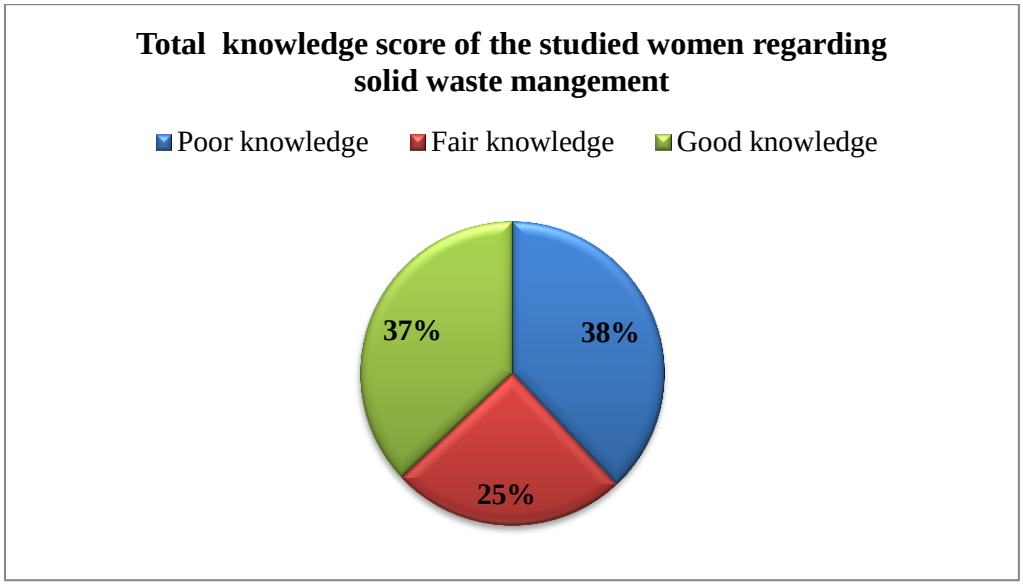

Figure (2): Distribution of the studied women according to their total score of knowledge about solid waste managements.

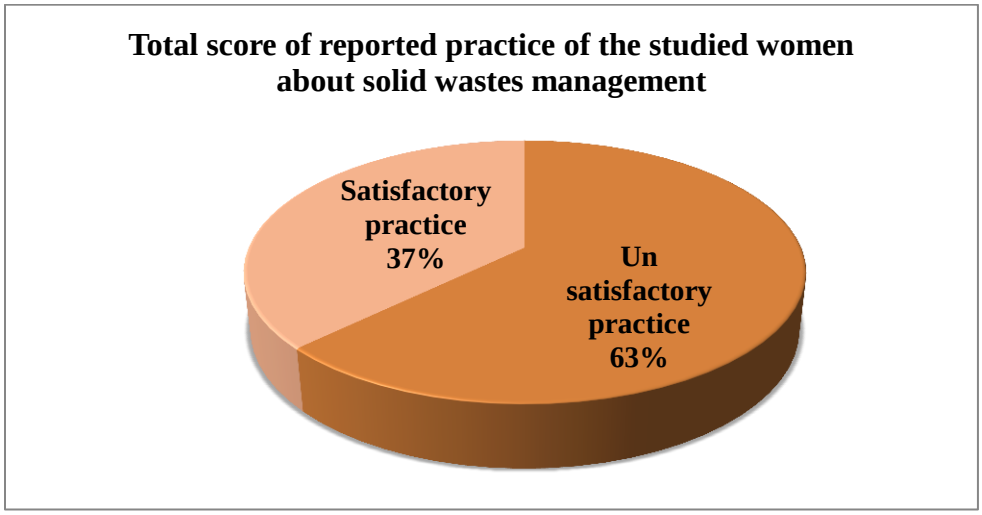

Figure (3): Distribution of the studied women according to their total score of reported practice about solid waste managements.

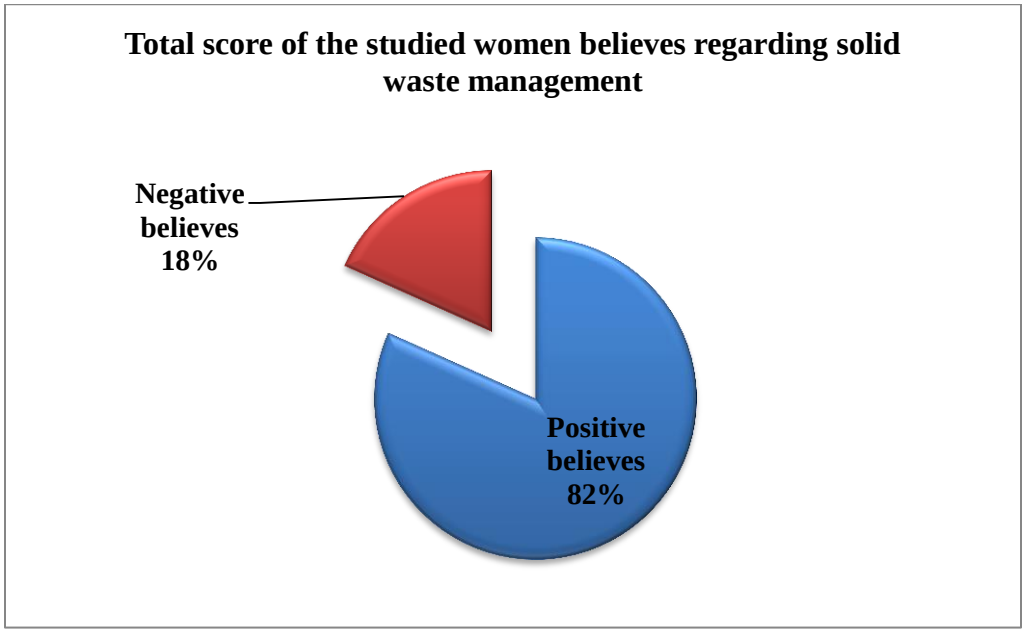

Figure (4): Distribution of the studied women according to their total score of believes about solid waste managements.

Discussion

Solid waste disposal and management become the major issue that faces the whole, as billions of tons of solid wastes generated every day. Sustainable waste management is a big challenge that faces low- and middle income countries; this may be due to deficient of financial resources, lack of organization, complexity of systems and lack of communication with household residents. As a result of that, resident perform improper disposal and improper management of wastes such as open burning and illegal dumping. Solid waste management has greater importance. So that, it has been recognized and embedded either directly or indirectly in all the Sustainable Development Goals (SDGs) [18-21].

Raising awareness of the community, especially household residents about proper solid wastes disposal and management is considered the primary step of solid wastes management. As household residents considered the primary generator of solid wastes. This can be facilitated through providing appropriate knowledge, motivation and building positive attitude about correct waste disposal and management processes. As a result, household residents waste management practices will intern improve [18,20,21]. Therefore, the aim of this study was to assess knowledge, self-reported practices, and believes of rural women about household solid waste management at El Gharbia governorate.

The present study illustrated that more than one third and one quarter of the studied rural women had poor and fair knowledge scores about solid wastes management and disposal respectively and only more than one third of them had good knowledge scores. In addition to that about two thirds of them had unsatisfactory practice regarding solid wastes management and disposal. However, most of the studied women had positive believes about solid wastes management and disposal. These results highlight that, knowledge and believe are not the only variables which control practice of rural women toward management of solid wastes. Lack of training, and supportive resources and devices may participate in unsatisfactory management of rural women of wastes.

Knowledge about solid waste management is very important as it leads to good management. Where poor management of household solid waste result from poor knowledge and in turn has bad effect on the

environment as it leads to destruction of the natural beauty; damage the landscape and decrease in plant productivity and depreciation of land value. Also, bad management had negative impact on human health as it leads to spreading of diseases [1,22, 23]. Concerning knowledge of the studied women about problems of solid wastes, about one third and one quarter of the studied rural women, didn't know that the solid wastes can cause -Global warming, widening of the ozone layer hole, acid rain and distortion of the urban environment, and skin diseases, like skin allergies respectively **(table 2)**. This may be related to limited awareness of rural women about solid wastes problem. This result is in contrast with **Kaoje et al. (2017)** [24] who conducted a study to determine residents' perception of solid waste disposal practices in Sokoto, Northwest Nigeria and found that 63.2% of the residents perceived solid wastes problems.

Regarding knowledge of studied women about management of solid wastes, it was observed that more than half of the studied women agreed that burning household waste in an open place and bury household waste in a large pit are proper ways to deal with solid waste **(table 2)**. These behaviors are considered part of rural women habits. Also, this result may be due to lack of awareness of them about problems that may result from these acts and due to lack of awareness of them about proper methods of solid wastes management. This result may be in the line with **Shahzadi et al. (2018)** [8] who conducted a study for determination the level of knowledge, attitude, and practices regarding household waste disposal among people in rural community of Lahore and found that about 42% and 35% of respondents agree about deep burial and burning, incarnation respectively.

In relation to total knowledge scores of the studied women about solid wastes management, the present study illustrated that more than one third of the studied women had poor knowledge scores about solid wastes management, followed by one quarter had fair knowledge **(figure 2)**. This may be due to lack of awareness of rural women about solid wastes problems, disposal and management and related to lack of educational companies about solid wastes problems and management in rural areas in Egypt. This result is in agreement with **Chouhan et al. (2018)** [25] who conducted a study to assess the knowledge regarding domestic waste management and its effect on health among home makers and explained

that about 34% of the studied homemakers had poor knowledge about solid waste management. Also, our results is in the same line with **Anupriya et al. (2020)** [26] who conducted a study to evaluate knowledge and practice regarding household waste management among women in selected rural area at Puducherry and explained that about 98% of the studied women had inadequate knowledge about solid wastes management.

Primary segregation takes place at the source (at house). If it is done properly, it will reduce the work in secondary segregation. Otherwise, it is an unpleasant task to lay hand in wet wastes that is more than 8 - 12 hours old, that has already started decomposing [27]. The current results pointed out that, more than three quarters of the studied women did not sort or segregate household waste before disposal or did it slightly **(table 3)**. During data collection from rural women they expressed that, even if they segregate wastes especially medical waste and sharps, they did not know how to depose it safely. These results emphasize the urgent need to empower women knowledge and practice, and provide them with suitable resources which enable them to segregate household wastes like puncture-prof containers and so on.

Awareness of different aspects of waste management from collection, storage, sorting or segregation and disposal, can help to reduce waste generation and improve the waste management process [1]. Concerning practices of the studied women about solid wastes management, it was observed that about one fifth did not practiced putting household wastes in closed bin followed by about one third of them from slightly to moderately practiced this act **(table 3)**. This may be related to the limited awareness of rural women about importance of putting solid wastes on closed containers in prevention of spreading flies and mosquitoes. Also, the studied rural women reported that they collected wastes inside any available dirty plastic bag, not in a specific waste container. This result was in agreement with **Muiruri et al. (2020)** [28] who conducted a study for assessment of methods practiced in the disposal of solid waste in Eastleigh Nairobi County, Kenya and reported that 35.1 % of the studied sample putting wastes in a dust bin.

In relation to practices of rural women about disposal of medical infectious households' waste, around half of the studied rural women didn't practice the correct steps of dealing with sharp contaminated materials such as

(insulin syringes, needles, scalpels, razors, blood-contaminated razors). In addition to that, more than one quarter of the studied rural women didn't put wound dressings, cotton, blood- contaminated gloves in tightly closed bags before putting it in the ordinary waste (**table 3)**. This may be related to lack of knowledge of rural women about correct methods of disposal of medical and infectious household wastes, due to lack of educational companies conducted in rural areas about solid wastes disposal and due to limited facilities in rural areas. Actually, this result pointed that, rural areas need more attention from local and higher authorities regarding safe disposal and management of solid medical infectious households wastes.

Regarding total score of reported practice of the studied women about solid waste managements, it was observed that slightly more than one third of the studied women had satisfactory practice and about two thirds of them had unsatisfactory practice **(figure 3)**. From the researcher point of view, this result may be attributed to lack knowledge of the studied women as more than one third of them had poor knowledge scores about solid wastes management, followed by one quarter had just fair knowledge **(figure 2).** Also, it is ordinary that poor knowledge result in poor practice and also due to lack of facilities about solid wastes management provided by government in rural areas in Egypt. This result is in accordance with **Madhushree (2018)** [(29)] who conducted a study to evaluate knowledge and practice regarding the domestic waste management among the households of selected rural community, Mangalore and found that 20% of the respondents had good practice and 73.8% of them had moderate practice. Also, this result is in agreement with **Baby and Mathew (2020)** [(30)] who conducted a correlative study to assess the knowledge and practice of housewives regarding household waste management in selected rural community at Mangalore with a view to provide an information pamphlet and reported that 80% of the studied housewives had average practice score and only 20% had good practice score.

In relation to believes of the studied rural women about solid wastes managements, it was observed that more than three quarters of the studied rural women agree that burning waste outside the home poses health and environmental risks **(table 4)**. This result is in the line with **Kaithery and Karunakaran (2019)** [(31)] who conducted a study on attitude of household waste management in a rural

area of Northern Kerala and found that 78.2% of the studied sample strongly disagree about the statement that say I don't think that burning garbage can be bad for my health and others health.

Concerning total score of the studied rural women believes regarding solid wastes management, the current study revealed that most of the studied women had positive believes regarding solid wastes management **(figure 4)**. This may be related to the willingness of rural women to improve their family health but limited resources hinder their practice. This result was in accordance with **Limon et al. (2020)** [17] who conducted a study to assess solid waste management beliefs and practices in rural households towards sustainable development and pro-environmental citizenship and found that most of the respondents demonstrate positive beliefs on solid wastes management.

Generally, good knowledge help improve practice/behavior. Our current study revealed that, there was a positive correlation between total knowledge score and total practice score of the studied women regarding household waste management **(table 5)**. This result highlights the importance of conducting education programs to women to enhance their knowledge that will improve their management of household solid wastes. This result is in the line with **Madhushree (2018)** [29] and with **Baby and Mathew (2020)** [30] who reported that there was moderate positive correlation between total knowledge score and total practice score

Finally, rural areas in Egypt is still in need of continuous effort and great attention to raise awareness of rural women about solid wastes disposal and management, in order to enhance their knowledge about solid wastes and in turn improve their practices toward household waste management.

Conclusion and recommendations

Based on the finding of our research, the majority of the studied rural women had had positive believes about solid wastes management. However, about two thirds of them had fair or poor knowledge and un-satisfactory practice. Therefore we suggested the following recommendations which include:

Information dissemination campaign should be conducted to increase rural women knowledge and improve practice regarding solid waste management.

Handouts about household solid waste management written in local languages could be developed, disseminated, and used as

information and educational materials for households.

Local government authority should build partnerships with non-government organizations to provide rural women with technical support and resources necessary for solid waste management.

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Influence of Head Nurses' Paternalistic Leadership on Hospital Cynicism and Job Performance among Intensive Care Nurses: A Comparative Study

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Abstract

Background: Paternalistic leadership is a style in which the leader combines high discipline with the compassion of the father figure and ethical integrity in a personal atmosphere to enable nurses perform more effectively and efficiently and help them reduce cynical behaviour toward the hospital. **Aim of the study**: Compare influence of head nurses' paternalistic leadership on hospital cynicism and job performance among intensive care nurses at Tanta Main University Hospitals and EL-Mehalla General Hospital. **Subjects and Method: Research design**: A descriptive, comparative, via cross-sectional research design was used. **Subjects**: All available nurses working at Tanta Main University Hospitals' ICUs (n=295) and EL-Mehalla General Hospital (n=301). **Tools**: Three tools were used for data collection: Paternalistic Leadership Scale, Organizational Cynicism Scale and Nurses' job Performance Observational Checklist. **Results:** The majority of nurses perceived a high level of head nurses' paternalistic leadership at Tanta Main Hospital compared to the minority of nurses at El-Mahalla General Hospital. The majority of nurses perceived a low level of hospital cynicism at Tanta Main Hospital, while more than half of nurses perceived a moderate level at El-Mahalla General Hospital. The majority of nurses at Tanta Main Hospital had a satisfactory level of job performance compared to slightly more than half of nurses at El-Mahalla General Hospital. **Conclusion**: There was a significant influence of head nurses' paternalistic leadership on hospital cynicism at both setting (Tanta Main and El-Mahalla General Hospital). Also, head nurses' paternalistic leadership affects nurses' job performance at Tanta Main Hospital. However, there was no relation between head nurses' paternalistic leadership and nurses' job performance at El-Mahalla General Hospital. **Recommendation**: Develop training program for head nurses to improve leadership practices in order to reduce cynicism and improve staff performance.

***Key Words*:** Nurses' Performance, Organizational Cynicism, Paternalistic leader

Introduction

The hospital is a complex organization that provides health care to people through a team of trained nurses who are considered the backbone of hospitals. [1] Nurses are the most dominant in number and have the most direct contact with patients and families. Nurses' roles are greatly important, especially in intensive care units where they are responsible for closely monitoring and reporting changes in patients' health and wellbeing. They always need positive interaction and effective communication to conduct their jobs effectively. [2]

Nurses in intensive care units are directly affected by all of the positive or negative variables of their working environment e.g. they require environment that promote superior performance in terms of physical, social, and psychological aspects, as well as the ability to connect them to the profession and institution.[3] Head nurses are seen as the first line leaders and their leadership practices is an important issue in building and maintaining a healthy work environment, as well as maximizing staff satisfaction and patient outcomes. [4]

A nurse leader is the most important person able to strengthen the quality of healthcare in healthcare institutions. The ability to direct others to achieve desired outcomes, goals, and objectives is referred to as leadership [5,6] Paternalistic leaders are those who have a strong influence on their subordinates, give them the opportunity to explain their own ideas, allow co-decision procedures, establish control over subordinates, and encourage them to be innovative. Beyond being a leadership style, paternalism represents social-cultural characteristics. [7]

Authoritarianism, benevolence, and morality are the three dimensions of paternalistic leadership behaviors. Authoritarian leadership refers to the exercise of absolute authority by a leader. They control over subordinates and expect unquestioning obedience from them. Benevolent leadership is a behavior that demonstrates an individualized concern for personal or familial well-being outside of work relationships. A benevolent nurse leader invests time and energy in taking care of their subordinates, showing concern and encouraging them when they face challenges. Moral leadership is

exemplifies superior personal virtue, self-discipline, and selflessness. Moral nurse leadership has been identified as a type of leadership that upholds high ethical standards. [8,9]

Paternalist nurse leaders strive to create a family atmosphere within their organizations. They approach their subordinates in a 'benevolent' and 'fatherly' manner. [10, 11] Nurses who do not believe they are receiving adequate leadership support may develop negative feelings toward the healthcare system as a whole. Organizational cynicism is one of these attitudes. Organizational cynicism is defined as staff's behavioral reaction to adversity in the workplace. [12] Cynicism is characterized by feelings of hopelessness, frustration, and disillusionment. It is also associated with disdain, disgust, and distrust. As a result, cynicism is recognized as a growing issue in the workplace that necessitates immediate and comprehensive attention. [13]

Cynicism is a pessimistic attitude defined by three dimensions developed by nurses for their hospitals. The cognitive dimension is a lack of genuineness and veracity in the hospital. The emotional reaction to the hospital is the affective dimension. It is associated with negative emotions such as disrespect, anger, pain, and embarrassment. The behavioral dimension refers to negative attitudes and, more specifically, humiliating tendencies. [14]

A cynic is someone who doubts the sincerity and goodness of human motives and behaviors. It is not an innate personality trait, but rather the result of experiences such as distrust in superiors, negative leadership behaviors, role conflicts at work, and negative working conditions such as long working hours and an excessive work. Nurses suffer as a result of organizational cynicism, resulting in poor performance. [15, 16]

Job performance is the effectiveness with which nurses perform activities. It contributes to the hospital's technical core either directly by implementing a part of its technological process or indirectly by providing it with needed materials or services. Also, contextual activities are important because they contribute to hospital effectiveness in ways that shape the organizational, social, and psychological context. All these serve as the catalysts for task activities and processes. Hospitals need high-performing

nurses in order to meet their goals, deliver nursing services, and achieve competitive advantage. Performance is also important for nurses because accomplishing tasks and performing at a high level can be a source of satisfaction. [9] Because hospitals are in the service sector, they must be able to manage available human resources as efficiently as possible in order to accomplish specified goals and acquire a competitive edge [17]

Significance of study

A nursing service is a one-of-a-kind service that is provided 24 hours a day, seven days a week, and has a distinct advantage compare to other services. As a result, the hospital must continue to keep an eye on nurses' performance. [18] In addition, hospitals have higher expectations of their nurses, and nurses have higher expectations of their hospitals. [19] Head nurses play a critical role in meeting both hospitals' and nurses' expectations. Through their leadership styles in health care organizations, they play a critical role in determining whether nurses exhibit positive or negative organizational behaviors that can have a direct impact on the success of the organization. [20, 21] So, the aim of this study is to determine influence of head nurses' paternalistic leadership on hospital cynicism and job performance among intensive care nurses.

Aim of the study

This study envisioned to compare influence of head nurses' paternalistic leadership on hospital cynicism and job performance among intensive care nurses at Tanta Main University Hospitals and EL-Mehalla General Hospital

Research question

Are there differences between Tanta Main University hospital and EL-Mehalla General Hospital regarding paternalistic leadership levels, nurses' hospital cynicism levels, and nurses' job performance levels?

Subjects and Method

Study design

The research design was descriptive, comparative, and cross-sectional. This design is used to describe, compare, and investigate differences in variables between two or more groups that occur in a setting at a specific point in time. [22]

Setting

This study was conducted in all intensive care units(ICUs),including: Medical, Pediatric, Neurological, Cardiac,

Ophthalmology anesthesia, chest and neonate ICUs at Tanta Main University Hospitals which is affiliated with the Minister of Higher Education and Scientific Research. As well as neonates ICU, medical ICU, surgical ICU, and pediatric ICU at EL-Mehalla General Hospital which is affiliated with the Ministry of Health and Population in Al-Gharbia Governorate .

Subjects

All available nurses (n= 596) in the hospitals mentioned above incorporated in this study; Tanta Main University Hospitals 'ICUs (n=295) and EL-Mehalla General Hospital (n=301).

Tools

Three tools were used to gather data of the study.

1-Paternalistic leadership scale

This tool is reliant on Bor-Shiuan Cheng et al. (2004) [23] to assess to what extent staff nurses perceive their head nurses as paternalistic leaders. It consisted of two parts, as follows;

Part (1): Personal characteristics of nurses included hospital name, gender, age, marital status, ICU name, qualifications, years of experience and if attended any training courses.

Part (2): Paternalistic leadership assessment scale included 26 items and categorized into three dimensions, benevolent leadership (11 items), moral leadership (6 items), and authoritarian leadership (9 items). Nurses' responses were measured on 3-points Likert Scaling varying from (1-3) 1= disagree 2= neutral, 3= agree. Levels of paternalistic leadership represented statistically based on the cut off value into ≥75% as high level, <75%-60% as moderate level and low <60%. A higher score denoted that the staff nurses perceived that their head nurses as paternalistic leaders.

2- Organizational Cynicism Scale

Organizational Cynicism scale developed by Seher et al. (2018) [24] and modified by the researchers to assess nurses' hospital cynicism. It consisted of 15 items and classified into three dimensions; cognitive dimension, affective dimension, and behavioral dimension (5 items for each dimension). Nurses' responses were evaluated against a 3-points Likert Scale, ranging from (1-3) 1 = disagree, 2 = neutral, and 3 = agree. Levels of nurses' hospital cynicism are interpreted statistically based on the cut off value into three levels ≥75% as high level, <75%-

60% as moderate level and <60% as low level.

3- **Nurses' Job Performance Observational Checklist**

This tool was developed by Mahmoud (2019) [25] and modified by the researchers. It is designed to assess the nurses' job performance. It contained of 54 items classified into eight dimensions; work habits (7 items),staff relations and communication(6 items),communication with patients(7 items),nursing care plan activities(7 items),material planning and coordination(2 items),safety measures and patient safety(7 items),documentation(9 items), and keeping up-to-date technically(5 items).

Nurses' job performance assessed by using a three point Likert Scale ranging from (0 to 2). 0 for not done, 1 for incompletely done and 2 for completely done. Total score categorized into two levels as the following satisfactory ≥ 80 % of total score and unsatisfactory <80% of total score.

Method

Validity and reliability:

The tools were translated into the Arabic Language to be clear for all nurses' education levels and back-translated to ensure accuracy. A panel of five experts was invited to review the questionnaire from the nursing administration specialty to assess the face and content validity, as well as to check the fidelity. Based on this revision, necessary modifications were made. The content validity was 95.8%, 91.5%, and 98.2% for tools I, II, and III, respectively. The Cronbach coefficient Alpha test was drawn on to find out the tools' internal consistency. The test outcome was viewed as satisfactory as the questionnaires had high inner consistency, the paternalistic leadership assessment scale = 0.987, the organizational cynicism scale =0.911, and the nurses' job performance observation checklist = 0.862.

Pilot study:

A pilot study was conducted on 10% of ICU nurses (n = 60) selected randomly from the previous mentioned settings and excluded from the subjects to recognize the complexities and problems that may be encountered during data collection and to estimate the required time for filling out the questionnaires.

Field work:

The questionnaires were distributed to the nurses at their units individually. The

needed time to complete the questionnaires was about 20-30 minutes for tool I and II. Nurses' performance observation checklist tool was collected via the researchers' observation during the working hours. Each nurse was observed three times during different shifts, and an average was calculated for each. In addition, the researchers use three trained qualified nurses from a training unit in each of the two hospitals to assist them in the observation of nurses. The data was collected over a period of six months, from January to the end of July 2021.

Ethical considerations:

The researchers obtained approval from the administrators at two hospitals before starting the data collection. Informed consent was obtained from the nurses after clarifying the purpose of the research, and they were told that their answers would be kept confidential. The nature of the study will not cause any harm to the entire sample.

Data analysis:

The IBM SPSS software package version 20.0 was used to analyze the data fed into the computer. IBM Corporation, Armonk, New York. Numbers and percentages were used to describe qualitative data. The Kolmogorov-Smirnov test was used to verify the normality of the distribution. Quantitative data was described using range (minimum and maximum), mean, standard deviation, and median. The significance of the obtained results was judged at the 5% level. The used tests were; Chi-square test, Fisher's Exact or Monte Carlo correction, Pearson coefficient, and Mann Whitney test.

Results

Table 1: compares the nurses' characteristics at Tanta Main University Hospitals and El-Mahalla General Hospital. It demonstrates that more than half of the nurses at both hospitals were aged 30–40, with a mean age of 34.56 ± 6.28. More than 90% of nurses in both hospitals were female, and most (79.5%) of them were married. At Tanta University's main hospitals, 30.2% and 17.3% of nurses worked in neonatal and neurological ICUs, respectively, while 35.2% and 32.9% of nurses worked in medical and neonatal ICUs, respectively. As regard to qualification level, more than two thirds (72.5, 77.7%) of nurses at Tanta Main University Hospitals and El-Mahalla General Hospital had bachelor's degrees, and less than half (40.0, 42.9%) of them

had less than ten years of experience. 71.9% of nurses at Tanta Main University Hospitals attended training courses, compared to 58.8% of nurses at El-Mahalla General Hospital.

Table 2: illustrates head nurses' paternalistic leadership levels as perceived by nurses at Tanta Main University Hospitals and El-Mahalla General Hospital. It was noticed that head nurses' paternalistic leadership's benevolent, moral, and authoritarian dimensions presented a statistically significant difference at $p \leq 0.05$ between the two hospitals. Whereas, 60.3% and 70.2% of nurses at Tanta Main University Hospitals viewed their head nurses as highly benevolent and morale, respectively, only 19.9% and 19.3% of nurses at El-Mahalla General Hospital did. Also, more than half (53.2%) of nurses at Tanta Hospital perceived their head nurses as highly authoritarian compared to none of the nurses at El-Mahalla Hospital.

Figure 1: demonstrates the levels of the overall head nurses' paternalistic leadership as perceived by nurses at Tanta Main University Hospitals and El-Mahalla General Hospital. More than half (55.6%) of nurses at Tanta Main University Hospitals had a high perception level of overall head nurses' paternalistic leadership compared to only 12% of nurses at El-Mahalla General Hospital.

Table 3: compares nurses hospital cynicism levels at Tanta Main University Hospitals and El-Mahalla General Hospital. It shows that there was a statistically significant difference between nurses' perception level of hospital cynicism at Tanta Main and El-Mahalla Hospital. More than two thirds (73.2%) of nurses had low perception levels of cognitive cynicism at Tanta Main University Hospitals compared to only one third (31.6%) at El-Mahalla Hospital. More than half (58.0, 69.5) of nurses at Tanta Main University Hospitals had low perception levels of affective and behavioral cynicism. Meanwhile, 49.2 and 54.2% of nurses at El-Mahalla Hospital had moderate perception levels of affective and behavioral cynicism, respectively.

Figure 2: shows nurses overall hospital cynicism levels at Tanta Main University Hospitals and El-Mahalla General Hospital. As noticed in the figure, the majority (84.1) of nurses at Tanta Main University Hospitals had a low perception

level of overall hospital cynicism. More than half (59.8%) of nurses had a moderate perception level of overall hospital cynicism at El-Mahalla General Hospital.

Table 4: demonstrates the comparison between the levels of nurses' job performance at Tanta Main University Hospitals and El-Mahalla General Hospital. There was a statistically significant difference between the levels of nurses' job performance at Tanta Main University Hospitals and El-Mahalla General Hospital. The majority (94.6, 91.9, 89.8, 89.2, 84.1, 83.1, 79.3%) of nurses at Tanta Main University Hospitals had a satisfactory level of job performance regarding safety measures and patient safety, documentation, communication with patients, nursing care plan activities, staff relations and communication, keeping up-to-date technically and material planning and coordination, compared to half or more than half (50.2, 53.5, 57.1, 57.8, 59.5, 60.5%) of nurses at El-Mahalla general Hospital had an unsatisfactory level of all job performance dimensions respectively.

Figure 3: illustrates the levels of nurses' overall job performance at Tanta Main University Hospitals and El-Mahalla General Hospital. It can be noticed that ,91.8% of nurses at Tanta Main University Hospitals had a satisfactory level of overall job performance, compared to 51.5% of nurses at El-Mahalla General Hospital.

Table 5: illuminates the correlation between overall head nurses' paternalistic leadership, hospital cynicism, and nurses' job performance at Tanta Main University Hospitals and El-Mahalla General Hospital. There was a statistically significant negative correlation between overall head nurses' paternalistic leadership and hospital cynicism ($p\leq 0.001$) at both hospitals. Also, there was a statistically significant positive correlation between overall head nurses' paternalistic leadership and nurses' job performance ($p\leq 0.001$) at Tanta Main University Hospitals. While at El-Mahalla General Hospital, there was no correlation between overall head nurses' paternalistic leadership and nurses' job performance.

Table 6: presents relations between overall head nurses' paternalistic leadership and nurses' personal characteristics. At Tanta Main University Hospitals, there was a statistically

significant relationship between nurses' perception of head nurses' paternalistic leadership and their unit ($p \leq 0.05$) at Tanta Main University Hospitals . Also, there was a statistically significant

relationship between nurses' perception of head nurses' paternalistic leadership and their years of experience ($p \leq 0.05$) at El-Mahalla General Hospital.

Table (1): Comparison between nurses' characteristics at Tanta Main University Hospitals and El-Mahalla General Hospital

Nurses' characteristics	Total (n = 596)		Tanta (n = 295)		El – Mahalla (n = 301)		Test of sig.	P
	No.	%	No.	%	No.	%		
Gender								
Male	49	8.2	29	9.8	20	6.7	χ^2=0.048	0.826
Female	547	91.8	266	90.2	281	93.3		
Age								
<30	119	20.0	60	20.3	59	19.6	χ^2=0.100	0.992
30–<40	337	56.5	167	56.6	170	56.5		
40–<50	128	21.5	62	21.0	66	21.9		
≥50	12	2.0	6	2.0	6	2.0		
Min. – Max.	24.0 – 58.0		24.0 – 58.0		24.0 – 58.0		U= 43506.5	0.671
Mean ± SD.	34.56 ± 6.28		34.45 ± 6.29		34.67 ± 6.28			
Median	33.0		33.0		33.0			
Marital status								
Not married	109	18.3	60	20.3	49	16.3	χ^2=0.048	0.826
Married	487	81.7	235	79.7	252	83.7		
ICU name								
Chest	29	4.9	29	9.8	0	0.0	χ^2=408.51*	<0.001*
Cardiac	26	4.4	26	8.8	0	0.0		
Pediatric	41	6.9	41	13.9	0	0.0		
Neonatal	188	31.5	89	30.2	99	32.9		
Neurological	51	8.6	51	17.3	0	0.0		
General medical	34	5.7	34	11.5	0	0.0		
Ophthalmology anesthesia	25	4.2	25	8.5	0	0.0		
Surgical	31	5.2	0	0.0	31	10.3		
Medical	106	17.8	0	0.0	106	35.2		
Pediatric	65	10.9	0	0.0	65	21.6		
Qualification								
Diploma	55	9.2	28	9.5	27	9.0	χ^2=2.667	0.263
Bachelor	448	75.2	214	72.5	234	77.7		
Associate	93	15.6	53	18.0	40	13.3		
Years of experience								
<10	247	41.5	118	40.0	129	42.9	χ^2=0.044	0.998
10-<15	127	21.3	73	24.7	54	17.9		
15-<20	142	23.8	75	25.4	67	22.3		
≥20	80	13.4	29	9.8	51	16.9		
Min. – Max.	3.0 – 30.0		3.0 – 30.0		3.0 – 30.0		U= 43.869.5	0.801
Mean ± SD.	12.30 ± 5.46		12.25 ± 5.48		12.35 ± 5.44			
Median	13.0		13.0		13.0			
If attended any training courses about paternalistic leadership								
No	207	34.7	83	28.1	124	41.2	χ^2=11.21*	0.001*
Yes	389	65.3	212	71.9	177	58.8		

χ^2: **Chi square test** SD: **Standard deviation**

p: p value for comparing between the studied groups

*: Statistically significant at $p \leq 0.05$

Table (2): Comparison between head nurses' paternalistic leadership levels as perceived by nurses at Tanta Main University Hospitals and El- Mahalla General Hospital

Paternalistic leadership	Total (n = 596)		Tanta (n = 295)		El – Mahalla (n = 301)		χ^2	P
	No.	%	No.	%	No.	%		
Benevolent leadership								
Low <60%	231	38.8	49	16.6	182	60.5		
Moderate 60% -<75%	127	21.3	68	23.1	59	19.6	135.671*	<0.001*
High ≥75%	238	39.9	178	60.3	60	19.9		
Moral leadership2								
Low <60%	207	34.7	26	8.8	181	60.1		
Moderate 60% -<75%	124	20.8	62	21.0	62	20.6	199.800*	<0.001*
High ≥75%	265	44.5	207	70.2	58	19.3		
Authoritarian leadership								
Low <60%	334	56.0	127	43.1	207	68.8		
Moderate 60% -<75%	105	17.6	11	3.7	94	31.2	241.735*	<0.001*
High ≥75%	157	26.3	157	53.2	0	0.0		

χ^2: **Chi square test**
p: p value for comparing between the studied groups
*: Statistically significant at p ≤ 0.05**Table (2): Characteristics of ICU nurses (N=300)**

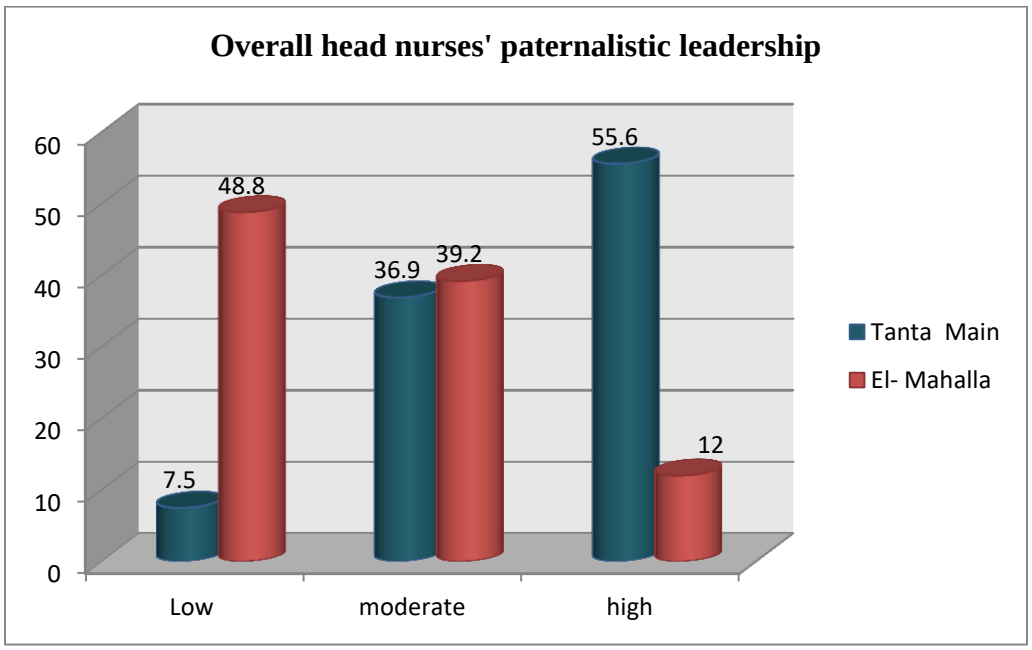

Figure (1): Levels of the overall head nurses' paternalistic leadership as perceived bynurses at Tanta Main University Hospitals and El- Mahalla General Hospital.

Table (3): Comparison between nurses' hospital cynicism levels at Tanta Main University Hospitals and El- Mahalla General Hospital

Nurses' hospital cynicism	Total (n = 596)		Tanta (n = 295)		El – Mahalla (n = 301)		χ^2	p
	No.	%	No.	%	No.	%		
Cognitive Cynicism								
Low <60%	311	52.2	216	73.2	95	31.6	111.375*	<0.001*
Moderate 60% -<75%	98	16.4	16	5.4	82	27.2		
High ≥75%	187	31.4	63	21.4	124	41.2		
Affective Cynicism								
Low <60%	203	34.1	171	58.0	32	10.6	169.314*	<0.001*
Moderate 60% -<75%	248	41.6	100	33.9	148	49.2		
High ≥75%	145	24.3	24	8.1	121	40.2		
Behavioral Cynicism								
Low <60%	247	41.4	205	69.5	42	14.0	190.154*	<0.001*
Moderate 60% -<75%	225	37.8	62	21.0	163	54.2		
High ≥75%	124	20.8	28	9.5	96	31.9		

χ^2: **Chi square test**
p: p value for comparing between the studied groups
*: Statistically significant at $p \leq 0.05$

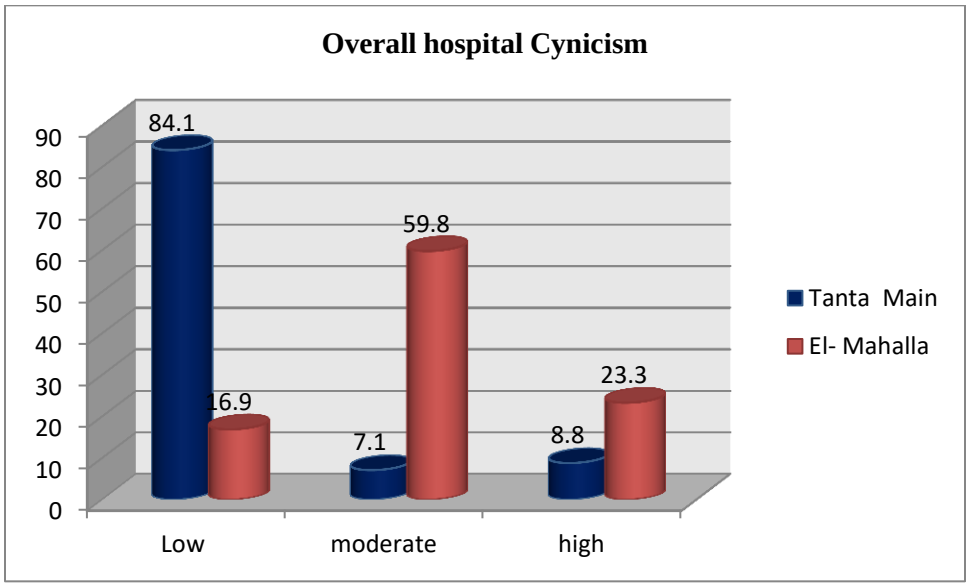

Figure (2): Levels of the overall hospital cynicism at Tanta Main University Hospitals and El- Mahalla General Hospital as perceived by nurses.

Table (4): Comparison between nurses' job performance levels at Tanta Main University Hospitals and El- Mahalla General Hospital.

Nurses' job performance observation checklist	Total (n = 596)		Tanta (n = 295)		El – Mahalla (n = 301)		χ^2	p
	No.	%	No.	%	No.	%		
Work habits								
Unsatisfactory <80%	178	29.9	32	10.8	151	50.2	100.865*	<0.001*
Satisfactory ≥ 80 %	418	70.1	263	89.2	150	49.8		
Staff relations & communication								
Unsatisfactory <80%	232	38.9	50	16.9	182	60.5	118.670*	<0.001*
Satisfactory ≥ 80 %	364	61.1	245	83.1	119	39.5		
Communication with patients								
Unsatisfactory <80%	202	33.9	30	10.2	172	57.1	146.720*	<0.001*
Satisfactory ≥ 80 %	394	66.1	265	89.8	129	42.9		
Nursing care plan activities								
Unsatisfactory <80%	226	37.9	47	15.9	179	59.5	119.957*	<0.001*
satisfactory ≥80 %	370	62.1	248	84.1	122	40.5		
Material planning and coordination								
Unsatisfactory <80%	243	40.8	61	20.7	182	60.5	97.665*	<0.001*
satisfactory ≥80 %	353	59.2	234	79.3	119	39.5		
Safety measures and patient safety								
Unsatisfactory <80%	167	28.0	16	5.4	151	50.2	147.877*	<0.001*
satisfactory ≥80 %	429	72.0	279	94.6	150	49.8		
Documentation								
Unsatisfactory <80%	185	31.0	24	8.1	161	53.5	143.162*	<0.001*
satisfactory ≥80 %	411	69.0	271	91.9	140	46.5		
Keeping up-to-date technically								
Unsatisfactory <80%	224	37.6	50	16.9	174	57.8	106.023*	<0.001*
satisfactory ≥80 %	372	62.4	245	83.1	127	42.2		

χ^2: **Chi square test**
p: p value for comparing between the studied groups
*: Statistically significant at $p \leq 0.05$

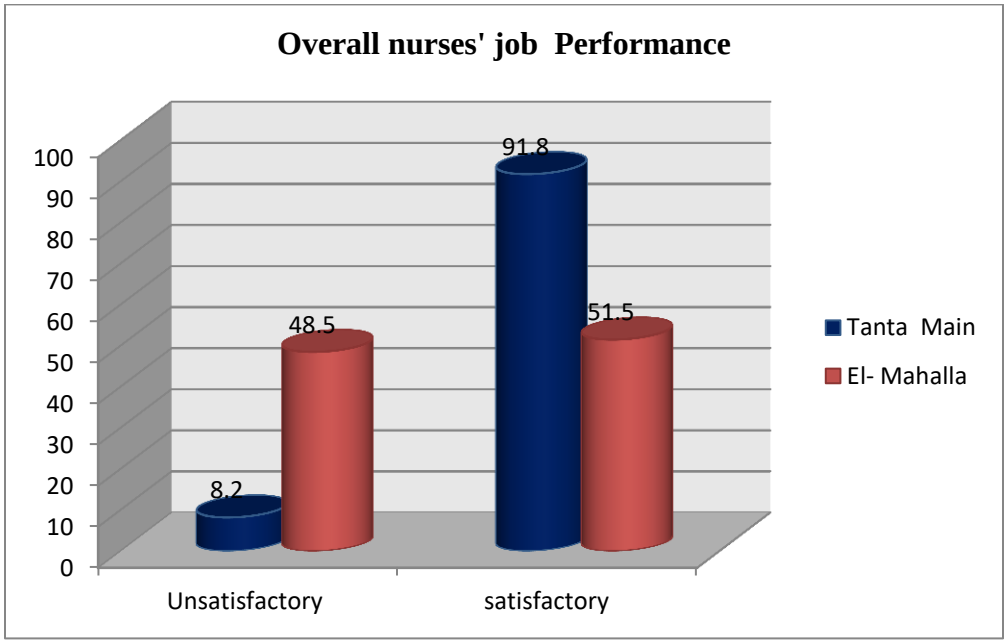

Figure (3): Levels of overall nurses' job performance at Tanta Main University Hospitals and El- Mahalla General Hospital

Table (5): Correlation between overall head nurses' paternalistic leadership, Hospital Cynicism and nurses' job performance at Tanta Main University Hospitals and El-Mahalla General Hospital

Head nurses' paternalistic leadership / Nurses' hospital cynicism& nurses job performance		Overall head nurses' paternalistic leadership	
		Tanta (n = 295)	El – Mahalla (n = 301)
Nurses' hospital cynicism	r	-0.524*	-0.151*
	p	<0.001*	0.009*
Nurses' job performance	r	0. 152*	0.042
	p	0.008*	0.467

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Table (6): Relation between overall head nurses' paternalistic leadership and nurses' personal characteristics

Nurses' personal characteristics	Overall head nurses' paternalistic leadership			
	Tanta (n = 295)		El – Mahalla (n = 301)	
	Mean ± SD	Median	Mean ± SD	Median
Gender				
Male	81.17 ± 12.95	82.69	59.68 ± 12.57	57.69
Female	80.80 ± 14.84	82.69	60.86 ± 12.45	61.54
U (p)	**3790.50 (0.877)**		**3699.50 (0.780)**	
Age (years)				
<30	79.74 ± 12.90	78.85	60.66 ± 11.53	57.69
30–<40	79.92 ± 15.23	82.69	60.10 ± 12.53	60.58
40–<50	84.09 ± 14.86	82.69	61.92 ± 13.07	63.46
≥50	83.66 ± 8.23	80.77	67.31 ± 11.41	68.27
H (p)	**3.452 (0.327)**		**2.713 (0.438)**	
Marital status				
Not married	81.35 ± 13.68	82.69	61.15 ± 14.82	61.54
Married	80.73 ± 14.86	82.69	60.68 ± 11.96	61.54
U (p)	**5918.0 (0.702)**		**6019.0 (0.781)**	
ICU name				
Chest	86.87 ± 11.81	82.69	–	–
Cardiac	77.66 ± 9.94	82.69	–	–
Pediatric	84.24 ± 14.55	88.46	–	–
Neonatal	77.25 ± 17.53	73.08	61.56 ± 10.78	61.54
Neurological	77.60 ± 14.00	73.08	–	–
General medical	85.52 ± 11.36	82.69	–	–
Ophthalmology anesthesia	84.54 ± 10.38	82.69	–	–
Surgical	–	–	63.59 ± 12.64	61.54
Medical	–	–	58.36 ± 12.86	57.69
Pediatric	–	–	62.07 ± 13.61	61.54
H (p)	**23.523* (0.001*)**		**5.624 (0.131)**	
Qualification				
Diploma	80.43 ± 12.98	82.69	62.18 ± 10.33	61.54
Bachelor	81.78 ± 14.59	82.69	60.65 ± 13.01	61.54
Associate	77.25 ± 15.39	73.08	60.38 ± 10.30	59.62
H (p)	**3.471 (0.176)**		**0.309 (0.857)**	
Years of experience				
<10	81.11 ± 13.09	82.69	59.55 ± 13.05	57.69
10-<15	79.64 ± 14.93	78.85	59.20 ± 11.92	57.69
15-<20	80.54 ± 16.85	78.85	61.24 ± 12.18	61.54
≥20	83.49 ± 14.19	82.69	67.87 ± 9.59	69.23
H (p)	**1.580 (0.664)**		**14.159* (0.003*)**	
If attended any training courses				
No	80.93 ± 15.02	78.85	61.40 ± 12.75	61.54
Yes	80.80 ± 14.54	82.69	60.30 ± 12.23	59.62
U (p)	**8687.0 (0.864)**		**10436.50 (0.469)**	

U: Mann Whitney test H: H for **Kruskal Wallis test** *: Statistically significant at $p \leq 0.05$

Discussion

In a hospitals where services for human life are obtainable continually under all conditions, nursing leadership practices affect many organizational outcomes in terms of attaining goals, especially since they directly affect nurses' output.[4] Nurses constitute the largest part of the healthcare manpower, and their professional ability plays an important role in the actual operation of healthcare care. So, constructive and powerful nurses leaders as "paternalistic leadership" aware of nurses' needs are very vital to helping them to provide more efficient performance and qualified service while minimizing or reducing negative situations like hospital cynicism. Therefore, the current study aimed to identify influence of head nurses' paternalistic leadership on hospital cynicism and job performance among intensive care nurses.

Regarding nurses' perception of head nurses' paternalistic leadership, the study findings revealed that more than half of nurses at Tanta Main University Hospitals had a high perception level of head nurses' paternalistic leadership as total compared with nurses at El-Mahalla General Hospital. Also, it was observed that benevolent, moral, and authoritarian paternalistic were significant differences between the two hospitals. These findings may be due to head nurses at Tanta hospital work at teaching hospitals, which offer them more opportunities to receive a management training program that assists them to learn and understand effective leadership practices than El-Mahalla hospital head nurses. So, head nurses who worked at Tanta hospital looked like family members to their staff nurses, dedicated all their energy to taking care of other health care providers, highly met nurses' needs according to their personal desires, and cared more about the personal lives of nurses than El-Mahalla hospital leaders.

In the same scene, **Sungura (2019) [7]** determined that the mean scores of the answers given by the nurses to the paternalistic leadership were moderate. Also, **Ugurluoglu et al. (2018)**[9]**,** who conducted a study on staff working in a university hospital, determined that participants' perceptions of paternalistic leadership were moderate in terms of the sub-dimensions.

Additionally, **Nal and Tarm (2017)** [26] found that the average score on the paternalistic leadership for healthcare workers was moderate. While **Saygili et al. (2020)** [17] contradicted the current findings and determined that paternalistic leadership perceptions of health staff were at a low level.

The high perceptions of nurses about head nurses' paternalistic leadership will contribute to the additional commitment of nurses to the hospital as paternalistic leadership is based on an understanding of altruism, love, and protection that requires decisions for the benefit of other individuals rather than the leader's own will and interest. [17] **Nal and Tarım (2017)[26]** found that paternalistic leadership has a significantly high level of positive impact on the job satisfaction of healthcare workers. Also, **Hawass (2017)** [27] has been proven that paternalistic leadership increases feedback from units and liability, increases levels of self-efficacy and attentiveness in an organization.

The present findings explain that more than half of the nurses at Tanta Hospital perceive their head nurses as highly authoritarian, compared with none of the nurses at El-Mahalla Hospital. This result may be due to teaching hospitals have hierarchies and strong structures that promote a top-down management system rather than governmental hospitals that allow Tanta Hospital head nurses to exercise authoritarian leadership. Therefore, Tanta Hospital head nurses were looking to use power to control their staff's tasks through applying inflexible routines, rules, and policies to get things done in a work setting. But, head nurses use these behaviors to encourage nurses to move beyond obedience with formal agreements, which in turn increases nurses' confidence in their judgments. This finding is supported by the positive correlation between head nurses' paternalistic leadership and nurses' job performance at Tanta Hospital rather than at El-Mahalla Hospital, where there is no correlation between head nurses' paternalistic leadership and nurses' job performance.

Wanga et al. (2018) [28] supported these findings and proposed a novel typology of paternalistic leadership styles based on how leaders show authoritarianism and benevolence as the two vital components of this type of leadership. Also, they found a

positive relationship between classical paternalistic leadership and subordinate performance as strong as that between benevolence-dominant paternalistic leadership and performance. While **Gao et al. (2014)** [29] discovered that authoritarianism has a negative influence on team performance in their study of the impact of paternalistic leadership on team performance.

Regarding nurses' perception of hospital cynicism, it was concluded from the study results that there were significant differences among the nurses at two hospitals. Confirming that the majority of nurses at Tanta Hospital had a low perception level of overall hospital cynicism compared with over half of nurses at El-Mahalla Hospital who had a moderate level. This finding could be attributed to nurses at Tanta Hospital having more advantages because they work at a university hospital, which provides them with more opportunities for continuous training and education, higher salaries and opportunities for advancement. Furthermore, nurses at Tanta Hospital reported a high perception level of head nurses' paternalistic leadership. This nature of relationship between leaders and nurses has been reflected to have a positive impact on the institutions as it increases nurses' commitment to work, social loyalty, and responsibility toward others. The same result was found by **Sungura (2019)** [7], who determined that nurses' perceptions of organizational cynicism were low. Contradictory to these results, **Aly et al. (2016)**[30] who found higher levels of cynicism among nurses.

Conversely, the cynical behaviors of nurses at El-Mahalla Hospital could be a reaction to antagonistic surroundings in the work environment, such as long working hours and lack of arrangement of the work schedules and work amplification. Additionally, ineffectual management and leadership as lacks trustworthiness, justice, transparency producing inhospitality, annoyance, insecurity, desperateness and mistrust of institutions. **El-liethiey and Atalla (2021)**[31] supported this finding and concluded that the studied nurses perceived moderate organizational cynicism. In addition to, **Bacaksız et al. (2018)** [32] who determined that the level of organizational cynicism of subordinates was moderate in their

study conducted with hospital subordinates.

The study results illustrated that the highest level of hospital cynicism as perceived by the nurses at El-Mahalla Hospital was related to affective cynicism. This may be due to those nurses who are overwhelmed by a sense of angst and worsening when they think about their hospital with intense negative mental dispositions. Also, they usually complain about the practices of their hospital to individuals outside. This result is supported by **Aly et al. (2016) [30],** who illustrated that nurses have the highest point in the affective (emotional) dimension compared to the behavioral and cognitive dimensions of organizational cynicism. Contradictory, **El-liethiey and Atalla (2021) [31]** and **Archimi et al. (2018) [33],** who found that the lowest mean percent score of organizational cynicism, was related to affective cynicism.

Regarding nurses' job performance, the researchers found a statistically significant difference between the levels of nurses' performance at two hospitals. The majority of nurses at Tanta Main University Hospitals had a satisfactory level of total performance compared to around half of them at El-Mahalla General Hospital. These results may be due to El-Mahalla Hospital nurses had poor working environment, stress, job dissatisfaction, and increased workload. Also, these results could be due to the fact that El-Mahalla Hospital nurses perceived their head nurses as low-paternalistic leaders who did not communicate in a good manner with all staff all the time. Also, they sometimes were unable to assess their ICUs' needs for equipment, materials, and processing and were unable to apply their safety measures to prevent their staff from hazards effectively. In addition, they may not provide adequate feedback for nurses' performance and use an ineffective sanction system that affects staff morale. These challenges may replicate nurses' creativity in the development of improved methods or approaches to solving work issues.

In the same scene, **Islam et al. (2019) [34]** indicated that the level of job performance of clinical nurses was at a moderate level. Moreover, **Ibrahim et al. (2016) [35]** revealed that the level of performance among the nurses was relatively low. While, **Al-Makhaita et**

al. (2014)[36] indicated that more than half of the studied nurses rated good performance scores in primary as well as secondary levels of healthcare.

The study findings found a statistically significant negative correlation between overall head nurses' paternalistic leadership and hospital cynicism at both hospitals. It can be stated that paternalist leadership had an effect on hospital cynicism. Where, the study concluded that paternalistic leadership positively affects nurses' positive feelings and reliance towards the organization. The nurses who are in a paternalistic relationship with the leader see the hospital as a family environment, track their leaders, admit the leader's authority, and trust that the leader knows what is best for them. Therefore, nurses' high perceptions of paternalistic leadership will contribute to less cynical behavior toward the institution.

Sungura (2019) [7] supported the present findings and found that, there were negative and significant relationships between head nurses paternalistic leadership and dimensions of hospital cynicism. As the nurses' perceptions of paternalistic leadership increased, their perceptions of cognitive, affective, and behavioral cynicism decreased. While **GÜLEÇ (2021)** [37] contradicted the present findings and found that there was no meaningful relationship between paternalist leadership and organizational cynicism.

Also, there was a statistically significant positive correlation between overall head nurses' paternalistic leadership and nurses' job performance at Tanta Main University Hospitals. This means paternalistic leaders cultivate nurses' performance. Paternalistic leadership can contribute to the mental and physical readiness of nurses as well as create positive interactions and synergy between nurses and other workforces. Also, Paternalistic leaders give consideration and guidance to nurses who have poor performance based on pointers of paternalistic leadership style, such as considering nurses who are immature and being too protective of them.

The study of **Fing et al. (2021)** [18] supported the current study results and indicated that there is an influence of a paternalistic leadership style on the performance of nurses at the Royal Prima General Hospital Medan. The nurses think that the paternalistic

leadership style of the head of the nursing room is mostly strong with the high performance of the nurses. Additionally, **Al-Ghazali (2020)**[38] found that nurses maintained their effective levels of performance for all three consecutive shifts because their leaders had good paternalistic leadership styles. **Tan Zhiying (2017)** [39] contradicted the current findings and indicated that paternalistic leadership did not have a significant impact on performance.

Conclusion

According to the study findings, nurses perceived a high level of head nurses' paternalistic leadership at Tanta Main University Hospitals and a low level at El-Mahalla General Hospital. Nurses perceived a low level of hospital cynicism at Tanta Main University Hospitals and a moderate level at El-Mahalla General Hospital. Nurses at Tanta Main University Hospitals performed better than nurses at El-Mahalla General Hospital. Head nurses' paternalistic leadership had a significant influence on hospital cynicism at both hospitals (Tanta Main and El-Mahalla General Hospital). In addition, head nurses' paternalistic leadership has an effect on the performance of nurses at Tanta Main University Hospitals. At El-Mahalla General Hospital, there was no correlation between head nurses' paternalistic leadership and nurses' job performance.

Recommendations

For the hospital's administration

Construct regular feedback approaches that focus on positive attributes of powerful leaders and required leader abilities and behaviors.

Develop training programs to prepare new and inexperienced head nurses for leadership practices.

Adopt an open-door policy to play a more active and vital role in preventing cynicism especially at El-Mahalla General Hospital.

Effective training programs for nurses on stress management, and emotional intelligence are helpful in handling stressful situations that can result in reducing hospital cynicism and ultimately improved performance especially at El-Mahalla General Hospital.

Maintain continuous training and development activities for nurses relating to staff relation and communications, material planning and

coordination, nursing care plan activities and communication with patient and updated skills is necessary especially at El-Mahalla General Hospital.

For head nurses

Display “fatherly” management styles to nurses that help in reduce hospital cynicism and improve performance especially at El-Mahalla General Hospital.

Arrange appreciation programs, provide unbiased performance appraisals, build a positive work experience, and increase nurse’ motivation.

Increase nurses' autonomy and empowerment by forming new working relationships among staff, encouraging nurses to be aware of potential problems that need to be addressed.

Further research can be conducted to identify the relationship between paternalistic leadership and nursing outcomes as well as patient outcomes.

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Relation between Intensive Care Units Nurses' Readiness for Change and Work Environment Characteristics at El – Menshawy General Hospital

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Abstract

Background: Changes in healthcare organizations are ongoing, but their implementation is extremely difficult, so healthcare worker should work together. Supportive professional practice environment is significantly associated with quality of care, stimulating and managing organizational change. **Aim:** to assess the relation between intensive care units nurses' readiness for change and work environment characteristics at El – Menshawy General Hospital. **Subjects and Method: Study design:** A descriptive correlational study design was used. **Setting:** The study was conducted in all Intensive Care Units (ICUs) of El Menshawy General Hospital. **Subjects:** It consisted of all (n=164) nurses working in ICUs. **Tools:** Two tools were used, Readiness for Change Questionnaire and Nursing Work Environment Characteristics Questionnaire. **Results:** The results showed that 66.6% of the ICU nurses' had weak levels of overall readiness for change. 58.5% of the ICU nurses' perceived fair level of nursing work environment. **Conclusion:** There was a statistically significant positive correlation between overall ICU nurses' readiness for change and their work environment. **Recommendations:** Informing nurses about policies and practices that decrease the potential negative impact of the proposed change. Conducting training program that support nurses to be adapted with change. Creating an environment which encourages nurses to participate in decision making.

***Key words*:** Intensive care units nurses, Readiness for change, Nursing work environment.

Introduction

Healthcare organizations often face with pressures for change, which are both internal and external in nature. External pressures include increasing globalization, communication explosion and political pressures. While, internal pressures encompasses the increasing level of education, improving socio-economic status and the desire to live a better quality of life.(1) Change is described as transition from one state to another, it is concerned with break down existing structures and create new one. Organizational change is a way to impart new attitude and behaviors in nurses that will help them to perform their tasks more effectively, efficiently while overcoming their fears against change. (2)

Change does not suddenly happen and should be preceded by readiness for change. Readiness is viewed as the degree to which an organization is assessed as ready to experience change. (3) Healthcare organizations are increasingly required to improve their ability to enhance nurses' support or acceptance for change initiatives through their readiness and beliefs about the change.(4) The concept of readiness for change, including the ability of an organization to manage change as well as the motivation and character attributes of program leaders and the staff, institution resources, and the organization climates that determine whether significant changes are expected to occur in any organization.(5) Responses to change dimensions are readiness, commitment and resistance.(6)

Readiness for change includes factors such as, appropriateness, management support, change- efficacy, and personally beneficial. (7) Commitment to change includes, affective, continuance and normative commitment to change. Routine seeking, emotional reaction, short-term thinking and cognitive rigidity are all aspects of resistance to change. (8) The healthy practice environment is the crucial fact and challenge for the nurse managers and leaders, so they must regularly assess the nursing practice environment to maintain and improve it. The organizational aspects of a work context that facilitate or hinder professional activity have been defined as the nursing practice environment. Work environment entails nurses' safety, job security, good working

relationship among nurses, recognition for best effort and performance, greatly inspired for performing well and effective involvement in decision-making processes of the organization.[9]

To create a positive practice environment appropriate support is needed to attract and retain nurses so that positive consequences can be achieved for patients and a nurse's satisfaction. [10] There are five characteristics to professional nursing practice environment that interact and influence nurse, patient, and organization outcomes. Nurse participation in hospital affairs, nursing foundation for quality of care, nurse manager's ability, leadership and support of nurses, staffing and resources adequacy, and collegial nurse-physician relationships are among these qualities. [11]

Significance of the study:

Nurses are vital to the effectiveness of organizational change and play an important role in the change process.[12] Effective change stem from mixture and integration of different aspects including individual, organizational, and contextual factors. The interactions amongst these variables provide an explanation about how and why healthcare organizational change efforts succeed or not.[13] A favorable professional nursing practice environment can have an impact on a nurse' readiness for change. The absent of essential work environment aspects impedes the nurse' ability to provide high-quality and safe care is influence by a lack of time or resources which required to complete comprehensive assessments. [14]

Aim of the study

This study aims to assess the relation between intensive care units nurses' readiness for change and work environment characteristics at El – Menshawy General Hospital.

Research Question

-What is the relation between intensive care units nurses' readiness for change and work environment characteristics at El – Menshawy General Hospital?

-What are the levels of ICU nurses' readiness for change?

-What are the levels of ICU nurses' perception of work environment characteristics?

Subjects and Method

Study design:

A descriptive correlational study design was used to achieve the aim of the study. .It is a design that uses questionnaires to identify variables and relationships among them when enough information exists. [15]

Setting:

The study was conducted in ICU_S at Menshawy General Hospital, which affiliated to Ministry of Health and Population, (300) bed capacity, it divided into outpatient clinics and inpatient units. Inpatient units includes Intensive Care Units, Pediatric, Surgical , Orthopedic , Operating Rooms, Renal dialysis unit ,Urology , Obstetrics and Gynecology ,Medical, Emergency , Isolation, Poising center , Neonate Surgery , Oral and Maxillofacial surgery , and Endoscopes , CT scan , MRI , ECO ,X –Ray, Laboratories ,Sonar , Blood bank, laundry and kitchen.

The study was conducted in all ICUs including; Medical Pediatric, Cardiac, Neonate, Neuro, and Medical Intensive Care Units.

Subject:

The study subject was consisted of all (n=164) available nurses working in ICUs include Pediatric (n=22), Cardiac (n=20), Neonatal (n=56), Neuro (n=13),and Medical ICU (n=53). The subject was calculated to be 164 nurses at 95% confidence level and purposive 90% power of the study and available at time of data collection.

Tools of data collection:

To achieve the aim of the present study, the following tools were used:

Tool I: Readiness for Change Questionnaire

This tool was developed by the researcher based on Herscovitch and Meyer (2002) [16], Oreg (2003) [17], Anjani and Dhanapal (2012) [18] and El- Beshlawy F. (2018) [19]. This tool consisted of four parts as follow; **Part one:** Nurses' characteristics data included age, sex, years of experience, marital status, residence and level of education.

Part two: Nurses' readiness to change contained 20 items classified into four subscales, as follow; appropriateness included 6 items, management support included 4 items, change efficacy included 7 items and personally beneficial included 3 items.

Part three: Nurses' commitment to change contained 13 items classified into three subscales, as follow; affective included 5items, continuance included 4 items and normative included 4 items.

Part four: Nurses' resistance to change contained 13 items classified into four subscales, as follow; routine seeking included 4items, emotional reaction included 3items, short-term thinking included 2items and cognitive rigidity included 4items.

Scoring System

Nurses' responses measured on a five-points Likert-Scale ranging from (1-5), which 5= strongly agree, 4= agree, 3= uncertain , 2= disagree and 1= strongly disagree. Items (10, 19, 20) related to readiness for change, items (6, 7, 8, 11) related to commitment to change and items of resistance to change all these items were negative so the researcher reversed the score.

The level of readiness for change determined as: [20]

-Strong nurses' readiness for change ≥75%.

-Moderate nurses' readiness for change from 60% to <75%.

-Weak nurses' readiness for change <60%.

Tool II: Nursing Work Environment Characteristics Questionnaire

This tool was developed by the researcher based on Lake (2002) [21] and Swiger et al. **(2017)** [22]. It was used to assess nursing practice environments (Work Index). This tool contained 24 items classified into five domains, as follow;

Nurse participation in hospital affairs included 9items, nursing foundations for quality of care included 5items, nurse manager ability, leadership and support of nurses included 5items, staffing and resource adequacy included 3 items, collegial Nurse–Physician Relations included 2 items.

Scoring System:

Nurses' responses measured on a five-points Likert-Scale ranging from (1-5), which 5= strongly agree, 4= agree, 3= uncertain, 2= disagree and 1= strongly disagree.

The level of nurses' responses determined as [40]:

-Good nursing work environment ≥75%.

-Fair nursing work environment from 60% to <75%.

-Poor nursing work environment <60%.

Method:

1- Ethical considerations;

- Approval of ethical committee at faculty of nursing was obtained.
- The researcher introduced herself to the nurses, they informed consent for participation was obtained after explanation of the nature and the purpose of the study, confidentiality of the information obtained from them .
- The right to terminate participation at any time was accepted.
-The nature of the study wasn't causing any harm for the entire sample.
-Assuring the nurses about the privacy and confidentiality of the collected data and explained that it was used for the study purpose only.

2-Official permission to conduct the study was obtained from responsible authorities at El Menshawy General Hospital .The purpose of the study was made clear to the medical and nursing directors of the hospital to gain their cooperation.

3- The study tools were modified by the researcher based on review of the related literatures.The tools were translated into Arabic language and reviewed by the supervisors and submitted to five experts in the field of nursing administration to check content validity and clarity of questionnaire. The face validity value of tool (I) was 87.3% and tool (II) was 85.4%. Based on the experts' responses, certain modifications were made and some sentences modified using simple words.

4- A pilot study was carried out on 10% (17) nurses and they were excluded from the study subjects. It conducted to test the tools for its clarity, feasibility, applicability, relevance of the questions, and to determine the needed time to complete the questionnaire.

5-Reliability of tools tested using Cronbach Alpha Coefficient test. Reliability of tool (I) was 0.940 and reliability of tool (II) was 0.851.

6- Data collection phase: The data were collected from nurses by the researcher. The researcher met the ICU nurses in small groups at their work settings and distributed the questionnaire. The estimated time needed to complete the questionnaire items from nurses was 20-30 minutes. The subjects recorded the answers in the presence of the researcher to clarify and ascertain all questions were answered. The data was collected over period of six months started from

January until June, 2020.

7- Statistical analysis of the data data were fed to the computer and analyzed using IBM SPSS software package version20.0.(Armonk, NY: IBM Corp) Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum), mean, standard deviation. Significance of the obtained results was judged at the 5% level.

Results

Table (1): Illustrate Intensive Care Unit nurses' personal characteristics. It showed that around half (50.6%) of ICU nurses' age ranged between 20 - < 30 years with mean age 29.57 ± 5.80. The majority (90.2%) of ICU nurses were female and also the majority (91.5%) of them were residence in rural area. Regarding level of education, majority (87.8%) of ICU nurses' had Bachelor degree in nursing, while the minority (3.7%) of them had master degree in nursing. Also, 92.1% of ICU nurses' were married. Regarding ICU nurses' years of experience, around three fifths (61%) of them had less than 10 years of experience, with mean score (9.10 ± 6.52). More than one- third (34.1 %) of ICU nurses' were working in Neonatal ICU, followed by 32.3% of them working in Medical ICU.

Table (2): Illustrate overall ICU nurses' readiness for change. The table revealed that, two thirds (66.6%) of ICU nurses' had weak level of readiness for change. While, around one third (33.5%) of the ICU nurses' had moderate level of readiness for change.

Figure (1): Illustrate levels of ICU nurses' readiness for change. The table shows that, around one third (31.7%) of the ICU nurses' had strong readiness for change .While, less than two thirds (63.4%) of them had moderate readiness for change and minority (4.9%) of them had weak readiness for change.

Figure (2): Shows levels of ICU nurses' commitment to change. Minority (2.4%) of ICU nurses' had strong commitment to change while two fifths (40.2%) of them had moderate commitment to change. Above half (57.3%) of them had weak commitment to change.

Figure (3): Shows levels of ICU nurses' resistance to change. According to this figure, the minority (0.6%) of the ICU nurses' had strong and moderate resistance to change, while

(98.8%) of them had weak resistance to change.

Figure (4): Shows levels of ICU nursing work environment characteristics. Minority (4.9%) of the ICU nurses' perceived good level of nursing work environment. Above half (58.5%) of them perceived fair level of nursing work environment while more than one third (36.6%) of them perceived poor level of nursing work environment.

Figure (5): Represents correlation between overall ICU nurses' readiness for change and overall nursing work environment. The figure clear that there was a positive significant correlation was found between overall ICU nurses' readiness for change and their work environment. $r = 0.614$

Table (1): Intensive Care Unit nurses' personal characteristic (n = 164)

Characteristics	Nurses	
	No.	%
Age		
20 - < 30	83	50.6
30 - < 40	70	42.7
≥40	11	6.7
Min. – Max.	22.0 – 46.0	
Mean ± SD.	29.57 ± 5.80	
Sex		
Male	16	9.8
Female	148	90.2
Residence		
Rural area	150	91.5
Urban area	14	8.5
level of education		
Master in nursing	6	3.7
Bachelor degree in nursing	144	87.8
Diploma in nursing	14	8.5
Marital status		
Married	151	92.1
Un married	13	7.9
Years of Experience		
<10	100	61.0
10-<15	33	20.1
≥15	31	18.9
Min. – Max.	1.0 – 28.0	
Mean ± SD.	9.10 ± 6.52	
Type of ICU		
Pediatric	22	13.4
Cardiac	20	12.2
Neonatal	56	34.1
Neuro	13	7.9
Medical	53	32.3

Table (2): Distribution of the ICU nurses according to overall readiness for change (n=164)

Readiness for change dimensions	Level of ICU nurses' readiness for change					
	Strong readiness		Moderate readiness		Weak readiness	
	No.	%	No.	%	No.	%
Nurses' readiness for change	52	31.7	104	63.4	8	4.9
Nurses' commitment to change	4	2.4	66	40.2	94	57.3
Nurses' resistance to change	1	0.6	1	0.6	162	98.8
Overall	**0**	**0.0**	**55**	**33.5**	**109**	**66.6**

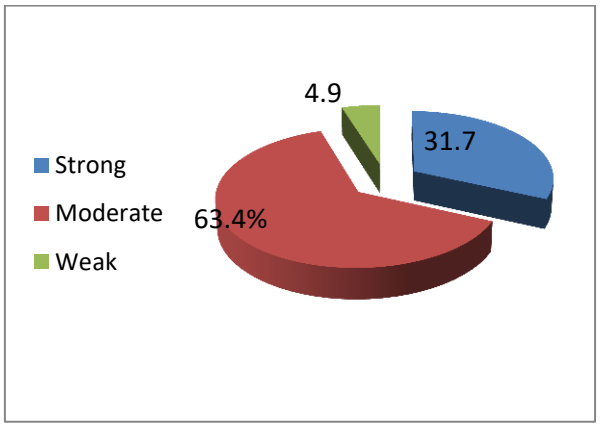

Figure (1): Levels of ICU nurses' readiness for change dimension (n =164)

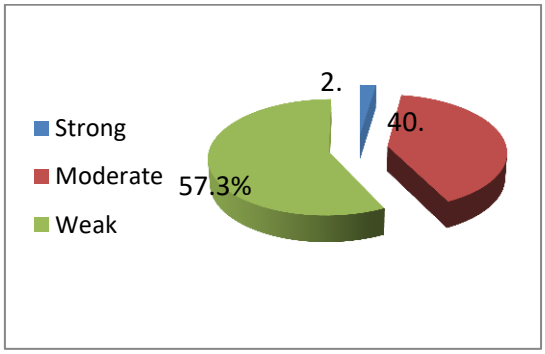

Figure (2): Levels of ICU nurses' commitment to change dimension (n =164)

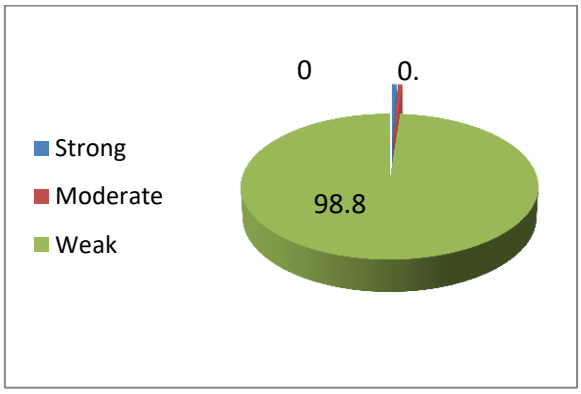

Figure (3): Levels of ICU nurses' resistance to change dimension (n =164)

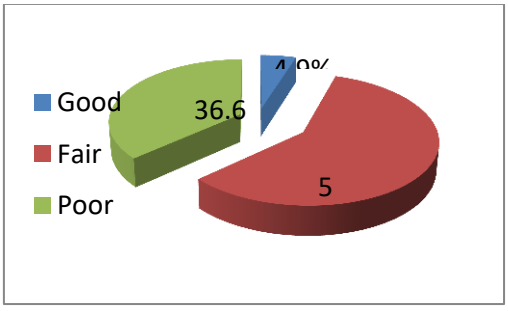

Figure (4): Levels of ICU nursing work environment characteristics (work index) (n =164)

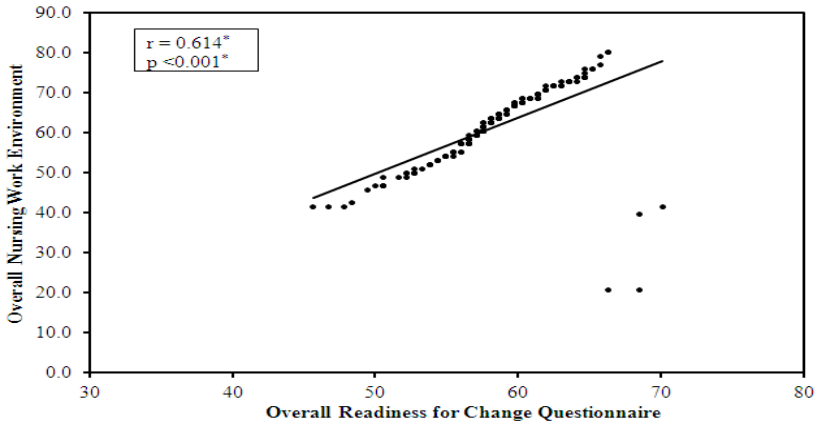

Figure (5): Correlation between overall nurses' readiness for change and overall nursing work environment (n = 164)

Discussion

Nurses' readiness for change is vital for achieving healthcare organizational goals and the success of change programs. The culture of healthcare organizations can be an influential character that has an effect on nurses' work environment and enhances the hospital's ability to adapt to environmental changes. If nurses are committed to their organization, the organizational changes can be managed successfully. [23]

In terms of overall ICU nurses' readiness for change, the present study discovered that, the majority of ICU nurses' had a low level of readiness for change. These findings could be due to lack of management support, appreciation, clear information, communication and assistance for nurses in decision-making. So, they were less commitment and less motivated to participate in any change program. This finding in the same line with **Madsen (2018)** [24] **and Inandi and Gilic (2016)** [25] they reported that nurses had low readiness for organizational change. This finding is contradictory with **Andrew (2017)** [26] who found that nurses had high readiness for organizational change.

Regarding to the levels of ICU nurses' readiness for change dimensions, the findings of the present study illustrated that, the highest percentage of ICU nurses' had moderate readiness for change dimension. These results may be due to inadequate resources, poor communication system, vague information about change, less opportunity to participate in the change process and lack of staff training and development. The current results were in the same line with **El-Sayed et al. (2017)** [13] they found that the nurses had a moderate level of change readiness. The study findings disagreed with **El-Sayed et al. (2019)** [12] they show that, most of nurses had a high level of change readiness.

The present study finding that, more than half of ICU nurses' had weak commitment to change dimension. These findings could indicate that nurses are dissatisfied with their jobs as a result of work overload, lake communication skills, insufficient resources and poor working relationships. The current study was

agreement with **Dorgham (2012)** [27] who reported that the participants had low commitment toward their hospital. These results of the current study were agree with **Laschinger and Almost (2015)** [28] they found that, nurses less committed to their healthcare institutes, and less motivated to participate in any change process. The current study were disagreement with **Hakami et al. (2020)** [29] they found that the majority of the staff nurses had moderate level of organizational commitment. Also **Abd-elwahab and Elguindy (2014)**[30] they reported that, the mean score of staff nurses' organizational commitment was moderate. Also, it were inconsistent with the study demonstrated by **Lorber and Savic (2014)** [31] they mentioned that, the level of commitment among nurses was between high and moderate. Similar findings were also reported by **El-Demerdash et al. (2013)** [32] they found that, three-fourths of staff nurses had a moderate level of organizational commitment.

The findings of the current study represented that, majority of the ICU nurses' had weak resistance to change dimension. These results may be attributable to a focus on benefits and discuss the effects of change on work values, attitudes, skills and stuff relation. This result was in accordance with **Yilmaz and Kilicoglu (2013)** [33] they showed low dispositional resistance to organizational change. This result was contradictory with **Lamm and Gordon (2010)** [34] they found higher dispositional resistance to change among study subjects.

The present study found that, high percent of ICU nurses perceived a fair level of nursing work environment. These findings could indicate that nurses with more autonomy, greater control over the environment, and good relations with the medical team are conducting practice. These results congruent by the study of **Al Moosa (2020)** [35] they indicated that the studied nurses had moderate level of perception related to their work environment. Also, the results were supported by the study carried out by **El-Sayed et al. (2019)** [12] shows that the greatest portion of the studied nurses had moderately perceive professional nursing practice work environment, and **Raquel (2013)** [36] found that nurses had moderate

perception toward professional nursing practice environment.

These findings were contradicted with **Moisoglou (2020)** [37] who revealed that the studied nurses perceived unfavorable work environment. The findings were not supported by the study carried out by **Hessels et al. (2017)** [23] they found that there was a high attribute favoring professional nursing practice environment. The results were disagreement with **Lambrou et al. (2014)** [38] they stated that nurses perceived their professional working environment as stressful and this is due to low attributes favoring professional.

Concerning correlation between overall ICU nurses' readiness for change and overall nursing work environment, the results of the current study showed that, there was a positive statistically significant correlation between ICU nurses' readiness for change and their work environment. These findings could be attributed to the current work environment which allows nurses to make essential work decisions that enhance their readiness for change. Nurses' readiness to organizational change is enhanced by receiving assistance from their supervisor, and working as a team with physicians through good relationships and collaboration.

These findings were consistent with **El Gohary and Abdelazyz (2020)** [39] who found that, there was a highly statistically significant positive correlation between nurses' readiness for organizational change and professional nursing practice environment .This result is in agreement with **EL-sayed et al. (2019)**[12] who found that there was statistical positive correlation between change readiness and professional nursing environment practices. Also, the study of **EL-sayed et al. (2017)** [13] they found significant correlation between change readiness and professional nursing environment practices.

Conclusion

The present study concluded that majority of ICU nurses' had a low level of readiness for change. Highest percentage of ICU nurses' had moderate readiness for change dimension. Also most of ICU nurses' had weak commitment to change dimension. While majority of ICU nurses had weak resistance to change

dimension. Most of ICU nurses perceived a fair level of nursing work environment. There was a statistically significant positive correlation between overall ICU nurses' readiness for change and their work environment.

Recommendations

Based on the findings of the present study, the following recommendations are suggested

For hospital administration:

-Establish an effective work environment with adequate staffing, resources, and encourage teamwork.

-Encourage the new ideas and foster creativity among ICU nurses and provide nurses with clear information about change.

For nursing mangers:

-Assess of ICU nurses' readiness toward organizational change before initiation of organizational change.

-Continuously monitor and evaluate ICU nurses' readiness toward organizational change.

For staff nurse:

- Participate in all change programs to increase their knowledge about change.

-Be up to date with new technologies and procedures.

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The Influence of Workplace Ostracism and Organizational Cynicism on Organizational Silence among Nursing Staff

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Abstract

Background: Workplace ostracism limits opportunities for social interaction and discourages nursing staff from forming lasting and meaningful relationships in an organization and organizational cynicism and organizational silence are barriers against the improvement of organizations. **Aim:** The study aimed to investigate the effect of workplace ostracism and organizational cynicism on organizational silence among nursing staff. **Subjects and Method: Design:** Descriptive correlation research design was utilized. **Setting:** The study was conducted at medical and surgical departments at Benha University Hospital. **Subjects:** a sample of nursing staff 362 (46 head nurses and 316 nurses). **Tools:** Three tools were used for data collection of this research as follows; workplace ostracism scale, organizational cynicism scale and organizational silence scale. **Results:** Ninety percent (92.5%) of nursing staff had a low level of workplace ostracism, more than two third (68.8%) of nursing staff had a low level of total organizational cynicism, and less than half (45.9%) of nursing staff had a high level of total issues for remaining organizational silence. **Conclusion:** A significant positive correlation between total workplace ostracism dimensions, total organizational cynicism dimensions and dimensions of organizational silence. **Recommendations:** it is recommended to conduct continuous periodic training programs for nursing staff in different health care units to increase their awareness about organizational cynicism, development of a cooperative system considers nursing staff thought and ideas, which leads to a sense of loyalty, cooperation, and commitment toward the hospital, and improve and develop methods and mechanisms for communication with nurses to avoid the silent behavior of the nursing staff.

Keywords*:* Organizational cynicism, organizational silence, nursing staff, workplace ostracism.

Introduction

A nurturing emergent concern is developed in healthcare organizations for diverse healthcare professionals, specifically nurses' attitudes. Effectiveness and efficiency of nurse's performance can be affected by their negative emotions [(1)]. The mechanism of ostracism is based on the proposition of the 'Social Exchange Theory'. Negative responses are created, once any individual or employee feels that he or she is being neglected by peers, co-workers, or groups. Work is one of the most important parts of an individual's life. They spend adequate time of their day in organization. Therefore, establishing healthy interpersonal relationships among nurses has become a necessity in their organizational lives; this brings a variety of outcomes for nurses as well as for their organization [(2)].

The concept of ostracism is defined as ignoring and ignoring employees in their environment. Ostracism can be seen in all environments as well as in workplaces. This situation can harm the workplace as well as the nurses [(3)]. Another type of concept is social ostracism, which is defined as being ignored and rejected by another person or group despite the desire of the rejected nurses to communicate [(4)]. Because of the need to be part of a group, ostracism is sad and not pleasant, ostracized behavior in the workplace includes limitation of necessary knowledge, avoidance of speech and eye contact, and indifference [(5)]. Ostracism also defined as the extent to which nurses perceives that he/she is excluded or ignored by others [(6)]. When nurses are ostracized, they cannot enter social interactions with other organizational members [(7)].

Language-based ostracism is type of ostracism, which occurs when two or several nurses talks with a language that cannot be comprehended by others. It may either be purposeful when actors intentionally hurt others, while in non-purposeful ostracism actors unintentionally exhibit the actions that hurt others [(8)]. Ostracism can be considered as a hidden pain which extremely affects nurse's attitude and will destroy their motivation [(9)]. At attitudinal level ostracism can also decreases nurses' emotions, self-esteem, and well-being [(8)]. Workplace ostracism has other negative consequences such as lower group commitment and higher staff turnover [(10)], decreased levels of organizational citizenship behaviors, increased levels of deviance and lower levels of job satisfaction [(11)]. In addition, workplace ostracism may result in nurses' depression, anxiety, and distress [(12)].

Ostracism is a menacing source of bringing discomfort and dissatisfaction in nurses' life [13].

Cynicism is defined as "an attitude resulting from a critical appraisal of the motives, actions, and values of one's employing organization" [15]. While organizational cynicism brings about negative significances affecting nurses and the overall healthcare organization**.** Organizational cynicism is referring to staff nurse's behavioral reaction to adverse circumstances in the work environment. Besides, it is a feeling of resentment towards the organization; management lacks honesty, justice, transparency causing unfriendliness, disappointment, insecurity, hopelessness, anger, mistrust of institutions or persons, group, ideology and social skills[14]. Organizational cynicism arises when the nurses believe that organizations lacking honesty. This perception is that there is no honesty, more particularly; morality, justice and honesty about the fundamental perception may be caused by a violation of expectations [16].

Organizational cynicism has been synthesized into three dimensions developed by an nurse to his organization as follows; cognitive, affective, and behavioral structure of the cynical construct [17]. Concerning the cognitive proportion, it is the belief that the organization's practices lack justice, honesty, and sincerity, and the employee negative believe that human beings are untrustworthy and incoherent in their behaviors [18]. Concerning the affective dimension; it is the sensitive strong emotional reactions towards the organization. The nurses feel contempt and anger towards their organizations; or feel discomfort, hatred and even shame about their organizations [19]. Regarding the behavioral dimension, it is the negative tendencies and mostly embarrassing humiliating attitudes. This dimension consists of negative and frequently critical conducts. Strong critical expressions towards the organization are the most prominent of behavioral tendencies [20]. There are several factors influence on organizational cynicism which is organizational justice, organizational trust, and nurse intention to leave work, job performance, organizational support, job satisfaction, and organizational commitment, and organizational citizenship behavior [21].

Silence can be active, conscious, intentional and purposeful; this is an important point,

because it clarifies intricate nature and multidimensional nature of silence [22]. Therefore, silence does not necessarily refer to passive behavior and in conflict with voice organizational silence defined as nurses' refusal to express effective behavioral, cognitive refusal evaluation with respect to organizational situations [23].

Significant of the study:

Inability to express their nursing staff views, thoughts and criticism or to assert nurses lead to developed negative attitudes and behaviors toward their job and place of employment, it causes psychological, sociological and economic problem [24], have identified that these negative responses are not only restricted to reduce social interactions at work thus unable to fulfill the social and emotional requirements of the individuals [25]. But also, organizational silence and cynicism which set barriers against the improvement of organizations have been highlighted in the health organization [26]. As with organizational reticence, if the cynicism of nurses is not recognized and managed effectively, the following preventable and fixable problems may arise such as decrease organizational commitment, job dissatisfaction, nurse's self-confidence resistance to change, performance, productivity, alienation from work, lateness, absenteeism and even leaving work [27]. Upon the previous literature, the authors claimed that is consecutive; which means, built on each other when nursing staff negative responses are generated once any nursing staff feels that he or she is being neglected by peers, co-workers or groups and identified that these negative responses are not only restricted to reduce social interactions at work thus unable to fulfill the social and emotional requirements of the nurses and The negative responses may also lead to loss or damage to the organization[28,29]. So, the research was conducted to investigate the influence of workplace ostracism and organizational cynicism on organizational silence among nursing staff.

Aim of the Study

To investigate the influence of workplace ostracism and organizational cynicism on organizational silence among nursing staff.

Research questions:

What are the workplace ostracism levels as perceived by nursing staff?

What are the organizational cynicism levels as perceived by nursing staff?

What are the nursing staffs ' levels about organizational silence?

Is there an influence between workplace ostracism and organizational cynicism on organizational silence among nursing staff?

Subjects and Method

Design:

A descriptive correlational research design was used to conduct this study.

Setting:

The study was conducted in the medical and surgical departments at Benha University Hospital. These departments were as follow: medical departments consisted of (intensive care unit, coronary care unit, kidney, dialysis units; adult and pediatric and premature unit) surgical departments consisted of (operating rooms; general operating, emergency unit; department and operating room and labor and cesarean section).

Subjects:

The sample of this study consisted of convenience nursing staff from the previously mentioned study setting, who had the following inclusion criteria, (were available at the time of data collection, had three years of experience and accepted to participate in the study). The total number was (860) nursing staff, the final number was 362(46 head nurses and 316 nurses).

Tools of data collection:

The tools used to collect the data for this study was self-administered questionnaire which was divided into four sections which are demographic characteristics for the participants, Workplace Ostracism Scale, Organizational Cynicism Scale, and Organizational Silence Scale.

Section (1): Demographic characteristics for the participants: This part was developed by the researcher and included data of the studied sample: age, job position, gender, department, year of experience, and educational level.

Section (2): Workplace Ostracism Scale: was developed by Ferris et al. (2008)[30] and modified by the researchers it used to measure nursing staff workplace ostracism. The scale had thirty-one items as 'Others ignored me at work'.

Scoring System: The scale was based on a 5-points Likert Scale scores were allocated as follows (5=strongly disagree, 4=disagree, 3=Natural, 2=agree, 1=strongly agree). Higher scores indicated higher levels of workplace ostracism. These scores were converted into a percent score: good levels of workplace ostracism occurrence level from >75% = >116 score. Average levels of workplace ostracism occurrence level 60-75% =93-116 score. Poor levels of

workplace ostracism occurrence level from<60 =<93 score [30].

Section (3): Organizational Cynicism Scale (OCS): It was developed by Kalagan 2009 [31] and modified by the researcher based on the related review of the literature [32], aimed to identify the level of organizational cynicism among nursing staff, it consisted of nine items as 'I believe my hospital says one thing- and does another.

Scoring system: Was determined as the following the subject's response was measured on five points as follow: (5) strongly disagree, (4) disagree, (3) neither agree nor disagree, (2) agree and (1) strongly agree. The level of organizational cynicism among nursing staff was considered high if the percent score was > 75%= 45 score, moderate level if the percent scores were ranged from 60 to75%= 33 to 27 score while considered low level if the percent score was < 60% = 27 score [33].

Section (4): Organizational Silence Scale (OSS): It was developed by Cakici, (2007) [34] and modified by the researcher based on the related review of the literature[33]**,** aimed to assess the perception level of organizational silence among nursing staff. Consisted of two main categories as the following: I-Issues for remaining silent: include (22) items distributed as following: administrative performance and working facilities (8), nurse performance and the issue of administration (5), responsibility (3), ethics (4) and department performance (2). II- Reasons for remaining silent: include (30) items distributed as following: administrative and organizational reasons (12), fear about work (5), lack of experience (3), isolation and fear of relationship damage (8) and organizational position (2).

Scoring system: For issues for remaining silence; the subjects' response of the applicants was measured by three-points Likert Scale as follow, (3) always remain silent, (2) sometimes remain silent and (1) never remain silent. The perception level of nursing staff toward organizational silence was considered high if the percent scores was > 75%= 50 score, moderate if the percent score was ranged from 60-75%=50 to 40 score while considered low if the percent score was<60%= 40 score [35].

Reasons for remaining silent; the subjects' response was measured by five-points Likert Scale as follow: (5) very effective, (4) effective, (3) either effective or ineffective, (2) ineffective, (1) totally ineffective. The perception level of nursing personnel toward

organizational silence was considered high if the percent score was>75%= 113 score, moderate if the percent score was ranged from 60- 75%=90 to113 score while considered low if the percent score was 60%= 90 score [35].

Pilot Study:

A pilot study was conducted to assess tools clarity and applicability. It has also served in estimating the time needed for filling the questionnaires. It was done on 10% of the total subjects, (five from head nurses and thirty-one from staff nurses). The time needed for filling all questionnaires was 20-25 minutes, no modification was done, and pilot subjects were included in the main study sample.

Validity and reliability:

Content Validity:

A Bilingual group of five experts was selected to test the content and face validity of the tools. Needful modifications were done to reach the final valid version of the tools. The tools were considered valid from the experts' perspective.

Reliability:

The tools were tested to reliability by measuring their internal consistency using Cranach's alpha coefficient method. This turned to be α = 0.747 for workplace ostracism scale tool I; α=0.764 organizational cynicism scale tool II and α=0.753 for organizational silence scale tool III. This indicates a high degree of reliability for the study tools.

Ethical Considerations:

Informed consent was attained from all participants of the study after explanation of the study purpose, with making assurance on the anonymity of them and that their information will be secured and only used for the research purpose. Also, they had the right to withdraw from the study. This was followed by their agreement on participation in the study.

Fieldwork:

The data collection took three months from beginning February (2021) to the end of April (2021) covering a period of three months. The data was gathered from nursing staff. The questionnaire was distributed during nursing staff work hours (morning and afternoon shifts), after two or three hours of her beginning shift and took ten or eleven nursing staff from each clinical unit, three days per week to avoid patient care interruption.

Administrative Design:

Written official approval to conduct this research was obtained written approval to

carry out the study was obtained from the Faculty Dean and Nursing Director at Benha University Hospital.

Statistical Analysis

A personal computer was used to store and analyze data. The Statistical Package for Social Studies (SPSS), version 25 was used. Descriptive statistics were used such as Frequency, Percentage distribution; Mean and Standard Deviation, Mean Percent Score. Comparison was performed using Chi square test. Correlation between variables was estimated using Pearson's correlation coefficient (r). Significance was adopted at $p<0.05$ for interpretation of results of tests of significance.

Results

Table 1: Shows that more than two-thirds 68.8% of the studied subjects their age were 20<30with mean score 30.48±8.270, 61.3% of the studied subjects were female, majority 87.3% of studied subjects were staff nurses. According to departments 62.4% working at medical departments, As regard to level of educational 49.2% had technical institute of nursing, and 38.1%<5 years of experience with mean score 7.36 ± 5.014.

Table 2: Shows that more than ninety percent 92.5% of nursing staff had low level of workplace ostracism with mean score 81.00±16.03.

Figure 1 and Table 3: Shows that more than two thirds 68.8% of nursing staff had low level of total organizational cynicism with mean score 27.85±5.579.

Table 4: Shows that less than half 45.9% of nursing staff had high level of total issues for remaining organizational silence with mean score 54.00±4.359. While the highest mean percent score was for responsibility item and lowest mean percent score was for ethics item.

Table 5: Shows that the majority 84.8% of nursing staff had low level of total reasons for remaining organizational silence with mean score 90.07±11.72. While the highest mean percent score was for experience item and lowest mean percent score was for organizational position item.

Table 6: Displayed that there was a significant positive correlation between total workplace ostracism dimensions, total organizational cynicism dimensions and total organizational silence dimensions.

Table 7: Displayed that there was a significant relation between nursing staff workplace ostracism and working department at ($p=\leq 0.05$). While there was none statistically significant between ages,

gender, job position, level of education and years of experience in relation to total workplace ostracism at (p= >0.05).

Table 8: Displayed that there was none a significant relation between nursing staff organizational cynicism and between all demographic characteristics' items at (p= >0.05).

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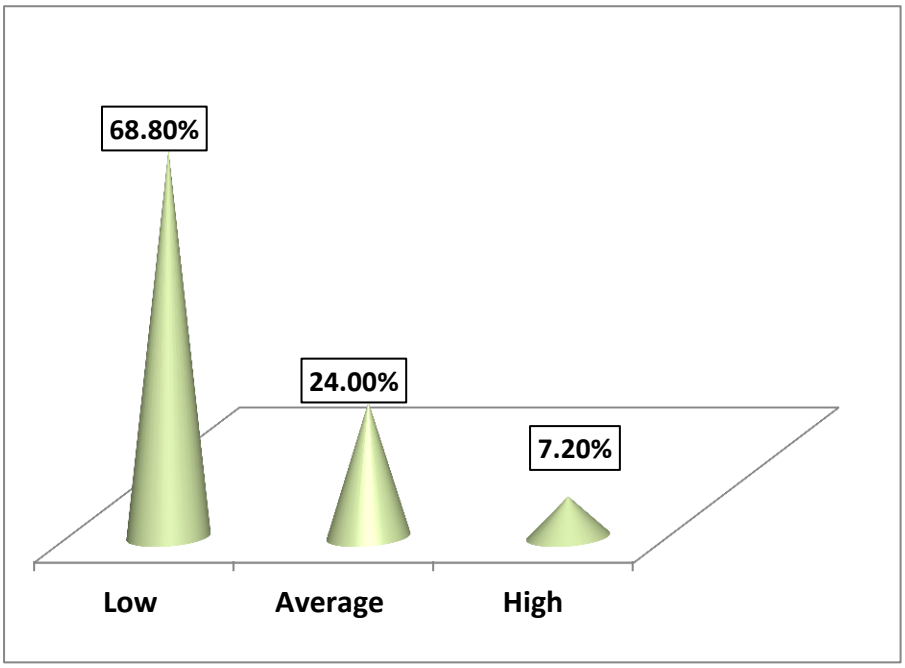
Table 9: Displayed that there was a significant relation between total issues for remaining silence and years of experience (p=< 0.05). While it was none statistically significant between age, gender, working departments, job position, and level of education in relation to total issues for remaining silence at (p= >0.05).

Table (1): Distribution of the studied nursing staff according to their demographic characteristics (N=362)

Demographic characteristics items	Total N=362	
	No.	%
Age (years)		
20-	249	68.8
30	42	11.6
≥40	71	19.6
Min- Max 20.0-56.0 Mean ± SD	30.48 ± 8.270	
Gender		
Male	140	38.7
Female	222	61.3
Job position		
Staff nurse	316	87.3
Head nurse	46	12.7
Working departments		
Medical	226	62.4
Surgical	136	37.6
Level of education		
Secondary School of Nursing	42	11.6
Technical Institute of Nursing	178	49.2
Bachelor of Nursing	142	39.2
Years of experience		
<5	138	38.1
5 -	129	35.6
10-	41	11.3
15-	47	13.0
≥20	7	1.9
Min- Max 1.0-28.0 Mean ± SD	7.36 ± 5.014	

Table (2): Levels, mean and standard division and mean percent of the studied nursing staff according to the level of workplace ostracism (N=362)

Items	Levels of ostracism								Min - Max	Mean ± SD	Mean Percent Score
	Low		Average				High				
	No	%	No.			%	No.	%			
Total Ostracism	**335**	**92.5**	**27**	**7.5**	**0**	**0.0**	**33.0-122.0**		**81.00±16.03**	**52.26%**	



Items	Min -Max	Mean ± SD	Mean Percent Score
Total organization cynicism	10.0-43.0	27.85±5.579	61.89%

Figure (1) and table (3): Levels, mean and standard division and mean percent of the studied nursing staff according to the level of organization cynicism

Table (4): Levels, mean and standard division and mean percent of the studied nursing staff according to the level of issues for remaining organizational silence dimension (N=362)

Items	Levels of issues for remaining silence						Min -Max	Mean ± SD	Mean Percent Score
	Low		Average		High				
	No.	%	No.	%	No.	%			
Admin. performance	60	16.6	78	21.5	224	61.9	14.0-24.0	20.12±2.297	83.83%
Nurse performance	2	0.6	138	38.1	222	61.3	10.0-15.0	12.73±1.100	84.87%
Responsibility	57	15.7	63	17.4	242	66.9	5.0-9.0	7.70±0.966	85.56%
Ethics	164	45.3	51	14.1	147	40.6	4.0-12.0	8.88±1.886	74.00%
Department performance	167	46.1	107	29.6	88	24.3	2.0-6.0	4.57±1.112	76.17%
Total Issues	**38**	**10.5**	**158**	**43.6**	**166**	**45.9**	**41.0-64.0**	**54.00±4.359**	**81.82%**

Table (5): Levels, mean and standard division and mean percent of the studied nursing staff according to the level of reasons for remaining organizational silence dimension (N=362)

Items	Levels of reasons for remaining silence						Min -Max	Mean ± SD	Mean Percent Score
	Low		Average		High				
	No.	%	No.	%	No.	%			
Administrator reasons	278	76.8	77	21.3	7	1.9	26.0-50.0	36.02±5.553	60.03%
Isolation &fear of change	291	80.4	34	9.4	37	10.2	18.0-40.0	23.67±5.128	59.18%
Fear about work	235	64.9	90	24.9	37	10.2	12.0-25.0	15.27±3.121	61.08%
Experience	257	71.0	15	4.1	90	24.9	6.0-15.0	9.87±2.503	65.80%
Organizational position	309	85.4	14	3.9	39	10.8	3.0-10.0	5.243±1.457	52.43%
Total reasons	**307**	**84.8**	**47**	**13.0**	**8**	**2.2**	**70.0-131.0**	**90.07±11.72**	**60.05%**

Table (6): Correlation matrix among nursing staff workplace ostracism, organizational cynicism, and organizational silence

Variables			Workplace ostracism	Organization cynicism	Organizational silence				
					Administrator performance	Nurse performance	Responsibility	Ethics	Department performance
Workplace ostracism		**r**							
		P							
Organization cynicism		**r**	0.749						
		P	0.000*						
Organizational silence	**Administrator performance**	**r**	0.914	0.142					
		P	0.006*	0.007*					
	Nurse performance	**r**	0.839	0.109	0.161				
		P	0.001*	0.039*	0.002*				
	Responsibility	**r**	0.114	0.424	0.312	0.710			
		P	0.030*	0.042*	0.000*	0.000*			
	Ethics	**r**	0.499	0.305	0.285	0.569	0.347		
		P	0.036*	0.054*	0.000*	0.030*	0.050*		
	Department performance	**r**	0.118	0.142	0.264	0.377	0.442	0.671	
		P	0.025*	0.007*	0.005*	0.000*	0.000*	0.000*	

r = Pearson correlation * Significant p at ≤0.05 r ≥0.9 very high correlation r 0.7-<0.9 high correlation r 0.5-<0.7 moderate correlation r < 0.5 low correlation

Table (7): Relations of the nursing staff workplace ostracism and demographic characteristics

Demographic characteristics	Workplace ostracism			T	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	**1.315**	**0.142**		9.258	0.000
Age	**-0.020**	**0.018**	-0.063	-1.144	0.254
Gender	**-0.028**	**0.030**	-0.051	-.918	0.359
Job position	**-0.035**	**0.058**	-0.044	-.606	0.545
Working departments	**-0.072**	**0.036**	-0.134	-2.019	**0.044***
Level of education	**0.009**	**0.030**	0.022	.293	0.770
Years of experience	**0.018**	**0.018**	0.074	1.014	0.311
Model Summary	**R= 0.324**	**R^2= 0.105**			

* Significant p at ≤0.05

Table (8): Relations of the nursing staff organization cynicism and demographic characteristics

* Significant p at ≤0.05

Demographic characteristics	Organization cynicism			T	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	1.475	0.372		3.960	0.000
Age	0.008	0.043	0.010	0.184	0.854
Gender	-0.086	0.072	-0.068	-1.183	0.238
Job position	0.067	0.138	0.036	0.483	0.630
Working department	-0.009	0.087	-0.007	-0.099	0.921
Level of education	-0.122	0.071	-0.130	-1.703	0.090
Years of experience	-0.061	0.042	-0.108	-1.440	0.151
Model Summary	**R= 0.256**	**R^2= 0.065**			

Table (9): Relations of the nursing staff organization silence and demographic characteristics

Demographic characteristics	Issues for remaining silence			T	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	-0.508	0.226		-2.249	0.025
Age	-0.019	0.026	-0.023	-0.722	0.471
Gender	0.014	0.043	0.010	0.320	0.749
Job position	0.024	0.083	0.012	0.289	0.773
Working department	-0.018	0.052	-0.013	-0.342	0.732
Level of education	0.016	0.043	0.016	0.377	0.706
Years of experience	-0.059	0.030	-0.077	-1.975	**0.049***
Model Summary	**R= 0.843**	**R^2= 0.711**			

* Significant p at ≤0.05

Discussion:

Hospitals, as a significant social setting, offer to nurses the chance to interact and communicate with other health teams and patients. Despite social interaction having many benefits, the outcomes are not always positive since some organizational nurses are intentionally kept in isolation Xi (2019[37], Jahanzeb (2019) [38]. This phenomenon is named ostracism, which denotes the extent to which a nurse perceives that she is excluded or ignored by others.

Ostracism is a common phenomenon amongst nurses in government sector hospitals who always need perfect interaction to achieve their jobs efficiently Ali and Johl (2020) [39]. Therefore, when nurses are ostracized by their colleagues, start to feel powerlessness, unhappiness, hostility, and unworthiness, which cause counterproductive work behaviors Gharaei (2020)[40], Shi (2018)[41].

The current study finding reveals that most of nursing staff had a low level of ostracism while less than one-tenth of the studied had a moderate level of ostracism. These results may be due to the observed differences in the level of age, educational level, and years of experience, as is evident in the demographic characteristics table, which causes ostracism and disagreement between them because of the difference in the way of

thinking. On the other hand, the results of Ebrahim, (2020) [42] who found that about two-thirds of the studied nurses had a moderate level of workplace ostracism and one-fifth of nurses had low workplace ostracism. While Gkorezis et al. (2016) [43] stated that most of the studied nurses suffered from workplace ostracism at the workplace. Furthermore, the study performed by Chen and Li (2019) [44] reported that half of the studied nurses suffered from low workplace ostracism.

Nurse's cynicism is a belief that organizational leaders lack integrity and a perception that leaders do not care about the employees, which results in a sense of alienation. Employee cynicism can be expressed through frustration, pessimism, contempt, and distrust toward the organization. Nurse's cynicism can develop over time in direct reaction to organizational events including excessive job demands, strain related to lack of work resources and perceptions of leaders' low levels of trustworthiness. Aly (2016) [45] reported that once a high level of cynicism has developed, it may remain high for many nurses**.** The current study finding reveals that more than two-thirds of the studied nurses had a low level of cynicism and less than one-tenth of them had a high level of cynicism. This comes in line with the results of Volpe et al. (2014) [46], Mantler et al. (2015) [47].

The current study found that silence is a problem encountered among the studied nursing staff especially those related to responsibility and their performance. When they perceive their institution as closed, secretive and accusatory remain silent about its issues. Despite all the advancements in technology and science, the most valuable resource in the field of health care is humans, the chief asset for ensuring the improvement of service quality. Today, organizational silence is one of the biggest problems among health care personnel. Organizational silence prevents workers from openly expressing their opinions and concerns about the organization's problems. A similar finding was reported by Bayn (2015) [48] who found that most studied nurses had organizational silence. Moreover, Yurdakul et al. (2016) [49], found that more than three quarters of the nurses suffered from organizational silence.

Health care is a workplace that necessitates healthcare professionals' voice. Although speaking up plays a key role in improving patient safety, several scholars have suggested that healthcare professionals often

stay silent thus enhancing the opportunity of provoking medical errors and unfavorable outcomes Mannion and Davies (2015) [50], Eriguc et al. (2014)[51] and Schwappach and Gehring (2014)[52]. These studies come in agreement with the current study findings which found that lack of experience and fear about the work were the main causes for remaining silent among the studied nursing staff. An explanation of these findings is that the nurses' refusal to reveal their opinion, ideas, and suggestions about work issues because of their fears and concerns may negatively affect the process of their improvement and development within the organization. In the same line Yurdakul et al. (2016) [49], who noticed that lack of experience was the first cause of silence among the nurses.

Defensive silence is a proactive behavior of nurses to remain silent because they feel that speaking up can be risky for his/her position within the organization and can lead to disputes. Recent research suggests that nurses can take on defensive silence either to avoid confrontation with supervisors or to avoid disapproval from colleagues. Nurses who experience ostracism at the workplace are ignored by their coworkers and the coworkers do not welcome their ideas, opinions, and suggestions. Nurses would thus refrain from socialization with others and would start exhibiting defensive silence to avoid being rejected at the workplace Khalid et al. [53]. This could explain the current study finding, where a significant association between the nurses' ostracism and silence behaviors. Similar findings were reported by Panagiotou et al. (2016) [54] who reported that workplace ostracism significantly impacts organizational silence and concluded that ostracized employees are less engaged, full of fear and have low performance, as they feel less important and refrain from the socialization process and thus avoid exhibiting extra-role behaviors and remain silent.

Moreover, Wu et al. (2012) [55] found that workplace ostracism is a potential determinant of defensive silence (a facet of employee silence) as ostracized employees at the workplace try to protect themselves from being ignored and thus adopted the strategy of defensive silence and concluded that when individuals feel that their position is not secure in an organization then they indulge in defensive silence and used knowledge hoarding as a weapon to maintain their existence in the organization.

Workplace ostracism is an emotive manipulation which meant that to what extent nurses recognize that they are being ignored in the workplace. Workplace ostracism is considered as a danger to nurses' needs, self-esteem, substantial belongings, control needs, self-esteem, control; and sensitive presence, and organization is damaged. Negative responses are generated once any nurses feel that he or she is being neglected by peers, co-workers, or groups. These negative responses could reduce social interactions at work thus being unable to fulfill the social and emotional requirements of the nurses, enhance sadness and increase sadness and frustration and mental and physical ailment. The negative responses may also lead to negative, problematic behaviors, relations and cynicism could be developed by Haq and Mahmud, (2012) [(56)], Wu et al. (2014)[(57)]. This could explain the results of the current study where a significant association was noticed between the nurses' ostracism and cynicism. Similar findings were reported by Jahanzeb et al. (2020) [(58)], and Wesselmann et al. (2018) [(59)] who found a significant relationship between workplace ostracism and counterproductive work behavior including cynicism.

Moreover, the current study finding portrays a significant relationship between the working department and ostracism. A similar finding was reported by Ebrahim et al. (2020) [(42)], who reported a significant effect of working unit and ostracism. Furthermore, the study performed by Haj and Gharaei (2020) [(60)] reported that there was a statistically significant relationship between ostracism and nurses' working department and found that there were statistically significant relationships between ostracism and employment status, university of education, working unit and nurses' current physical disorders.

Cynicism makes a hostile working environment and reflects weak interpersonal relationships for the individual involved in that behavior. The more negative the cynicism that takes place in an organization, the less likely employees are to identify with it Kuo, (2015) [(61)]. Empirically speaking, cynicism is found to be detrimental to work productivity and creates a climate of mistrust and amorality. Furthermore, it decreases organizational citizenship behavior and proactive service performance. This, in turn, will lead employees to be silent and then lead to other adverse work-related outcomes. This

imbalanced relationship is due to the low quality of the exchange relationship Wu et al.(2012) [54].

The current study found a significant association between the nurses' silence and cynicism. An explanation is that silence as intentional behavior, may drain employees' cognitive and emotional resources, causing high levels of stress, which can be released through engaging in cynical behavior. In the same line Aboramadan et al. (2021) [62] found that employee silence was demonstrated to have a positive effect on behavioral cynicism, which implies that employees with high levels of silence are more prone to developing unfavorable attitudes and behaviors such as cynicism.

Conclusions:

More than ninety percent (92.5%), more than two third (68.8%), and (84.8%) of nursing staff have a low level of workplace ostracism, organizational cynicism, and total reasons for remaining organizational silence, respectively and less than half (45.9%) of nursing staff had high level of total issues for remaining organizational silence. And there was a significant positive correlation between total workplace ostracism, total organizational ostracism, and total organizational silence.

Recommendations

The study recommended the following:

- Strengthening collaborative work culture must be rated by managers to decrease the level of ostracism.
- Managers must recognize employees for their efforts and accomplishments and remind them of their importance in the organization.
- Conduct continuous periodic training programs should be given for nursing staff in different health care units, to increase their awareness about organizational cynicism.
- Identifying the factors that lead nursing staff to become silent, experience cynicism and leave their jobs in hospitals is necessary.
- Nursing staff represented in the hospital meetings, sharing, and participating in decision-making about patient's problems.
- Reducing the degree of job alienation among nursing staff in the organization, through encouraging nursing staff to speak and participate in matters and issues of work.
- Development of a cooperative system that considers nursing staff thoughts and ideas, which leads to a sense of loyalty, cooperation, and commitment toward the hospital.

- Creating an open organizational space to involve nursing staff actively and take decisions within a group and provide them with feedback on their performance in duty time.

- Changing leadership style from commanding to collaborative leadership and showing a desire to listen to the voice of employees.

- Creating a proper organizational structure that provides the opportunity for feedback and bottom-up relationships for employees.

Further studies need to be conducted to study causes of silence and its effects on self-efficacy.

-Developing an education program about workplace ostracism and organizational cynicism on organizational silence and its effect on organizational performance.

- Conduct more comprehensive studies for exploring the gap between workplace ostracism and organizational cynicism on organizational silence with diverse cultures in different health care setting.

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Effect of Job Crafting Training Program on Staff Nurses Work Involvement at Mansoura University Hospital

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Abstract

Background: Job crafting provides the opportunity to redesign nurses job towards their own strengths and interests for a better fit between their personal characteristics and the characteristics of their job that improve work involvement and performance. **Aim:** Investigate the effect of job crafting training program on staff nurses work involvement in I.C.U at Main Mansoura University Hospital **Subjects and Methods: Design:** A quasi-experimental design was utilized. **Subjects:** The subjects were included all staff nurses (n=65) working in I.C.U at Main Mansoura University Hospital. **Tools:** Data was collected by using three tools: Job Crafting Knowledge Questionnaire, Job Crafting Questionnaire (JCQ) and Job Involvement Scale (JIS). **Results:** Total mean score of perceived job crafting and nurses work involvement mean score (72.95±8.45, 65.69±8.71, 29.65±5.08, 29.20±5.16) respectively were high post and after three months of implementing program than pre-program with mean score (65.72±9.00, 25.68±2.40) respectively. Staff nurses knowledge about job crafting were improve post and after three months with mean score (19.11±1.03, 16.52±2.02) than pre- program (16.20±1.86). **Conclusion:** Post application of job drafting training program. There is statistically significance difference ($p < 0.05$) in relation to preprogram. Also, there is statistically significance between relational crafting dimension and work involvement post implementation training program. **Recommendation:** Nurse's manger carries out workshops how to apply job crafting for their work. Also increase the levels of nurses' job involvement by re-designing jobs through job enlargement and enrichment. Finally, nurse managers should consider job demands and resources to increase job resources as opportunities for advancement, supervisor support, and receiving feedback.

Key words: Job crafting, Staff nurses, Training program, Work involvement.

Introduction

Today's healthcare institutions require their staff to have a high level of responsibility, proactivity and work involvement. Organizations require a high performance from health care providers at job. At the same time, nurses' expectations about the workplace are expanding, seeking to opportunities for personal development and fulfillment. As there are few opportunities for job change that puts a burden on the nurse to perform tasks. Nurses can overcome these stresses by controlling their jobs and creating a healthy work environment. This can be achieved through redesign the work, which in turn improves way to perform the tasks, job relationships, and increases the level of quality of the nursing services [(1)].

Job crafting means the way in which a person can reformulate the work as a whole in a way that suits his personal interests and needs in accordance with the job requirements and resources [(2)]. Nurses must create a work environment that enables them to create a balance between personal and job needs. A successful manager can understand the needs of subordinates and use that to reformulate tasks and improve nurse's well-being. Jobs have become the first responsibility of the individual [(3)].

Job crafting consists of three main dimensions: changing the job's boundaries task crafting, relational crafting and cognitive crafting [(4)]. Task crafting includes increasing additional tasks to an individual's job or changing the nature of task performance. Relational crafting is reframing work relationships such as creating comfortable working relationships with colleagues and using methods of constructive communication within the work scope [(5)]. Cognitive crafting means is how nurses changing the way of thinking, tasks perception and use rational ideas in new and innovative ways [(6)].

Job crafting is the main factor for the success of organizations, as it is based on two types of resources, which are personal resources and job resources works to optimize the use of resources and reduce the requirements and workload. Therefore, applying a program about job crafting to focus on both job and personal resources at the same time, to have maximum benefit and positive results for nurses [(7)]. Nurses have a higher level of integration and involvement who apply job crafting on their work. Nature of tasks, work relationships and the way

tasks perception are the main factors that reshape the boundaries of work. Nurses satisfy work needs through job involvement because they feel the value of the work do, which is reflected in their level of job satisfaction and motivation for goal achievement [(8)].

Work involvement is the relationship between the personality of the individual response to the work environment and the level of their influence with the workplace and dynamics of the work environment. Nurses have a high level of self-efficacy and involvement who possess a high level of autonomy, inclusion and participation in work [(9)].

There is a strong link between providing new opportunities for learning in the work environment and high level of work involvement. As it requires nurses to perform some additional tasks and responsibilities. Nurse managers can work to add some challenging tasks to motivate the nurses and create a spirit of positive competition. This broadens the level of awareness, increases the work expectations, and opens new visions for ways to perform tasks, which is reflected in the work environment [(10)].

Work involvement is an important factor which affects organizational and individual outcomes. It is closely correlated with the level of work affiliation, self-understanding and job control and engagement. Work involvement has positive results, as it increases the level of expertise and ability to perform tasks and self-confidence, which is generally reflected in the results of the healthcare outcomes [(11)].

Significance of the study:

Job crafting naturally occurs in the workplace. Nursing directors are the crafters who reshape the jobs for nurses in healthcare organizations. Nurses make modifications to their jobs for a greater fit and meaning. They must be able to create a positive work setting that enables them for personal and goal achievement. ICU nurses can achieve the greatest benefit from the application job crafting in the way of performing work tasks which enhance their well-being. They can craft their job by changing three aspects of their work boundaries, namely, task boundaries, cognitive task boundaries and/or relational boundaries. While nurses engage in job crafting increase the meaningfulness of their role and work involvement that create positive job outcomes [(12)].

Aim of the study

Investigate the effect of job crafting training program on staff nurses work involvement in I.C.U. at Main Mansoura University Hospital through:

a) Assess job crafting knowledge among nurses in I.C.U. at different phases of program.

b) Assess perceived job crafting among nurses in I.C.U. at different phases of program.

c) Assess work involvement among nurses in I.C.U. at different phases of program.

d) Determine relation between perceived job crafting and work involvement among nurses in I.C.U. at different phases of program.

Hypothesis:

It is hypothesized that, an application of job crafting training program will improve staff nurses work involvement in I.C.U. at Main Mansoura University Hospital.

Subjects and Methods

Research design: A quasi- experimental research design.

Setting:

The study was conducted at all ICUs Main Mansoura University Hospital (Surgical, Neurosurgical, Internal medicine, Obstetric and Neuro- medicine ICUs). These hospitals provide a wide spectrum of health services at Delta region with bed capacity 1800.

Subjects:

The subjects were included all staff nurse working in all I.C.Us at Main Mansoura University Hospital available at the time of data collection (n=65). Nurses working in ICU were very stressful and high work loaded as critically ill patients need complex and multidimensional healthcare services.

The data of the present study was collected by:

Tool (I): Job Crafting Knowledge Questionnaire.

This tool developed by researchers from different related literature review [13,14] to assess knowledge of nurses related to job crafting topic before and after the implementation of the training program. This tool divided into two parts:

Part1: Personal characteristics: - As age , gender, marital status, educational level, years of experience.

Part 11: Job Crafting Knowledge sheet was consisting of 20 questions classifying as true and false questions (10 items) and a series of multiple choices (10 items). Scoring system: Fair (50.0%-75.0%) and Good (>75.0%) The total score divided into two levels based on the following cutoff point.

Tool (II): Job Crafting Questionnaire (JCQ).

This tool developed by Slemp and Vella-Brodrick (2013) **(15)**. It aimed to assess job crafting among staff nurses at workplace. It consists of fifteen statements. It divided into three dimension which are task crafting (5 items), cognitive crafting (5 items) and relational crafting (5 items). Likert Scale to evaluate responses ranged 1 = hardly ever, to 6 = very often. Scoring system: The total score divided into three levels based on the following cutoff point, Low (<50%), moderate (50.0%-75.0%) and high (>75.0%)

Tool (III): Job Involvement Scale (JIS).

It was developed by Kanungo (1982) [16] to assess job involvement in workplace. It is consisting of 10 items to assess study subjects job involvement. The 10 items were summed to provide a total involvement score. High scores reflect a higher level of work involvement. The response options also ranged on a 5-point Likert Scale from 1 (strongly disagree) to 5 (strongly agree).
Scoring system: The total score divided into two levels based on the following cutoff point. Scoring was moderate (50.0%-75.0%) and high (>75.0%).

Methods of data collection:

Obtaining an official permission to conduct the study from the hospital administration.
Oral consent of staff nurses was taken before the beginning. The right to withdraw from the research at any stage is approved.
Data collection tools were translated to Arabic. Content validity was tested and revised by a committee of 5 experts in nursing administration department.
Cronbach's alpha test was used for assessing the reliability of the three tools items, it was 0.75for (tool I), 0.78 for (tool II) and 0.76for (tool III).
A pilot study was carried out on seven of staff nurses in I.C.U. to assess the tools applicability and clarity and to determine the necessary modifications according to their responses. These staff nurses were not included in this study.

The data was collected by the researchers as tool (I), tool (II), and tool (III) were distributed to studied nurses as (pretest) before starting the program, then post immediately and 3 months after the program. The time needed to complete each sheet ranged from 20 -30 minutes. The job crafting training program was implemented during September 2020 till November 2020 in the training and education center in Mansoura University Hospital at morning shift.

Designed the training program which includes objectives of the training, definition of job crafting, importance of job crafting, types of job crafting and the consequences of job crafting .Before implementation of the training program, the data was collected by the researchers as tool (1), tool(2), and tool (3) were distributed to studied sample as (pretest) before starting the program, then post immediately and 3 months after the program. The time needed to complete each sheet ranged from 20 -30 minutes. The job crafting training program was implemented during September 2020 till November 2020 in the training and education center in Mansoura University Hospital at morning shift.

While follow up phase started at February 2021. The training program was implemented two times for two groups according to the workplace unit of each group. Each group contains about 30 nurses and the available time. The total allocated time for achieving the whole program to each group was 5 hours, divided into six sessions in two weeks, duration of every session was one hour. The program sessions started from 11am to 12:00pm. Different teaching and learning methods were used during the sessions which included interactive lectures, group discussion, brain storming, work in small groups, adult learning principles were applied by giving time for questions and discussions.

Ethical consideration

The Research Ethical Committee of Faculty of Nursing, Mansoura University, the director of the hospital at Mansoura University Hospital, hospital nursing administrator, Dean of the Faculty of Nursing to conduct this study. All participants were informed that the participation in the study is voluntary, and they have the right to withdraw from the study at any time. All participants were assured about the confidentiality of the

collected data and therefore the privacy of the study sample was assured.

Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 26, SPSS Inc. Chicago, IL, USA). The normality assumption was accepted. Therefore, categorical variables were represented as frequency and percentage. Continuous variables were represented as mean, and standard deviation. Two-way ANOVA test was conducted to test differences in repeated measures when variables are parametric and continuous. For pairwise comparisons, paired t-test was used to compare the means and standard deviations of two related groups. Friedman's test was conducted to test differences in repeated measures when variables are ordinal variables. The McNemar test was conducted to compare the differences between dichotomous categorical variables in paired groups. The Marginal Homogeneity test was conducted to compare the differences between ordinal categorical variables in paired groups. Pearson correlation coefficient test was conducted to test the association between two continuous variables. Statistically significant was considered as (p-value < 0.01 &0.05).

Results

Table (1): Showed personnel characteristics of studied staff nurses. Regarding age about half of them aged (43.1%) from 20-30 years. The most of them were female (89.2%). Majority of nurses were married (75.4%) and having Bachelor's degree in nursing (70.8%). Finally, about two third of them (61.5%) were experienced from 6-10 years.

Table (2): Illustrated mean score of job crafting knowledge, total job crafting and work involvement among the studied staff nurses throughout different phases of training program. Regarding job crafting knowledge, total job crafting and work involvement mean score (19.11±1.03, 72.95±8.45 , 29.65±5.08) respectively were higher than pre and after three months of application of program. Regarding job crafting knowledge there is there highly statistically significance at P1, P2 and P3 ($p < 0.01$). While total job crafting there is there highly statistically significance at P1 and P3 ($p < 0.01$). Finally work involvement there is there highly statistically significance at P1, P2 ($p < 0.01$).

Table (3): Showed levels of job crafting knowledge among the studied staff nurses throughout different phases of training program. There is highly statistically significance pre and post and post and after three months (p <0.01). **Table(4) :** Illustrated levels of job crafting among the studied staff nurses throughout different phases of training program. The nurses reported high level of job crafting immediately after training program (72.3%) in relation to pre- program. there highly statistically significance between pre and post and post and after three months (p1=0.000**, p3=0.000**).**Table (5):** Illustrated levels of work involvement among the studied staff nurses throughout different phases of training program. This table showed that before training program the most of nurses were moderate work involvement. While post and after three months of training of job crafting program were one third of them were high work involvement (36.9%, 33.8%) respectively. There is highly significance differences pre and post and pre and after three months (p1, P3=0.000**)**Table (6):** Showed relationship between knowledge related job crafting and work involvement among the studied staff nurses at different phases of training program. It showed that there is no statistically significance correlation between knowledge related job crafting, and work involvement in different phase. Except post application of job drafting training program there is statistically significance difference (p <0.05).

Table (7): Showed relationship between total job crafting and its dimension with work involvement among the studied staff nurses at different phases of job crafting training program. It showed that there is no statistically significance correlation between total job crafting, and work involvement (p=) at three phase of application of program. Finally, there is statistically significance between relational crafting dimension and work involvement post program.

Table (1): Personal Characteristic of the Studied Staff Nurses (n=65)

Variables	No	%
Age years		
20-30	28	43.1
31-40	27	41.5
>40	10	15.4
Gender		
Male	7	10.8
Female	58	89.2
Marital status		
Single	8	12.3
Married	49	75.4
Divorced	5	7.7
Widowed	3	4.6
Educational levels		
Technical institute	7	10.8
Bachelor degree	46	70.8
Postgraduate studies	12	18.5
Experience		
1-5	4	6.2
6-10	40	61.5
>10	21	32.3

Table (2) Mean Score of Perceived Job Crafting and Work Involvement among Studied Staff Nurses Throughout Different Phases of Training Program (n=65)

Variables	Phases of training program			F value /p	Pairwise comparison (p)
	Pre-program	Post program	After 3 months		
	Mean±SD	Mean±SD	Mean±SD		
1. Job crafting knowledge	16.20±1.86	19.11±1.03	16.52±2.02	29.67/ 0.000**	p1=0.000** p2=0.012** p3=0.000**
2. Total Perceived job crafting	65.72±9.00	72.95±8.45	65.69±8.71	29.67/ 0.000**	p1=0.000** p2=0.976 p3=0.000**
3. Work involvement	25.68±2.40	29.65±5.08	29.20±5.16	15.61/ 0.000**	p1=0.000** p2=0.000** p3=0.633

p1: difference between pre and post / p2: difference between pre and post 3 months / p3: difference between post and post 3 months/ ** highly statistically significant at p <0.01

Table (3): Levels of Job Crafting Knowledge among Studied Staff Nurses Throughout Different Phases of Training Program (n=65)

Levels of job crafting knowledge	Phases of training program						p	Pairwise comparison (p)
	Pre-program		Post program		After 3 months			
Fair (50.0%-75.0%)	22	33.8		0.0	20	30.8	32.88/ 0.000**	p1=0.000** p2=0.7 p3=0.000**
Good (>75.0%)	43	66.2	65	100.0	45	69.2		

p1: difference between pre and post / p2: difference between pre and post 3 months / p3: difference between post and post 3 months/ ** highly statistically significant at p <0.01

Table (4): Levels of Perceived Job Crafting among the Studied Staff Nurses Throughout Different Phases of Training Program(n=65)

Levels of Perceived job crafting	Phases of training program						p	Pairwise comparison (p)
	Pre-program		Post program		After 3 months			
	No.	%	No.	%	No.	%	27.41 /0.000**	p1=0.000** p2=0.82 p3=0.000*
High (>75.0%)	25	38.5	47	72.3	24	36.9		
Moderate (50.0%-75.0%)	39	60.0	18	27.7	40	61.5		
Low (<50%)	1	1.5	0	0.0	1	1.5		

p1: difference between pre and post / p2: difference between pre and post 3 months / p3: difference between post and post 3 months/ *statistically significant at p <0.05/ ** highly statistically significant at p <0.01

Table (5): Levels of Work Involvement among Studied Staff Nurses Throughout Different Phases of Training Program (n=65)

Levels of work involvement	Phases of training program						p	Pairwise comparison (p)
	Pre-program		Post- program		After 3 months			
	No.	%	No.	%	No.	%		
High (>75.0%)	1	1.5	24	36.9	22	33.8	22.65/ 0.000**	p1=0.000** p2=0.87 p3=0.000**
Moderate (50.0%-75.0%)	64	98.2	41	63.1	43	66.2		

p1: difference between pre and post / p2: difference between pre and post 3 months / p3: difference between post and post 3 months/ *statistically significant at p <0.05/ ** highly statistically significant at p <0.01

Table (6): Relationship between Knowledge related Job Crafting and Work Involvement among the Studied Staff Nurses at Different Phases of Training Program(n=65)

Variable	Work involvement					
	Pre-program		Post- program		After 3 months	
	r	p	r	p	r	P
Job Crafting Knowledge	0.05	0.67	0.25	0.04*	0.14	0.23

Table (7): Relationship between Job Crafting Dimensions with Work Involvement among the Studied Staff Nurses at Different Phases of Job Crafting Training Program (n=65).

Job crafting dimensions	Work involvement					
	Pre-program		Post - program		After 3 months	
	r	P	r	P	R	P
Task crafting	0.18	0.15	0.03	0.80	0.02	0.84
Cognitive crafting	008	0.51	0.03	0.80	0.01	0.93
Relational crafting	0.10	0.42	0.25	0.04*	0.05	0.67
Total job crafting	0.14	0.25	0.22	0.08	0.01	0.93

Discussion

Work environment, including healthcare setting are highly service oriented and knowledge-based setting. When serving patients require nurses become more involved at work, incorporate innovative technologies and new ways of working. Job crafting is an adjustment of one's job in innovative way of working within the ever-changing work environment. So, nurses can apply job crafting to improve their work outcomes [17].

The current study investigates the effects of job crafting training program on work involvement and after 3-month follow-up outcomes among studied nurses. The current findings revealed that the level of studied nurses' knowledge about job crafting immediately after program implementation increased and two third of them were good after three months of application. There is highly significance at three phases of job crafting training program. This result may be due to nurses need chance to redesign their duties and responsibilities to match their

personal goals, interests that align with job demands.

On the same line with this result, Van Leeuwen et al. (2021) [18] found that applying a job crafting training program increase the level of awareness about job crafting behavior that leading to reduce the level of work obstacles and optimizing the use of work resources. For instance, Oprea et al. (2019) [19] showed in his study that the impact of the application of a program about job crafting create a positive impact on all dimensions job crafting. Also, the program developed by Dubbelt et al. (2016) [20] found that studied sample utilize their personal and past experiences about job crafting which who worked on improving specially their clinical outcomes as work involvement and job commitment.

The current study reported that studied nurses have a high level of job crafting immediately after training program in relation to preprogram.This may be due to job crafting program encourages nurses to motivate nurses to think about the way they perform tasks and find alternative methods to achieve work goals and build constructive relationships with co-workers, in addition to focusing on appositive cognitive thinking and new ideas to redesign work that fosters involvement, engagement and satisfaction.

On the line with current study Bernburg et al. (2016) [21] who reported that job crafting program enhancing career management skills, mindfulness a self-regulation technique and reducing job demands and increasing job resources, such as training opportunities, autonomy and social support**.** In addition to, in the program reported by Kooij et al. (2017) [22] who found that participants creating new job crafting plans related to their past experiences, improving the behavior about job crafting.

However, Zhao et al. (2010) [23] found that there is no need to demonstrate job crafting as there is no general impact of the application of a program about job crafting or any of its dimensions on the functional results of individuals in the work environment. In other words, no evidence of an influential relationship between work involvement and job satisfaction where the participants involve in job crafting. Trustful social climate is the main reason for motivating nurses to participate and involved into work.

The current findings showed that before training program the most of nurses were

moderate work involvement. While immediately after and after three month of job crafting training one third of them was high work involvement. There is highly significance differences pre and post and pre and after three months. These results may be due to there is a strong link between reducing work requirements, obstacles, increasing job resources and increasing the level of work involvement.

The current results supported with Rudolph et al. (2017) [24] being shared in personally meaningful work , the ability to change the way of thinking and the style of performing tasks and dealing well with the work environment has an effective and positive relationship with job involvement . Also, staff that have the ability to find meaning and benefit from work that aligns with his or their personal interests, has a high level of work involvement [25]. In addition to, for participants who have a weak level of job crafting, their level of work involvement improved after applying a training program about job crafting after 3 months. This was as a result that they found alternative ways to perform tasks and discuss work problems with colleagues and the create of new working relationships that stimulate work involvement [26].

These results are inconsistent with Sakuraya et al. (2020) [27] who found that, in general, is no positive impact of the application of job crafting program on work participation and involvement nor performance results, as this program is not sufficient to improve work involvement.

The point of distinction in this program is that it focuses on all dimensions of job crafting (task, relation, and cognition). As, the current results revealed that there is a positive relation between relational crafting dimension and work involvement immediately after program. These results may be due to the program helps the studied nurses to properly understand the job requirements and work environment and strengthen their abilities personal and organizational growth.

On the line with current results Rosso et al. (2010) [28] reported that having a strong relationship between co-workers based on trust and a spirit of cooperation and working as an integrated team is the main factor in improving the level of job involvement. It can help individuals to understand the work in depth and find the right ways to accomplish tasks for improving levels of work involvement.

This results contradictory with, Slemp et al. (2015) [29] who found that the strong relationship between cognitive crafting and work involvement, the way an participant makes changes to their perception about their job to attach more meaning to their work linked with high level of job involvement. Also, De Devotto et al. (2020)[30] indicated that there was a positive correlation between the cognitive crafting and positive work outcomes as work involvement.

The current results shows that there is statistically significance correlation between knowledge related job crafting, and work involvement immediately after application of job drafting training program. These results may be due to implementing of program enhancing career management skills, and improve social work environment and enable cognitive modifications, thus improving ability of work involvement.

On the line with current results Tims and Akkermans (2020) [31] who reported that job design is the main factor for job crafting as it is based on job management skills, which motivates individuals to participate and integrate into work and create a positive work environment that helps to improve work involvement. Also, Dubbelt et al. (2019) [32] job crafting is the way to creating a balance between personal and career requirements. This is assumed to enhance work involvement and clinical competence. Furthermore, it was found that nurses who are able to change the way they perform tasks by using alternative methods to achieve goals or add new tasks in line with their needs and preferences, and those who had constructive relationship with their peers perceive a high level of involvement, commitment and quality of care [33].

Conclusion

This study confirmed that that the job crafting intervention program specially relation job crafting increase work involvement of studied nurses. Post application of job drafting training program there is statistically significance difference. Also, there is statistically significance between relational crafting dimension and work involvement immediately after implementation training program.

Recommendations

Based on the findings of the present study, the following can be recommended:

Carry out workshops and training programs to raise the awareness of nurses of how to apply job crafting for their work**.**

2.Conduct team crafting that encourage participation and discussion between nurses.

3.Nurse managers can increase the levels of nurses' job involvement by re-designing jobs through job enlargement and enrichment.

4.Nurse managers should consider job demands and resources levels in hospital to increase job resources as opportunities for advancement, supervisor support, and receiving feedback.

5.Encourage nurses to made positive work changes in the way they perform their tasks, seeking alternative ways for goal achievements.

6. Build and maintain open lines of communication between nurse mangers and nurses that promotes trust and positive job outcomes.

7. Provides a job crafter model in workplace with reflect positive impact of job crafting.

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Impact of COVID -19 on the Psychosocial Status of Saudi and Egyptian Population: Comparative Study

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Abstract

Background*:* The uncertainty and limited predictability surrounding the course of the coronavirus disease 2019 (COVID-19) pandemic has had negative consequences on people's psychosocial health status. The study **aimed** to explore the impact of COVID-19 on the psychosocial status of Saudi and Egyptian population using a comparative design. **Subjects and Method: Design:** A descriptive cross-sectional study was conducted between April 10 and 30, 2020. **Subjects:** Considering 517 participants from both countries (230 Egyptians, and 287 Saudis). For the research purpose, psychosocial status was defined as the general psychological and social conditions of the person that encompasses the anxiety, depression, and obsession feelings of the individual. **Tools** used were COVID-19 Anxiety Scale (CAS), Depressive symptoms questionnaire (DSQ), and obsessive-compulsive disorder questionnaire (OCD). **Results:** The mean psychosocial distress scores were significantly higher among Egyptian participants compared to Saudis. Anxiety was significantly lower among Saudis older than 55 years old compared to Saudis from younger ages. Among Egyptian participants, those who were married, employed, and/or older than 55 years had significantly lower depression and OCD scores; among Saudis, women and unemployed had significantly higher depression and OCD scores. Overall, anxiety, depression, and OCD scores had a significantly positive correlation with one another. **Conclusions:** Egyptians had greater prevalence rates of anxiety, depression, and OCD than Saudis. Many factors served as significant independent predictors for anxiety, depression, and OCD levels including gender, nationality, and employment status. The study reveals some factors associated with psychological impact that may be used to formulate psychological interventions to assist patients with vulnerable mental health statuses during COVID-19 pandemic and future health emergencies.

Keywords: Anxiety; COVID-19; Depression; Obsessive–compulsive disorder; Egypt; KSA.

Introduction

The new coronavirus calls for dramatic psychosocial responses to contain a pandemic of uncertain magnitude. At least in the early days of the pandemic, global interest remained limited largely to physical assessments and not mental ones. Considerable efforts to reduce transmission were enacted to control the spread of SARS-CoV-2, such as lockdowns and limitations on the sizes of public gatherings, but case numbers continued to increase despite asking those who fell ill with COVID-19 to quarantine away from others. Health authorities also worked to enact rapid public health measures such as intensive surveillance,epidemiological investigations, and the closure of public spaces to prevent its transmittance in the population. Now, as vaccination rates increase and cases recede, similar challenges are likely to be experienced with managing psychological distress resulting from the acute phase of the COVID-19 pandemic and its aftermath [(1)].Effective life support and good handling of the consequences of this crisis must be ensured worldwide, as there is no health without mental health[(2)].

Psychosocial health is defined by the integration of one's thoughts, feelings, and emotions [(3)]. Psychosocial wellbeing refers to the aspect of rational thinking that enables people to face their challenges in a positive way. Zinger [(4)]noted that psychosocial health is linked to one's past experiences and emotions. It also includes the various dimensions of mental health.

The direct and indirect psychological and social consequences of the global COVID-19 crisis are expected to affect current and future mental health for population. The SARS-CoV-2 virus is believed to infect a variety of areas of the body, including the central nervous, digestive, and reproductive systems [(4)]; trigger the activation of the body's immune system; and impair brain and mental health functioning [(5,6)]. In addition, this pandemic has had serious and widespread effects on mental health due to social isolation and restricted social activity, resulting in increased anxiety, stress, loneliness, depression, and suicidal thoughts and attempts [(7)]. To avoid the negative effects of anxiety, depression, and stress, enacting mental

health assessments and interventions to address public psychological issues, like loneliness and social isolation, should be prioritized. Importantly, depression, stress, and other negative emotions can lead to suicidal behaviors [8].

During a pandemic, there are two types of anxiety. Healthy anxiety occurs when a person comes into contact with a potentially infected surface/person or exhibits respiratory signs or symptoms such as coughing, sneezing, or fever. On the other side of the coin, an unhealthy kind of anxiety may arise when someone else sneezes or coughs near them. However, these fears and anxieties can be mild and short-lived and can be alleviated through mental rehabilitation [9]. Likewise, the public's augmented worry might increase their distress, which could worsen underlying mental health problems. Confusion and fear of putting oneself and others at risk can increase anxiety, and emotions of paranoia and obsessive–compulsive disorder (OCD) symptoms may be realized by way of infection-related anxiety and excessive hand washing. However, supporting people's confidence and encouraging their self-expression can help them manage their psychological distress[10,11].

SARS-CoV-2 has had a significant impact on the mental health of the general public due to its quick evolution into a worldwide pandemic. On January 20th, China confirmed human-to-human transmission of SARS-CoV-2, with several Wuhan health workers found to be infected. Since then, the population has shown increased anxiety-related behaviors, with a significant shortage of face masks, disinfectants, soaps, gloves, and alcohol arising around the world. Similarly, as some preventive remedial strategies were suggested to be able to prevent COVID-19, the general public gathered overnight at pharmacies to purchase vitamins and mouthwash [2].

An obsession with avoiding infection and the overwhelming urge to wash one's hands were the most common behaviors in response to the COVID-19 pandemic. Stress usually leads individuals to be afraid and to repeat the same behaviors without satisfaction. Financial instability or damage, unemployment, poverty, quarantining or remaining in isolation at home, and the media's emphasis on the importance of

sanitation were all common factors in the present crisis that led to more distress, psychosocial implications, and worse symptoms among those already infected. The increase in these symptoms may not be immediate, but it likely to be noticeable in the long term with retrospective research and could be attributed to inadequate case detection, disruption of medical services, and revisions of public health priorities [(12)]. OCD is known to worsen six months to one year after the end of previous outbreaks, such as those of severe acute respiratory syndrome and Middle East respiratory syndrome [(13)].

To mitigate increases in episodes of OCD and other panic diseases during a public health disaster or emergency such as the COVID-19 pandemic, it is important to detect and address the resulting socioeconomic impacts through introducing pandemic management strategies, social support interviews, and mental health interventions to minimize such adverse effects and improve mental health. In addition, establishing a balance between infection control and the mitigation of socioeconomic adverse effects should be considered [(14)]. People should be encouraged to stay connected through social media and to maintain their personal daily lives as much as possible or to adopt alternative behaviors to meet their needs and emotions in the event of a crisis. In addition, the general public should continue to engage in healthy activities for enjoyment and relaxation, to exercise regularly, to get enough sleep, and to eat a healthy diet. To facilitate maximum care and calmness, people can seek up-to-date information and hands-on advice from the WHO website and trusted medical professionals while avoiding paying attention to rumors that enhance levels of discomfort, anxiety, and concern. For particularly anxious patients, the provision of psychological counseling, for example by phone, can help to minimize inadequate follow-up [(15)].

Significance of this study

As the global health agencies seek to find diagnostic and therapeutic tools for COVID-19, only a few psychological studies have paid attention to the impact of the COVID-19 pandemic on mental health, despite that it provoked widespread fear and anxiety. Therefore, in order to improve quality of life, it is

necessary to better understand the effects of the COVID-19 pandemic. Patients, survivors of COVID-19, and those who come in contact with COVID-19 cases may feel shame and social exclusion from those around them due to fear and panic as a cause of the pandemic. These negative emotions can lead to an increased risk of developing mental health problems, such as coping disorders, depression, and extreme fear, which can lead to illogical thoughts and dreams. Therefore, it is urgent to assess the psychological effects of the pandemic and study ways to prevent dangerous mental health problems, such as suicidal ideation, from arising due to fears of viral transmission.

Aim of this study

Our study aimed to assess the impact of COVID-19 on the psychosocial status of Saudi and Egyptian population using a comparative design during the early period of the COVID-19 pandemic.

Research question

What are the differences between Egypt and the Saudi population in their psychosocial response during COVID-19?

Subjects and Method

Design and setting:

To achieve the research purpose, this descriptive cross-sectional study was conducted between April 19 and 30, 2020, among the KSA and Egypt populations.

Study subjects:

This study included a purposive sample of 517 individuals who agreed to participate in the study. Participants were male or female and aged 18 to 55 years.

The study sample size was calculated using proportionate representation according to the population censuses of the frequency, and a design effect value of 1.0. Using the open-source OpenEpi version 3.01 software package, the minimum required sample size was determined to be 165 subjects from each country (330 from both) to assure the achievement of a 80% sampling power [16].

Study Tools:

Tool I: Sociodemographic data and personnel characteristics:

A structured questionnaire was established by the study authors that included questions about respondent age, sex, level of education, marital status, and house ventilation and light.

Tool II: COVID-19 Anxiety Scale (CAS):

The COVID-19 Anxiety Scale from a previous study was administered [17]. Participants reported how each item of the 7 items of the scale reflected recent behavior related to COVID 19 using maximum points of 3 (0 = not applicable to me, 3 = very applicable to me). Anxiety is measured by taking an average participant score (0 to 3), so the higher the average, the higher the level of individual anxiety about COVID 19.

Tool III: Depressive symptoms questionnaire (DSQ):

This questionnaire was designed by the study authors to assess traumatic psychological distress and measure depression symptoms among a population during the COVID-19 outbreak. It consists of 14 items with scores ranging from zero to three points (0 = not applicable to me, 3 = very applicable to me) that cover a group of depressive symptoms, such as disturbances in mood or behaviors, and the effects of depression on sexual desire, appetite, and sleeping patterns because of the COVID-19.

Tool IV: obsessive-compulsive disorder (OCD) questionnaire:

The scale was developed by the study authors to describe how participants feel during the COVID-19 pandemic. It consists of eight items scored using a four-point Likert scale, where zero points correspond to "did not apply to me at all," one point corresponds to "applied to me to some degree or some of the time," two points correspond to "applied to me to a considerable degree or a good part of time," and three points correspond to "applied to me very much or most of the time," respectively.

Validity of the scales:

The validity of tools II, III, and IV was tested for their content by a jury of five experts in the field of psychiatric, mental health nursing, and community nursing to ascertain the relevance and completeness of the tools; then, the necessary modifications were made accordingly.

Reliability of the scales:

Tools II, III, and IV reliability were assessed by Cronbach's alpha coefficient test to ascertain their internal consistency. All three tools showed a good level of reliability as follows: CAS scale score (α = 0.88), DSQ scale score (α = 0.81), and OCD scale score (α = 0.87).

Data collection and procedures:

An online, survey-based cross-sectional study was conducted in the KSA and Egypt. Social networks such as WhatsApp and Facebook (both Facebook, Inc., Menlo Park, CA, USA) were the main platforms for distribution of the questionnaire. Although the minimum required sample was estimated to be 165 participants from each country, the responses gained from each was a minimum of 230 persons and the total sample was 517 individuals in the entire study and the sampling was readily available. The participants were informed about the study nature, aims, and procedures in the questionnaire. Participant education levels varied between high school, undergraduate, and postgraduate. All participants completed the questionnaire with no time limit, taking between five and 10 minutes to complete all four questionnaires. No limitations were reported by the participants in understanding the instructions or items. The data-collection process extended over 20 days (April 10–30, 2020).

Pilot study:

A pilot study was conducted on 10% of the estimated required study sample to test the applicability of the data-collection tool and the feasibility of the study. Those who participated in the pilot study were not included in the main study sample. Based on their recommendations and suggestions, the tool was modified and finalized for use in the main study. The pilot study also served to assess the reliability of the anxiety, depression, and OCD scales through measuring their internal consistency.

Statistical analysis:

Statistical analysis was performed using the Statistical Package for Social Science, version 23 [(18)]. The nonparametric Mann–Whitney U test was used to compare quantitative

continuous data, while the chi-squared test was used to compare qualitative categorical variables. Fisher's exact test was used when the expected values in one or more of the cells in a 2 × 2 table were less than 5. For assessment of the inter-relationships among quantitative and ranked variables, Spearman's rank correlation was used. Multiple linear regression analysis was used to identify the independent predictors of the anxiety, depression, and OCD scores, with analysis of variance (ANOVA) applied for the full regression models. All tests were two-sided, and p-values of less than 0.05 were considered statistically significant, while p-values of 0.05 or greater were considered statistically insignificant (NS).

Ethical considerations:

The research proposal was submitted to the ethical committee of a Saudi medical college and was approved prior to commencing data collection. In addition, after reading the introductory information provided about the study, prospective participants were asked to provide their informed consent before starting the questionnaire. Anonymity and confidentiality were granted through the use of survey identification numbers with no collection of personal identifiers that could be used to identify participants or to associate participants with the collected data. There was no risk of discomfort to the participants, except for the potential inconvenience of the time required to participate in the study. According to the Declaration of Helsinki, all ethical principles of human medical research were observed[(19)]. Additionally, official permission to use and modify the CAS questionnaire was granted by the authors [(17)].

Results

The sample of the study included a sum of 517 participants, specifically 230 participants from Egypt and 287 participants from the KSA. **Table 1** shows that most participants were aged between 18 and 44 years, with mean ages of 27.7 ± 11.3 years and 25.8 ± 9.6 years for the Egyptian and Saudi participants, respectively. Among them, 48.3% of the Egyptians and 83.3% of the Saudi participants were female. Concerning education, most participants were in university phases of education (49.1% Egyptian and 70.4% Saudi participants). There were statistically

significant differences in sex, the percentage of participants who were living alone, and in the education of the participants between the two groups ($p < 0.05$).

Table 2 indicates the presence of statistically significant differences in the anxiety and OCD scores between the two groups ($p < 0.001$). Also, there was a statistically significant difference in depression scores between Egyptian and Saudi participants ($p = 0.01$). The percentage of Egyptian participants who had anxiety, depression, and OCD disorders was significantly higher than that of Saudi participants.

As shown in **Table 3**, the mean anxiety score was 1.4 ± 0.9 points, the mean depression score was 0.8 ± 0.5 points, and the mean OCD score was 0.7 ± 0.6 points for Egyptian participants, while corresponding mean scores for the participants from KSA were 1.2 ± 0.5, 0.5 ± 0.4, and 0.5 ± 0.5 points, respectively. Statistically significant differences were observed in these scores between the two countries, skewing toward Egypt ($p < 0.001$).

Regarding the relationship between anxiety and Egyptian participants' characteristics, **Table 4a** shows that there was no significant variation in anxiety scores based on said characteristics. Meanwhile, **Table 4b** reports on differences in anxiety scores based on Saudi participants' characteristics: a statistically significant difference was detected in anxiety scores based on participants' ages (the lowest mean anxiety scores was found among participants aged older than 55 years), whereas, no statistically significant difference was found in the anxiety scores of Saudi participants based on other characteristics, such as sex, marital status, education, and living alone.

Table 5a reveals a statistically significant difference in mean depression scores based on Egyptian age ($p = 0.006$) marital status and job ($p = 0.001$). Married, employed participants and those older than 55 years of age had the lowest mean depression scores. Concerning the variation in mean depression scores based on Saudi participants' characteristics, **Table 5b** shows that mean depression scores were

significantly higher among female and unemployed participants.

Table 6a shows the difference in mean OCD scores based on Egyptian participants' characteristics. The findings revealed that mean OCD scores were significantly lower for married, employed participants and those who were older than 55 years. Similarly, **Table 6b** shows the difference in mean OCD scores depending on Saudi participants' characteristics. Female and unemployed participants scored significantly higher on the OCD scale compared to males and employed participants.

Regarding the correlation's matrix of anxiety, depression, and OCD scores with some sociodemographic characteristics, **Table 7**demonstrates that anxiety, depression, and OCD had a significantly positive correlation with one another in the whole study sample and among the Egyptians and Saudi participants, respectively, as well. Moreover, the age of participants had a significantly negative correlation with both depression and mean OCD scores. Among Egyptian participants specifically, a statistically significant negative correlation was detected between participants' educational level and their depression mean score.

Figure 1 demonstrates the existence of a statistically significant positive correlation between anxiety and depression scores. Also, the scores of both anxiety and depression were significantly and positively correlated with OCD.

The multivariate analysis in **Table 8** shows that the nationality of Saudi participants was a significantly negative independent predictor of anxiety, whereas female sex was a positive independent predictor of the anxiety score. Together, these two factors explain 0.04% of the variation in anxiety scores. Meanwhile, **Table 9** demonstrates that age, employment status, and the nationality of Saudi participants was a statistically significant negative independent predictor of depression mean score. On the other hand, female sex and living alone were positive predictors of the depression mean score.

Finally, as shown in **Table 10**, employment status and the nationality of

Saudi participants were significantly negative independent predictors of the OCD mean score, whereas female sex was a significantly positive independent predictor of the OCD mean score; these three factors together explain 0.08% of the variation in the OCD score

Table 1 : Sociodemographic characteristics of the participants in the study sample according to their nationality

Sociodemographic characteristics	Nationality				χ^2 test	p-value
	Egyptian (n = 230)		Saudi Arabian (n = 287)			
	No.	%	No.	%		
Age (years):						
< 18	35	15.2	10	3.5		
18–44	159	69.1	247	86.1		
45–54	29	12.6	23	8.0		
≥ 55	7	3.0	7	2.4		
Range	17–65		17–55			
Mean ± SD	27.7 ± 11.3		25.8 ± 9.6		0.18	0.68
Median	25.0		25.0			
Sex:						
Male	119	51.7	48	16.7		
Female	111	48.3	239	83.3	71.58	< 0.001*
Marital status:						
Unmarried	121	52.6	166	57.8		
Married	109	47.4	121	42.2	1.41	0.23
Education:						
Basic/intermediate	52	22.6	71	24.7		
University	113	49.1	202	70.4	55.39	< 0.001*
Postgraduate	65	28.3	14	4.9		
Living alone:						
No	205	89.1	274	95.5		
Yes	25	10.9	13	4.5	7.54	0.006*
Job status:						
Unemployed	114	49.6	162	56.4		
Working	116	50.4	125	43.6	2.43	0.12

(*) Statistically significant at $p < 0.05$

Table 2: Anxiety, depression, and OCD status among participants by nationality

	Nationality				χ^2 test	p-value
	Egyptian (n = 230)		Saudi Arabian (n = 287)			
	No.	%	No.	%		
Cutoff: mean + 1 SD						
Anxiety:						
Present	61	26.5	27	9.4		
Absent	169	73.5	260	90.6	26.48	< 0.001*
Depression:						
Present	48	20.9	36	12.5		
Absent	182	79.1	251	87.5	6.50	0.01*
OCD:						
Present	54	23.5	32	11.1		
Absent	176	76.5	255	88.9	13.99	< 0.001*

(*) Statistically significant at $p < 0.05$

Table 3: Comparison between Saudis and Egyptians Psychosocial status

Condition	Nationality				Mann–Whitney U test	p-value
	Egyptian (n = 230)		Saudi Arabian (n = 287)			
	Mean ± SD	Median	Mean ± SD	Median		
Anxiety	1.4 ± 0.9	1.00	1.2 ± 0.5	1.00	19.70	< 0.001*
Depression	0.8 ± 0.5	0.64	0.5 ± 0.4	0.43	38.13	< 0.001*
OCD	0.7 ± 0.6	0.63	0.5 ± 0.5	0.38	19.34	< 0.001*

(*) Statistically significant at $p < 0.05$

Table 4a: Comparison of Egyptians' anxiety scores by their sociodemographic characteristics

	Anxiety score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	1.4 ± 0.5	1.00		
18–44	1.4 ± 0.6	1.00	3.27	0.35
45–54	1.4 ± 0.7	1.00		
≥ 55	1.1 ± 0.4	1.00		
Sex:				
Male	1.4 ± 0.6	1.00		
Female	1.5 ± 0.6	1.00	0.78	0.38
Marital status:				
Unmarried	1.5 ± 0.6	1.00		
Married	1.4 ± 0.6	1.00	2.34	0.13
Education:				
Basic/intermediate	1.4 ± 0.5	1.00		
University	1.4 ± 0.6	1.00	0.13	0.94
Postgraduate	1.4 ± 0.7	1.00		
Living alone:				
No	1.4 ± 0.6	1.00		
Yes	1.4 ± 0.7	1.00	0.02	0.90
Job status:				
Unemployed	1.5 ± 0.6	1.00		
Working	1.4 ± 0.6	1.00	0.93	0.34

Table 4b: Comparison of Saudis' anxiety scores by their sociodemographic characteristics

	Anxiety score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	1.6 ± 0.7	1.50		
18–44	1.2 ± 0.5	1.00	9.77	0.02*
45–54	1.3 ± 0.5	1.00		
≥ 55	0.9 ± 0.4	1.00		
Sex:				
Male	1.1 ± 0.5	1.00		
Female	1.2 ± 0.5	1.00	2.38	0.12
Marital status:				
Unmarried	1.2 ± 0.5	1.00		
Married	1.2 ± 0.5	1.00	0.57	0.45
Education:				
Basic/intermediate	1.2 ± 0.6	1.00		
University	1.2 ± 0.5	1.00	0.04	0.98
Postgraduate	1.2 ± 0.4	1.00		
Living alone:				
No	1.2 ± 0.5	1.00		
Yes	1.1 ± 0.5	1.00	0.95	0.33
Job status:				
Unemployed	1.2 ± 0.5	1.00		
Working	1.2 ± 0.5	1.00	0.28	0.59

(*) Statistically significant at $p < 0.05$

Table 5a: Comparison of Egyptians' depression scores by their sociodemographic characteristics

	Depression score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.9 ± 0.5	0.71		
18–44	0.8 ± 0.5	0.71	12.33	0.006*
45–54	0.6 ± 0.4	0.50		
≥ 55	0.3 ± 0.3	0.36		
Sex:				
Male	0.7 ± 0.5	0.57		
Female	0.8 ± 0.5	0.71	3.62	0.06
Marital status:				
Unmarried	0.9 ± 0.5	0.79		
Married	0.7 ± 0.4	0.57	11.31	0.001*
Education:				
Basic/intermediate	0.8 ± 0.5	0.71		
University	0.8 ± 0.5	0.79	4.79	0.09
Postgraduate	0.7 ± 0.5	0.57		
Living alone:				
No	0.8 ± 0.5	0.64		
Yes	0.8 ± 0.5	0.64	0.00	0.97
Job status:				
Unemployed	0.9 ± 0.5	0.79		
Working	0.7 ± 0.4	0.57	10.81	0.001*

(*) Statistically significant at $p < 0.05$

Table 5b: Comparison of Saudis' depression scores by their sociodemographic characteristics

	Depression score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.8 ± 0.8	0.61		
18–44	0.5 ± 0.4	0.43	4.67	0.20
45–54	0.5 ± 0.3	0.50		
≥ 55	0.3 ± 0.4	0.21		
Sex:				
Male	0.4 ± 0.3	0.29		
Female	0.6 ± 0.5	0.43	9.28	0.002*
Marital status:				
Unmarried	0.6 ± 0.5	0.43		
Married	0.5 ± 0.4	0.36	2.35	0.13
Education:				
Basic/intermediate	0.5 ± 0.5	0.36		
University	0.5 ± 0.4	0.43	0.34	0.84
Postgraduate	0.4 ± 0.4	0.40		
Living alone:				
No	0.5 ± 0.4	0.43		
Yes	0.6 ± 0.4	0.50	0.19	0.66
Job status:				
Unemployed	0.6 ± 0.5	0.50		
Working	0.4 ± 0.4	0.36	7.99	0.005*

(*) Statistically significant at $p < 0.05$

Table 6a: Comparison of Egyptians' OCD scores by their sociodemographic characteristics

	OCD score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.7 ± 0.6	0.75		
18–44	0.7 ± 0.6	0.63	9.18	0.03*
45–54	0.5 ± 0.8	0.38		
≥ 55	0.3 ± 0.4	0.13		
Sex:				
Male	0.6 ± 0.5	0.50		
Female	0.8 ± 0.6	0.75	2.62	0.11
Marital status:				
Unmarried	0.8 ± 0.6	0.75		
Married	0.6 ± 0.5	0.38	7.34	0.007*
Education:				
Basic/intermediate	0.7 ± 0.5	0.63		
University	0.8 ± 0.6	0.75	5.93	0.051
Postgraduate	0.6 ± 0.6	0.38		
Living alone:				
No	0.7 ± 0.6	0.63		
Yes	0.8 ± 0.7	0.63	0.13	0.72
Job status:				
Unemployed	0.8 ± 0.6	0.75		
Working	0.6 ± 0.5	0.50	7.27	0.007*

(*) Statistically significant at $p < 0.05$

Table 6b: Comparison of Saudis' OCD scores by their sociodemographic characteristics

	OCB score		Mann–Whitney U test	p-value
	Mean ± SD	Median		
Age (years):				
< 18	0.9 ± 0.8	0.63		
18–44	0.5 ± 0.4	0.38	4.55	0.21
45–54	0.5 ± 0.5	0.38		
≥ 55	0.3 ± 0.4	0.13		
Sex:				
Male	0.3 ± 0.4	0.19		
Female	0.5 ± 0.5	0.38	14.63	< 0.001*
Marital status:				
Unmarried	0.5 ± 0.5	0.38		
Married	0.4 ± 0.4	0.38	1.32	0.25
Education:				
Basic/intermediate	0.5 ± 0.5	0.38		
University	0.5 ± 0.5	0.38	1.58	0.45
Postgraduate	0.3 ± 0.3	0.25		
Living alone:				
No	0.5 ± 0.5	0.38		
Yes	0.4 ± 0.5	0.25	0.59	0.44
Job status:				
Unemployed	0.5 ± 0.5	0.38		
Working	0.4 ± 0.4	0.25	10.95	0.001*

(*) Statistically significant at $p < 0.05$

Table 7: Correlation matrix of anxiety, depression, and OCD scores as well as age and education by nationality

	Spearman's rank correlation coefficient		
	Anxiety	Depression	OCD
Egyptian (n = 230)			
Anxiety			
Depression	0.484**		
OCD	0.512**	0.681**	
Age	−0.079	−0.270**	−0.160*
Education	0.031	−0.139*	−0.111
Saudi Arabian (n = 287)			
Anxiety			
Depression	0.321**		
OCD	0.379**	0.614**	
Age	−0.033	−0.153**	−0.152*
Education	−0.012	−0.027	−0.035
Total (N = 517)			
Anxiety			
Depression	0.419**		
OCD	0.470**	0.654**	
Age	−0.055	−0.196**	−0.144**
Education	0.043	−0.029	−0.043

(*) Statistically significant at $p < 0.05$ (**) Statistically significant at $p < 0.01$

Table 8: Best-fitting multiple linear regression model for anxiety scores

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	1.54	0.10		15.543	< 0.001	1.34	1.73
Saudi	−0.25	0.05	−0.22	-4.808	< 0.001	−0.35	−0.15
Female sex	0.09	0.05	0.08	1.685	0.093	−0.02	0.20

r-squared = 0.04 Model ANOVA: F = 11.57; p < 0.05

Variables entered and excluded: age, education, marital status, job status, and living alone

Table 9: Best-fitting multiple linear regression model for depression scores

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	1.11	0.11		10.232	< 0.001	0.89	1.32
Saudi	−0.28	0.04	−0.29	−6.536	< 0.001	−0.36	−0.20
Age	−0.01	0.00	−0.15	−3.117	0.002	−0.01	0.00
Female sex	0.10	0.05	0.10	2.075	0.038	0.01	0.20
Living alone	0.15	0.08	0.08	1.928	0.054	0.00	0.31
Employed	−0.10	0.05	−0.10	−2.106	0.036	−0.19	−0.01

r-squared = 0.11 Model ANOVA: F = 14.31; p < 0.05

Variables entered and excluded: education, and marital status

Table 10: Best-fitting multiple linear regression model for OCD scores

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	0.85	0.11		8.106	< 0.001	0.65	1.06
Saudi	−0.28	0.05	−0.27	−5.854	< 0.001	−0.38	−0.19
Female sex	0.13	0.05	0.12	2.451	0.015	0.03	0.24
Employed	−0.14	0.05	−0.13	−2.902	0.004	−0.23	−0.04

r-squared = 0.08 Model ANOVA: F = 15.73; p < 0.05

Variables entered and excluded: age, education, marital status, job status, and living alone

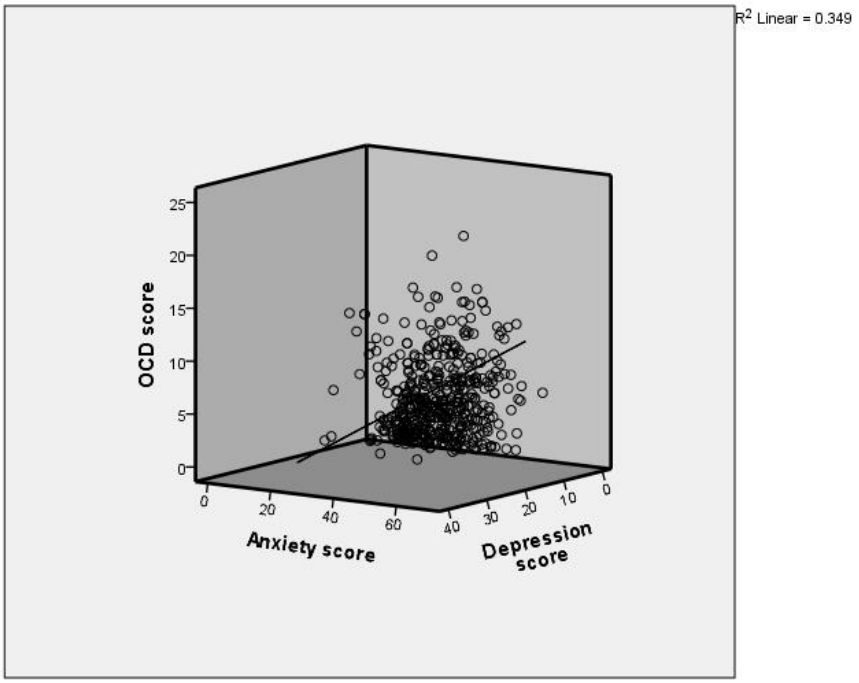

Figure 1: Correlation matrix of anxiety, depression, and OCD scores.

Discussion

The COVID-19 pandemic caused many sources of stress, including health concerns, isolation-related stress, relationship conflicts, and long-term financial stress. Stressful changes in gut microbiota and gut permeability as well as changes in circadian rhythm have remarkable effects on cell immunity, including the response to COVID-19 [(20)]. Many of the effects of stress are mediated by changes in immune cell energy regulation in the mitochondria of these responding cells. Stress, including high levels of stress associated with existing medical conditions, together with many of its symptoms, can make individuals more susceptible to serious infections [(21)].

Regarding the characteristics of our study sample, the number of Saudi participants in the study was greater than the number of Egyptian participants. This discrepancy in the participation rate was most probably due to the fact that Saudi individuals had higher levels of enthusiasm to participate in research studies; better Internet access; and more open-minded awareness and knowledge among the community about the importance of the problem, the rapid spread of the SARS-CoV-2 virus in Saudi community, and the desire to understand prevention measures to protect themselves from COVID-19. Additionally, Saudi participants seek to understand the psychological problems that they were exposed to during social isolation in order to rid themselves of such problems. This result is congruent with those of Alyami et al. (2021) [(22)], who found that the majority of their study sample was Saudi.

Concerning the personal characteristics of the Saudi portion of our study sample, our investigation revealed that the greatest percentage of Saudi participants were married, had a university education, employed, and of a majority age. Such a group of Saudi people, who are married, employed, adults, and highly educated could have greater levels of responsibility, knowledge, and enough experience in life to make them desire and have the willingness to contribute to our study. Our findings are comparable to those of Alyami et al. (2021) [(22)] and Shahin and Hussien (2020) [(23)], who stated that the majority of their Saudi sample was married, had a university education, employed, and of a majority age.

In addition, our study determined that most Saudi participants were female. Saudi women generally have more freedom and free time to agree and engage in research than men. On the contrary, Alkwiese et al. (2020) [24] emphasized that most of their Saudi participants were men. In contrast, Egyptian men were more active than Egyptian women in our study sample, which is attributed to the fact that many Egyptian women refused inclusion in this study because of the mental load and feelings of hopelessness and helplessness; stress; and the burden of COVID-19 on their lives, their family, and their children. This result was congruent with that of a recent study by Hussien and Shahin (2020) [25] conducted in Egypt, which found that the percentage of male participants exceeded that of female ones in their study sample. In the opposite way, female participants were significantly more prevalent than male ones in a different recent study from Egypt [26]. Also, Meng et al. (2020) [27] showed that the number of non-Saudi female participants was higher than that of non-Saudi males.

The current study results showed that Egyptians had greater prevalence rates of anxiety, depression, and OCD than Saudis. The explanation for these findings is that the Saudi government has provided safe nutritional support and financial subsidy for survival and enacted preventive measures like mask-wearing and social distancing promptly, even before the first COVID-19 case was confirmed in the KSA, which may have reduced early levels of public stress and anxiety. Other measures included the prevention of any unnecessary gatherings; a transient closing of educational institutions and mosques; and postponement or canceling of religious events such as Umrah, entertainment, and sporting events. These measures were carried out with compulsive curfew implementation for the public health interest despite the socioeconomic, political, and religious challenges. In accordance with our results, Shahin and Hussien (2020) [23] detected higher levels of depression, anxiety, and stress among Egyptians than among Saudis during the COVID-19 crisis. Moreover, feelings of uncertainty were found to be remarkably more prevalent among Egyptian university students than Saudi participants during the pandemic [28]. Also, Qiu et al. (2020) [29] reported increased prevalence rates of anxiety, depression, and OCD during the COVID-19 pandemic among study participants due to enhanced public panic.

The present study revealed an increased prevalence of depression, anxiety, and OCD among Saudis of younger ages. This finding might be due to the fact that the youth are full of energy, and their happiness is contingent on actions such as traveling and gathering together. Unfortunately, the COVID-19 pandemic has deprived younger individuals worldwide of fun times with each other in clubs or other places of enjoyment, which may increase the possibility of progression of depression, anxiety, and other psychiatric problems. In the same way, Wang et al. (2020) [30] reported an increase in anxiety, depression, and OCD in the young age group.

The current study reported higher mean scores of depression, anxiety, and OCD in female Saudi participants. These findings may be attributed to the fact that Saudi women are used to living on welfare and usually receive financial support from their husbands or their parents that permit their walking to recreational places and picnic with their friends or relatives and shopping for clothes and other things. With the COVID-19 pandemic, they became deprived of such enjoyable and fun times due to the social distancing and strict rules enacted by the Saudi government to reduce the transmission of SARS-CoV-2. Similarly, Wang et al. (2020) [30] observed an increase in anxiety, depression, and OCD among Saudi women more than Saudi men. On the contrary, Alyami et al. (2021) [22] emphasized that prevalence rates of anxiety, depression, and OCD were greater in men of older ages in their KSA population study.

The current study mentioned that the mean scores of anxiety, depression, and OCD among female Egyptian participants were insignificantly higher than those for male ones. The explanation for this finding might be that Egyptian women are responsible for the family and household needs, so they were worried about their family contracting COVID-19 and were affected economically as well, which placed a heavy burden on them due to their inability to meet their children's needs given the multiple responsibilities they had. Kazmi et al. (2020) [31] agreed with the results of our study, finding a greater level of anxiety among female participants than male ones.

Concerning the age of Egyptian participants, the present study mentioned that depression and anxiety were more common among those of younger ages. This occurrence could be due to the social distancing and closures of schools, cafes, universities, and clubs that made young people have to stay home all the

time, leading to boredom and pushing them to quarrel more frequently with their family members and siblings. This finding was similar to that of a study by Kazmi et al. (2020) [31], which detailed a higher level of psychological problems among younger than elderly participants during the COVID-19 pandemic. In contrast, Qiu et al. (2020) [29]reported that the depression level was insignificantly different based on the age of participants in China.

Regarding the employment-related impact among the Egyptian participants, our study demonstrated that anxiety, depression, and mean OCD scores were greater among unemployed individuals. In the same vein, Kazmi et al. (2020) [31] emphasized that depression and anxiety were more common in unemployed people than employed ones.

The present study illustrated that the mean score of anxiety among Egyptian participants was the highest, followed in descending order by those of depression and OCD. In opposition, Lai et al. (2020) [1] and Wang et al. (2020) [30] found that the prevalence of psychiatric problems in non-Saudi participants was arranged in ascending order as follows: anxiety, depression, and OCD.

Regarding the correlation between anxiety, depression, and OCD in the Saudi population, the current study stated that there was a significantly positive correlation. This may be due to a fear of contracting COVID-19 and the stress related to such fears, which made them anxious about their health and caused them to behave in an obsessive manner, washing hands and clothes excessively, avoiding touching anything or any person, acting in a ritualistic manner in all areas of life, and thinking very much about the ideas of infection and death from SARS-CoV-2. These restrictive and routine manners made such individuals become very sad and depressed. Correspondingly, Harper et al. (2020) [32]noticed increased OCD behaviors among participants aiming to protect themselves from viral contamination, such as increased social distancing and hand hygiene practices, together with heightened anxiety and depression levels. Similarly, a study by Ahorsu et al. (2020) [33] demonstrated the same outcomes as ours.

Concerning the correlation among anxiety, depression, and OCD of the Egyptian participants, our study stated that there was a significantly positive correlation. Likewise, Abba-Aji et al. (2020) [34] found that there was a significantly positive correlation

between anxiety, depression, and OCD of the participants in their study.

Conclusions

This study concluded that Egyptian participants had a remarkably higher stress level, including in the areas of anxiety, depression, and OCD, concerning COVID-19 compared to Saudi participants. In greater detail, anxiety was significantly lower in Saudi adults over the age of 55 years. However, married and employed participants and participants over 55 years old had significantly lower mean OCD and depression scores among Egyptians than single, unemployed, and younger participants. Female and unemployed individuals had significantly higher depression and mean OCD scores in the Saudi group than male and employed participants. On the other hand, the mean scores for anxiety, depression, and OCD were significantly correlated.

Participants' age was significantly inversely correlated with both depression and mean OCD scores. In addition, a statistically significant negative correlation was found between participants' educational level and mean depression scores, especially in Egypt.

Following the regression analysis, the nationality of the Saudi participants was deemed an independent negative predictor of anxiety. In addition, the age, employment status, and nationality of Saudi participants were statistically significant independent negative predictors of the mean depression score. The employment status and nationality of Saudi participants were also significantly negative independent predictors of the mean OCD score, while female sex was a significantly positive independent predictor of the mean OCD score.

Recommendations

In short, concerning the current situation associated with COVID-19, the public's mental health requires more attention from governmental, private, and nongovernmental organizations. Society needs to pay greater attention to seniors when major public health emergencies or pandemic crises occur and provide them with more human care and psychological interventions. Also, using psychological counseling and psychoeducation, social media can help to avoid poor follow-up and provide a good understanding of the impacts of a health emergency on the public's mental health, promoting mental wellness. It is recommended to construct an evidence-

based, tailored mental health promotion program that focuses on improving psychological and psychiatric health, reducing stress and anxiety among people, and enhancing the coping strategies available for application in catastrophic and long-lasting crises.

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Effect of Training Program on Technical Nursing Interns' Performance Regarding Application of Patients' Rights

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Abstract

Background: Patients' rights have become the center of national attention in the practice of nursing which are integral components of human rights. These rights are derived from medical professional values and code of nursing ethics, to defend patients' rights and ensure non-discrimination while providing care. **Objective**: The aim was to determine effect of training program on technical nursing interns' performance regarding application of patients' rights. **Design:** Quasi experimental research design was used. **Setting**: Study was conducted at medical department at Kafr ELShiekh general hospital affiliated to Ministry of Health. **Subjects:** All technical nursing interns (n=50) and all patients (n=133) admitted within six months were participated in the study **Tools:** Three tools were used; (1) Technical nursing interns' knowledge questionnaire (2) Technical nursing interns' practice observation checklist (3) Patients' satisfaction interview. **Results**: Technical nursing interns range (60% - 54%) showed either poor or fair knowledge level about all domains of patients' rights which improved post program to be range (86% - 76%) have good level of total knowledge. Technical nursing interns range (66% - 56%) had unsatisfactory level of patients' rights practice preprogram, changed post program to be range (88% - 78%) had satisfactory practice level. Post program 81.2%, 74.4% and 63.9% of patients had high satisfaction level on access to information and emergency services, respectful and non-discriminatory services and keep privacy, and confidentiality domains. **Conclusion**: The designed and implemented training program significantly improved technical nursing interns total knowledge and maintain their practices about patients' rights. **Recommendation**: Technical nursing interns required to attend training program about patients' rights prior to internship training to update their knowledge.

Key words: Patients' right, Technical nursing interns, Training program, Performance.

Introduction

Recently patients' rights have become the center of national attention in the practice of nursing which are integral components of human rights. These rights are derived from medical professional values and ethics, to defend patients' rights and ensure non-discrimination while providing care of patients with high respect and quality[(1)]. Patient rights are legal and ethical issues, reflects the patient's acceptance to participate in care with an emphasis on his or her autonomy. A hospital can't violate these rights, which setup the relationships between the patients, system and health care providers[(2)]. Patients' bill of rights is a document on how patient treated during the course of their hospital stay, and provide goals and expectations for patient treatment[(3)].

Technical nursing interns are newly graduate nursing students play an important role in providing patients' care. Their performance regarding patients' rights are to ensure that they provide the highest possible standard of care while respecting the fundamental dignity of each patient, as well as help patient express any problem that may encounters[(4)]. Patients' rights consists of five domains including respectful and non-discrimination, choice of providers and deciding freely, access to information and emergency services, complaints and appeals and keep privacy and confidentiality [(5)].Respectful and non-discrimination means that patients have the right to considerate, respectful and non-discriminatory care from their providers. The health care staff required to give care irrelevant of age, race, religion, nationality, legal status, financial status, type of insurance, diagnosis, sexual orientation or gender identity or expression. Patients' spiritual, psychosocial, and cultural beliefs must be respected [(6)]. While the domain of patients' rights to choose health care providers and deciding freely means that patients have the right to choose who can give them high quality care on the basis of adequate information[(7)]. Patients' right for access to information and emergency services. Patients should receive adequate, accurate and easily-understood information about their illness, possible interventions, and the known benefits and risks of specific treatment options[(8)]. Each patient has the right to emergency services to avoid as much suffering and pain as possible, in each phase of his or her illness and avoid complications[(9)]. Patients have right to complain and appeals whenever suffered a harm and have the right to receive a response or other feedback.

Complaints typically involve minor issues, such as room housekeeping or food preferences, while patient' appeals means a formal or informal written or verbal complaint that is made to the hospital by a patient, or the patient's representative, regarding the patients' care [10,11].

Finally, patients' rights to privacy and confidentiality, all information relative to patient' health status and medical records must be considered private, and adequately protected [12]. However, application of patients' rights are the basis of patients' satisfaction with the treatment process, confidentiality, informed consent and privacy[13]. Patient' satisfaction equal to the degree of convergence between the expectations the patients have of ideal care and their perception of the care they really get[14].

Patient' satisfaction can be defined as the expression of patient's judgment on the quality of care received [15]. National and international laws as well as human rights conventions and treaties reaffirms the essential components of the patients' rights to health as state obligations. These components are; the availability of health services, health infrastructure and public health programs, the non-discriminatory access for all to health care, the acceptability of health services and, the quality of care. Those patients' rights to health constituents are in perfect correspondence with patient satisfaction components[16, 17]. Patients' right is one of eight categories that the final accreditation is based on[18]. So, this study designed and implemented training program about patients' rights for technical nursing interns who still have not started their work in the future work place aiming at improve their knowledge about patients' rights and practice which can bring lots of benefits such benefits include increased quality of health care services; decreased costs; more prompt recovery; decreased length of stay in hospitals; lower risk of irreversible physical and spiritual damages. Consequently increased patient' satisfaction and dignity with patients' rights application[19, 20].

Aim of the study

Determine effect of training program on technical nursing interns' performance regarding application of patients' rights.

Research hypothesis

After implementation of the training program it is expected that Performance of technical nursing interns regarding application of patients' rights will be improved

Subjects and Method

Study design: Quasi experimental research design was used to achieve the aim of the present research.

Setting: The study conducted in Medical department of Kafr EL-Shiekh General hospital affiliated to Ministry of health where the technical nursing interns take their training. It was established in the last fifties, has four floors and capacity of hospital contain 450 beds.

Subjects: The study subject consisted of all (N=50) technical nursing interns at medical department and all patients (N=133) admitted within six months at the previous mentioned setting, who are adult, fully conscious, and have more than three days admission.

Tools: The data of the study collected using three tools:

Tool I:Technical Nursing Interns' Knowledge Questionnaire. This tool developed by the researcher guided by **Selen and Yeliz (2015)**[21] and relevant literatures review to assess their knowledge about patients' rights and

Part one: Characteristics of technical nursing interns such as age, sex, marital status, source of information about patients' rights and achievement level.

Part two: Question (67) about Technical Nursing Interns' Knowledge about patients' rights. in form of multiple choice and true & false. These questions classified into the patients' rights following categories: -

Basic concepts and benefits of patients' rights.

Respectful and nondiscrimination service domains.

Choice of care providers, deciding freely, access to information and emergency services domains.

Complaints, appeals, keep privacy and confidentiality domains.

Aspects of patients' satisfaction with application of patients' rights domains.

Practice situations and examples on application of patients' rights five domains

Scoring system: Technical nursing interns' answers scored by two for correct answer and zero for incorrect answer

Levels of head nurse knowledge

- Good level of knowledge ≥75%
- Fair level of knowledge 75-% - 60%
- Poor level of knowledge <60%

Tool II: Technical Nursing Interns' Practice Observation Checklist.

This tool developed by the researcher guided by **WHO (2018)** [22], **Parsapoor**

(2012)[23], **Habib and Al-Siber (2013)**[24], and recent related literatures.

It included five domains of patients' rights as follows:-

Patients' rights for receiving respectful and non-discriminatory service domain

Patients' rights for choose of care providers and deciding freely domain

Patients' rights for access to information and emergency services domain included two subscales:

Access to information subscale,

Emergency services subscale,

Patients' rights for complaints and appeals domain

Patients' rights for keep privacy and confidentiality domain, divided into two subscales:

Autonomy subscale,

Confidentiality subscale

Scoring system

Technical nursing interns' practice for application of patients' rights domains observed on a three points Likert scale ranging from 3=complete done, 2= incomplete done and 1= not done.

Levels of existence of conflict

-Satisfactory application level ≥75%

Unsatisfactory application level <75%

Tool III: Patients' Satisfaction Interview.

This tool developed by the researcher guided by **Parsapoor (2012)**[23], and recent related literatures to assess patient' satisfaction regarding application patients' rights domains and include two parts as follows:

Part one: Characteristics of patients such as diagnosis, age, sex, marital status, department, educational level, length of stay.

Part two: Patients' satisfaction regarding application of five domains of patients' rights used in tool II and contains 30items as follows

Respectful and non-discriminatory service include 6 items

Choice of providers and deciding freely include 6 items

Access to information and emergency services include 6 items

Complaints appeals include 6 items

Keep privacy and confidentiality, include 6 items

Scoring system:

Patients' responses measured on five points likert scale 5=strongly agree, 4=agree, 3= uncertain, 2=disagree, and 1= strongly disagree and concluded to three points

likert scale 3= strongly agree + agree, 2= uncertain and 1= strongly disagree + disagree.

Levels of patients satisfaction.

High level of satisfaction ≥75%
Moderate level of satisfaction 60 -75%
Low level of satisfaction < 60%

Method

- Official permission to conduct the study from the director of Kafr EL-Shiekh General Hospital was obtained and submitted to the responsible authorities to obtain the approval and assistance in data collection.
- **Ethical consideration:** the aim of the study was explained to technical nursing interns to gain their cooperation, verbal consent for their participation in the study was obtained and they had the right to withdrawal. They were informed that their information was kept confidential.
- Tools II and III were presented to a jury from the area of specialty to check tools content validity.
- The jury responses were represented in four points rating scale ranging from (4-1); 4= strongly relevant and 1= not relevant. Necessary modifications were done included clarification, omission of certain questions and adding others and simplifying work related words. The face validity for technical nursing interns' practice observation checklist of tool II was 94% and 95% for patient' satisfaction for tool III
- Reliability of tools was tested using Cronbach Alpha Coeffecient test, Its value 0.835 for patients' satisfaction, 0.776 for technical nursing interns practice, and 0.812 for technical nursing interns' knowledge
- A pilot study was conducted on (5) technical nursing interns and (13) patients randomly selected to test the tools for clarity and applicability, not from study subjects. It was conducted two times to the same technical nursing interns and patients after two weeks later (test - retest) to assess reliability of tools.
- **Data collection phase**
- Tool I Knowledge questionnaire about technical nursing interns patients' rights, was used before and after implementation of the program.
- Tool II technical nursing interns' practice observation checklist was used before and after implementation of program.
- Tool III patients' satisfaction interview, was used after implementation of program.
- The technical nursing interns were divided into 7 groups. The program time was 7 hours for each group. Every session

1 hour for seven days. The program was conducted for technical nursing interns at medical department at Kafr EL- Sheikh General Hospital or inside head nurses office as available.

The appropriate time for data collection was started session at 11am –12pm as it was the most suitable time for them after finishing first necessary work. The duration of data collection was 6 months started from February 2021 to July 2021.

Constructional of educational program

The first step was the statement of instructional objectives derived from the assessed need of the sample and literature review.

Instructional objectives

The main objective of the program is to improve technical nursing interns' knowledge and performance regarding application of patients' rights

Specific objectives

At the end of the program the technical nursing interns should be able to:

-Recognize basic concepts and benefits of patients' rights domains

-Explain patients' right for receiving respectful and non-discriminatory service domain

-Discuss patients' right for choose of care providers and deciding freely and access to information and emergency services domains.

-Illustrate patients' right for complaints appeals and keep privacy and confidentiality domains.

-Explain aspects of patients' satisfaction regarding application of patients' rights domains

-Apply training on practice situations examples on five domains of patient' right.

Program content

The content was designed to provide knowledge The content was designed to provide knowledge related to patients' rights. . The program includes seven sessions as follows:-

Session (1) Concepts and benefits of patients' rights.

Session (2) Patients' right for receiving respectful and non-

discriminatory service.

Session (3) Patients' right for choose of care providers, deciding Freely, access to information and emergency services.

Session (4) Patients' right for complaints, appeals, keep privacy and confidentiality.

Session (5) Aspects of patients' satisfaction regarding application of patients' rights.

Session (6,7) Training on practice situations and examples on five domains of patient' right.

Learning strategies

Selection of teaching method was governed by studying the subjects needs and content of the program. The methods used were group discussion, simulation, and role play.

Teaching aids

The teaching aids used for attainment of program objectives were data show, handouts, flow sheets, pens and papers.

Implementation of program

The study was carried on 50 technical nursing interns. The technical nursing interns were divided into seven groups. The program time was 7 hours for each group. Every session 1 hour for seven days. The program was conducted for technical nursing interns at medical department at Kafr EL- Sheikh General Hospital or inside head nurses office as available. They preferred to start session at 11am –12pm as it was the most suitable time for them after finishing first necessary work. The technical nursing interns were informed about objectives of program. The researcher built good relationship and motivated them to participate and share in program activities.

Statistical analysis

Statistical presentation and analysis of the present study was conducted, using the mean, standard Deviation, chi-square and Linear Correlation Coefficient [r]tests by SPSS V20.

Results

Table (1): Shows characteristics of technical nursing interns. High percent(70%) of technical nursing interns aged 21- < 22 years old with age ranged 20 -22 years and mean age 21.4±1.35. 80% were female, 62% were single. 48% had very good and 40% had excellent and 12% had good level of achievement.

Table (2): Represents characteristics of patients. Patients age ranged from (29 -72) years old, 35.3% and 33.8% of patients aged 51- < 60 and > 60% years, with mean age 52.6±7.81, 51.9% of patients were male and 63.2% of them were married. 17.3% of them their diagnosis had renal failure, and 11.3% had uncontrolled diabetes mellitus. Patients education (35.3%) were read and write, 27.8 had diploma and 20.3% have high education. 66.9% and 33.1% of patients stayed one

week and more in the medical department at Kafr– El Shiekh general hospital.

Figure (1): shows technical nursing interns' levels of total knowledge about patients' rights. Preprogram about half of them had poor level of knowledge on patients' rights, but, post program changed to be the majority were at good level

Table (3): Shows technical nursing interns' levels of total knowledge about patients' rights domains pre and post training program. there was statistically significant improvement of technical nursing interns level of knowledge for all patients' rights domains post program at ($p<0.001$) and ($p <0.05$).Preprogram range (46% - 40%) of technical nursing interns showed good level of knowledge about all domains of patients' rights. But high percent(60% - 54%) of technical nursing interns showed either poor or fair level of knowledge about all domains of patients' rights. The technical nursing interns knowledge improved to range (86% - 76%) showed good level of knowledge post program.

Figure (2): Technical nursing interns' level of total practice for patient' right domains pre and post program. Preprogram below half of technical nursing interns had satisfactory level changed post program to be majority have satisfactory level of total practice for patient' right domains.

Table (4): Represents technical nursing interns' levels of practice for application of patients' rights domains pre and post program. There were highly statistical significant improvement of technical nursing interns' level of practice for application of patient' right domains at ($p=<0.001$). Preprogram technical nursing interns 66% and 62% showed unsatisfactory level for practice of choice of providers and deciding freely, complain and appeals domains changed post program to 80% and 78% showed satisfactory practice level. Equal (60%) of technical nursing interns showed unsatisfactory level for practice of respectful and non-discriminatory service domains and keep privacy and confidentiality domains preprogram respectively changed post program to be 82% and 88% satisfactory practice level. Beside, technical nursing interns 56% showed unsatisfactory level for practice of access to information and emergency services preprogram, changed post program to be 86% showed satisfactory level. **Figure (3):** Shows levels of total patients' satisfaction with

application of patients' rights, post program high percent of patients had high level of satisfaction and low percent had moderate and low levels of satisfaction.

Table (5): Shows levels of patients' satisfaction about application of patients' rights post program. This table revealed that 81.2%, 74.4% and 63.9% of patients had high satisfaction level on access to information and emergency services, respectful and non-discriminatory services and keep privacy, and confidentiality domains, post program, respectively. More than half (57.1%) of patients had high satisfaction level on choice of providers and deciding freely post program. Equal (37,6%) of patients had low and moderate level of satisfaction about complaints and appeals domain post program. **Figure (4):** Shows correlation between total practice and total knowledge pre and post program. There was statistical significant positive correlation between technical nursing interns total knowledge and practices about patients' rights preprogram at (P = 0.026)and post program at (P = 0.001)

Figure(5): Correlation between level of total practice and level of total satisfaction post program. There was statistical significant positive correlation between technical nursing interns level of total practice and level of total patient' satisfaction post program at (P = 0.022).

Table (1): Characteristics of technical nursing interns (N= 50)

Variables	N= 50	%
Age		
20 - < 21	14	28
21 - < 22	35	70
22 -	1	2
Range	20 - 22	
Mean±SD	21.4±1.35	
Sex		
Male	10	20
Female	40	80
Marital Status		
Single	31	62
Married	19	38
Level of achievement		
Excellent	20	40
Very good	24	48
Good	6	12

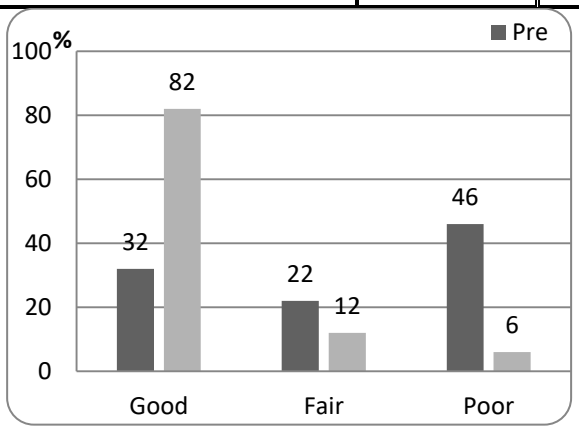


Figure (1): Technical nursing interns' level of total knowledge about patients' rights pre and post training program

Table (2): Characteristics of patients (No= 133)

Variables	N=(133)	%
Age (years)		
29 – 40	16	12.0
40- <51	25	18.8
51- 60	47	35.3
>60	45	33.8
Range	29 - 72	
Mean±SD	52.6±7.81	
Sex		
Male	69	51.9
Female	64	48.1
Diagnosis		
Uncontrolled Diabetes Miletus	15	11.3
Liver failure	14	10.5
Renal failure	23	17.3
Convulsion under investigation	10	7.5
Hematemesis	15	11.3
Cerebral Stroke	9	6.8
Cerebral hemorrhage	8	6.0
Septicemia	10	7.5
Congestive heart failure	10	7.5
Liver cirrhosis	9	6.8
Aneamia	10	7.5
Marital Status		
Single	7	5.3
Married	84	63.2
Divorced	15	11.3
Widow	27	20.3
Educational level		
Illiterate	22	16.5
Read and write	47	35.3
Diploma	37	27.8
High education	27	20.3
Length of stay		
one week	89	66.9
more than week	44	33.1

Table (3): Technical nursing interns total knowledge level about patients' rights domains pre and post training program (No = 50)

Total Knowledge level / Knowledge domains	Pre			Post			Chi- square	
	Good	Fair	Poor	Good	Fair	Poor		
	%	%	%	%	%	%	X^2	P-value
Basic concepts and benefits of patients' rights	46	20	34	76	16	8	11.958	0.003*
Respectful and non-discriminatory service right	44	20	36	80	14	6	11.991	0.002*
Choose care providers, deciding freely, access to information and emergency services right	40	32	28	82	16	2	21.163	<0.001**
Complaints, appeals, privacy and confidentiality right	44	22	34	78	12	10	12.754	0.002*
Patients' satisfaction with application of patients' rights	40	22	38	84	10	6	15.159	<0.001**
Difficult situations on receiving respectful, non-discriminatory service, choose of care providers and deciding freely, access to, information and emergency services	46	26	28	82	14	4	12.888	0.002*
Difficult situations about complaints, appeals, keep privacy and confidentiality	40	20	40	86	10	4	15.114	<0.001**

****Highly significant at P < 0.001 * significant at p <0.05**

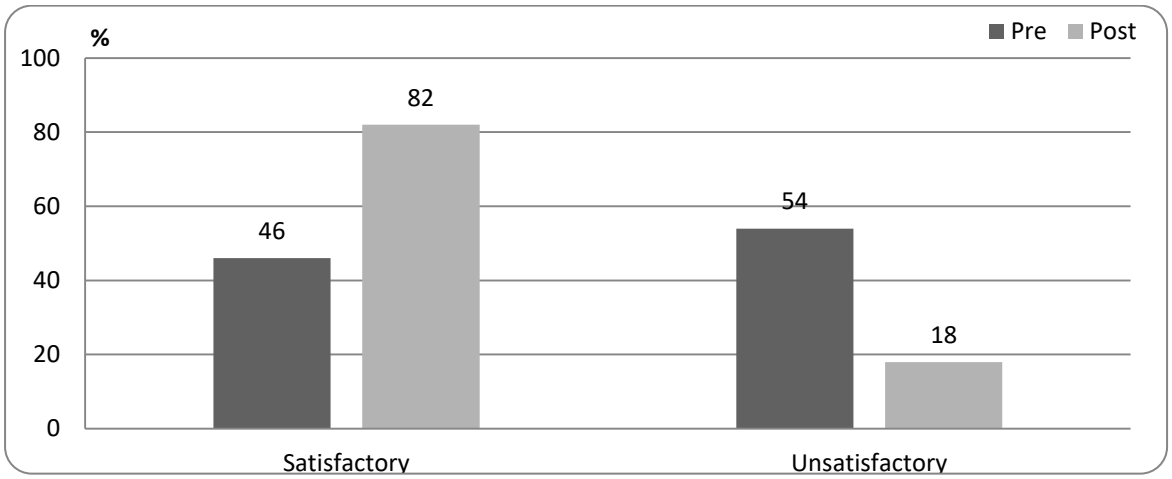


Figure (2): Technical nursing interns' level of total practice for patient' right domains pre and post program

Table (4): Technical nursing interns' levels of practice for application of patient' right domains pre and post training program (No = 50)

Level of practice / Domains	Pre		Post		Chi-square	
	Satis	Unsatis	Satis	Unsatis		
	%	%	%	%	X^2	P-value
Respectful and non-discriminatory service domain	40	60	88	12	18.382	<0.001**
Choice of providers and deciding freely domain	34	66	80	20	16.103	<0.001**
Access to information and emergency services domain	44	56	86	14	13.511	<0.001**
Complaints and appeals domain	38	62	78	22	16.420	<0.001**
Keep privacy and confidentiality domain	40	60	82	18	9.007	<0.001**

****Highly significant at P < 0.001**

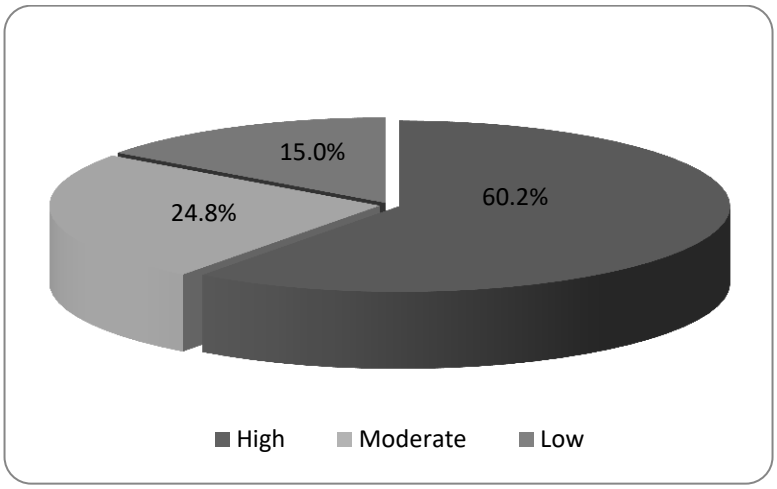
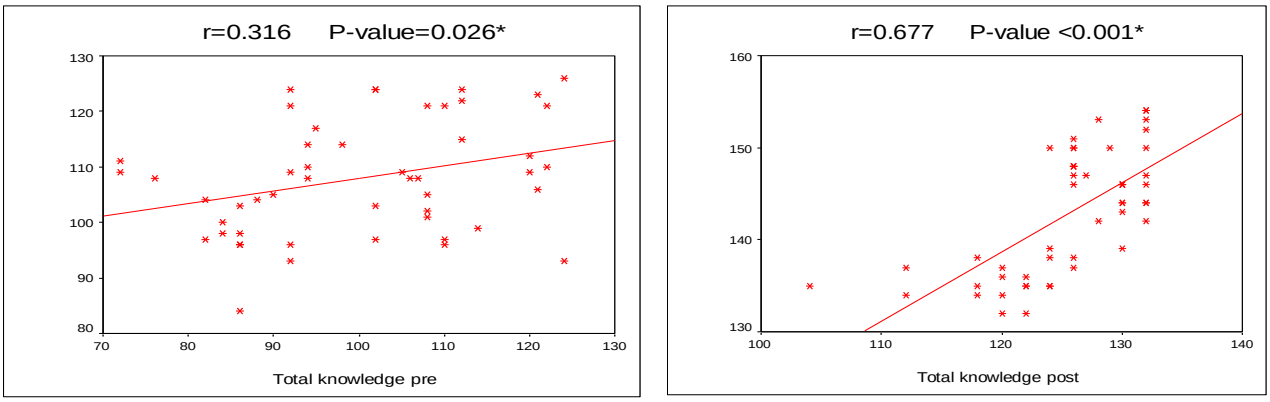


Figure (3): Levels of total patients' satisfaction with application of patients' rights post program

Table (5): Levels of patients'' satisfaction about application of patients' rights post program (No = 133)

Dimensions of patients' satisfaction	High		Moderate		Low	
	N	%	N	%	N	%
Respectful and non-discriminatory domain	99	74.4	21	15.8	13	9.8
Choice of providers and deciding freely domain	76	57.1	36	27.1	21	15.8
Access to information and emergency services domain	108	81.2	22	16.5	3	2.3
Complaints and appeals domain	33	24.8	50	37.6	50	37.6
Keep privacy and confidentiality domain	85	63.9	37	27.8	11	8.3



Preprogram **Post program**

Figure 4: Correlation between total practice and total knowledge pre and post program.

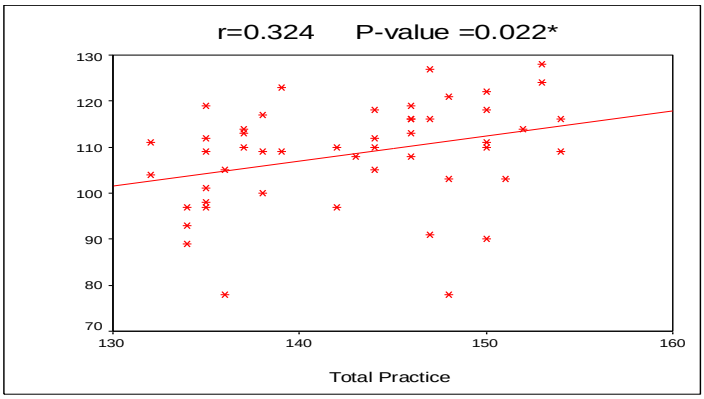


Figure 5: Correlation between level of total practice and level of total satisfaction post program.

Discussion

Patients' rights are a crucial human right because patients are one of the most vulnerable groups in the society. Therefore, adherence to patient rights is considered an important issue in the quality improvement efforts in health services, and one of the main bases for defining standards of clinical services.

Result analysis indicated that about half of technical nursing interns preprogram showed poor level of knowledge about patients' rights. Most properly those technical nursing interns' poor level of knowledge was due to their curriculum because not all patients' rights domains are included. Actually more than half of technical nursing interns preprogram showed either poor or fair knowledge about patients' rights inspite of their level of achievement were excellent and very good. The fact is that technical nursing interns pass through a transient period with significant job responsibilities. Usually they face multifaceted issues, dilemmas and problems that oblige them to use their talents, skills and knowledge which should be acquired through their undergraduate education and training.

Yousefzadeh, et al., (2021)[25] study about knowledge and attitude of midwifery students towards observing the ethical and legal standards of patients' rights supported the present study and found that more than half of the internship students weren't aware of patient rights and had low level of knowledge and revealed that midwifery students due to the lack of direct involvement in patient' problems and lack of responsibility in this regard have not yet felt the need for further training.

Also, **Hassan et al (2017)[26]** study about effect of patients' rights training sessions for nurses on perceptions of nurses and patients, supported the present study in the governmental and private hospital and revealed that preprogram less than half of nursing staff in the governmental hospital and about two- fifths in the private hospital had incorrect or incomplete knowledge related to patients' rights. He stated that this may be attributed to many factors, such as a lack of awareness and attitude toward patients' rights and lack of in-service training programs.

Adding that **Ganjoo, et al., (2021)[27]** found that high percent of the participants had good knowledge about ways of dealing with emergency situations and contradicting options after implementing the workshop

compared to low percent before implementing the workshop.

The present study finding showed that more than half of technical nursing interns had unsatisfactory level of total practice for patients' rights before program implementation. The fact is that those technical nursing interns practice had unsatisfactory level of all domains including respectful and non-discriminatory service, choice of providers and deciding freely, access to information and emergency services, complaints and appeals, and keep privacy and confidentiality domains. Their unsatisfactory practice level due to lack of knowledge about patients' rights domains and need for attending orientation training program prior to their internship period to guarantee better patients' rights knowledge, skills and practice.

Thema (2020)[28] study about strategies to improve patients' awareness regarding the patients' rights charter in selected hospitals of Limpopo Province in South Africa supported the present study result and found that preprogram majority of the participants had inadequate total practice regarding patients' rights. Conversely, **Fouad et al (2020)[10]** study nurses compliance toward patients' rights and its relation to patients satisfaction, found that more than half of staff nurses at Minia University Hospital had high level of compliance and rest had moderate level of compliance toward patients' rights. This result due to staff nurses at university hospitals attending courses about patient rights activate their positive vision toward nursing profession and improved their attitude toward performing patients' rights**.**

Kassa et al (2019)[29] study about assessment of knowledge, attitude and practice and associated factors towards palliative care among nurses working in selected hospitals, Addis Ababa, Ethiopia supported the present study result and stated that majority of nurses had poor attitude and poor practice when dealing with terminally ill patients, mentioned that finding could be related to respondents' poor knowledge towards palliative care and also due to the study subjects who had less than five years of work experience since experience affect the practice.

Yet knowledge and practice of most of technical nursing interns showed statistical significant improvement in majority of items due to their attendance of present study program. The sessions explained to them concepts, benefits, principles, patients' rights domains, patient' satisfaction on application

of patients' rights and practical situation on patients' rights domains. The well-designed program attracted those technical nursing interns' attention to recognize the giving and receiving of information and evoked their sense of responsibility toward application of patients' rights domains. Really the program clarified patients' rights domains and patient' satisfaction, which positively impact on their performance regarding patients' rights through daily work activities.

Ganjoo, et al., (2021)[27] support present study result and found that high percent of the participants had good knowledge and practice about ways of dealing with emergency situations and contradicting options after implementing the workshop compared to low percent before implementing the workshop.

This result is congruent with the study done by **D'Souza, et al., (2020)**[30] found that high percent of the participants' knowledge and practice about privacy and confidentiality aspects were improved after implementing the planned teaching program. Also, **Njuguna, et al., (2020)**[31] study health literacy on patients' rights charter among users of primary care health facilities in Kiambu and Machakos Counties in Kenya, support present study result and found significant improvement in the participants' knowledge and practice regarding methods of complain and confidentiality issues. Majority of patients had high satisfaction level on access to information and emergency services post program. actually patients were strongly agreed that technical nurses interns provide them with information in clear and understandable manner and provide them with sufficient information about the possible side effects and complications after asking doctor. Technical nurses' interns provide patients with emergency services for serious dysfunction of body organs and provide patients with emergency services and first aid whenever required

Asamrew and Endris (2020)[32] study about level of patient satisfaction with inpatient services and its determinants, supported the study result and stated that the relevance of information services given for patients and proper admitting processes, with the short waiting time to receive service, and ensuring privacy and confidentiality for services provided by nursing staff provided high level of satisfaction for patients. They explained that this may be due to the level of the hospital and/or workers capacity and motivation status of the health workers to

attain higher patients' needs. **Dada et al (2021)[33]** study about patients' satisfaction with emergency care services in a University Teaching Hospital in South-West, Nigeria supported the study results and mentioned that speed of pain control and the time to surgical intervention was rated very good and excellent .

Also, **Farzianpour et al (2016)**[34] study about relationship between' patient's rights charter' and patients' satisfaction in gynecological hospitals, supported study findings and found that nursing staff providing sufficient information about the disease, treatment methods and common complications, patient's and the alternative decision-maker's access to health care team during hospitalization and after discharge from the hospital in an understandable language. Conversely **Bazmi et al (2019)**[35] study about assessment of patients' awareness of their rights in teaching hospitals in Iran. reported the lowest score of patient' knowledge for the right to receive necessary information on possible side effects, as well as other treatment options and participation in the final selection of treatment

Conclusion.

Technical nursing interns had poor level of total knowledge and unsatisfactory level of total practice for patients' rights preprogram which reflected on their demand for training program to explain necessary information and train them for application of patients' rights. The present study well designed program improved technical nursing interns' knowledge and practice. As well as improved their performance regarding practicing of patients' rights domains and increased patients' satisfaction.

Recommendations

In the light of the current study finding these recommendations are suggested:

Integrate patients' rights in the curriculum of technical nursing students to improve their knowledge.

Conduct orientation about patients' rights prior to internship training practice.

Develop supportive working conditions and encourage nurses' compliance to patients' rights.

Stress use of steps of patients' rights to complains among nurses.

Conduct periodic formal and informal evaluation of nurses' practice of patients' rights.

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Improving Pediatric Critical Care Nurses' Knowledge and Practices Regarding Restraint Application and Children's Outcomes

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Abstract

Background: Critically ill children often connected with many tubes and lines. Physical restrain routinely implemented in critical care unit to reduce child's self-injury and improve safety. Therefore, the current study conducted to improve pediatric critical care nurses' knowledge and practice regarding restraint application and children's outcomes. **Subjects and Method: Design:** A quasi-experimental non-randomized intervention design pre-posttest one-group was utilized. **Subjects:** A convenience sample of 43 nurses working in Pediatric Intensive Care Units (PICUs) at Mansoura University Children's Hospital (MUCH) affiliated to Mansoura University, Egypt was recruited in the present study. **Results:** The current study showed that nurses take the decision of restrain without parents' permission or participation. Sedation is the alternative to physical restrain in PICUs as reported by nurses. The most common health problem among children is respiratory problem and the prevalence of restraint related complications reduced post intervention phase compared to baseline data. In addition, there is an improvement in the total level of knowledge. Reported and observed practices post intervention also, were improved as compared to pre intervention with statistically significant differences. **Conclusion:** The current study concluded that, the training program application is the best approach to improve knowledge and practices regarding using of physical restraint and reducing restraint related complications among children. **Recommendation:** Documentation system that includes physical and chemical restraint assessment and evaluation and restraint related complication documentation is mandatory.

Keywords: Pediatric Critical Care Nurses, Children's Outcomes, Knowledge, Practice, Restraint Application.

Introduction

Critically ill children are suffering from serious illness and they are under the effect of sedation that can aggregate the delirium and agitation state. Many invasive diagnostic and treatment procedure and equipment is attached to critically ill children that keep the risk of self-endanger increase. Therefore, nurses often implement physical restraint for the safety of patient. Physical restraints (PR) are common practices in the acute care settings, frequently used as nursing intervention for children in many countries. [(1)] The purposes of physical restraints are to prevent adverse events, especially those related to falls and accidental removal of medical and treatment devices. [(2)] Physical restraint used as a part of a holistic intervention plan; this plan should be established and accepted by the medical team with the consultation of the caregivers and with the consent of a guardian. Physical restraint should not be used for nurses' availability or to overcome deficiency of adequate staff support and supervision. It should be used only for the safety of the pediatric patients or others. [(3)] All children have physiologic and psychological needs to be mobile or move. Prolonged immobility of children may affect the physiologic functioning of the body in other way, such as: influencing respiratory volume, peripheral circulation, lack of motor development and sensory contact with the others. Therefore, pediatric critical care nurses should evaluate the necessity to restraint application and identify any alternatives to gain the child's cooperation. Physical restraint often applied by nurses to children in their care for different reasons such as immobilization, safe administration of treatments or medications, needle-related procedures and to prevent interference with tubes or dressings. [(4,5)] The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) defines physical restraint as "the use of physical for the purpose of adjusting the actions of the pediatric patient, without the permission of the patient." [(6)] According to the American Psychiatric Nurses Association, physical restraint is defined as "Any manual method,

physical or mechanical method, material or equipment that arrest or reduce the ability of the patient to move his or her arms, legs, body or head freely." It also, defined as "the use of restraint as a constraint to control the children's behavior or limit the children freedom of movement and is not a standard treatment the child condition". [7,8] There are many types of physical restraint usually used with children such as mummy restraint and modified mummy restraints (swaddle). Also, jacket restraint, elbow restraint, arm and leg restraint-splints, extremity restraint (clove hitch restraint), crib and crib with dome, mittens, abdominal binders, and bed cradle/ bed with side rail restraints. [9,10] These types used to control unexpected behaviour by children and to ensure their safety. [11] In acute care units, the prevalence of restraint application is between 7% and 87%. There are no relevant nursing guidelines for physical restraint use has been published in Pediatric Intensive Care Units (PICUs). Therefore, there is a deficiency of nurses' practice standard for physical restraint use among acute care setting in the hospitals. [12,13]

Numerous research reported the adverse effects of physical restraints, the prolonged use of physical restraints in children care can result in a range of seriously negative consequences, both physical and psychosocial. The physical complications include exacerbation of the patient's condition, skin laceration, muscle wasting, nerve damage, bone destruction, increased infection rates, pressure ulcers and even death by strangulation. Moreover, the psychosocial complications contain deterioration in social function, increased excitement, and other emotional reactions, including anger, depression, and embarrassment. [11]

Research in restraint application at PICU suggests a wide range of clinical practices among nurses. Therefore, an abundant number of registered policies and guidelines used to reduce high diversity of physical restraints in patients especially in children admitted to PICU. [14] Reducing physical restraints applications in the PICU is an important indicator of nursing care quality. So, nursing education plays a fundamental role to prepare competent nurses to

identify patients' needs and based on their needs modify the environment to provide most applicable health care services in the light of the best research evidence. [15]

Currently, physical restraint application in acute care setting is a provocative practice. Therefore, nursing staff play a vital role in the management process concerning physical restraint application in PICUs. According to Joint Commission on Accreditation of Health Care Organization, many health care organizations start to focus on hospitals' considerations to reduce PR application and monitoring process for restrained children. Additionally, PR is considered an arguable procedure; due to moral and legitimate issue considerations, that affects the independence and self-respect of patients. [16,17] In addition, PR includes severe safety concerns for nurses and children. Therefore, increase nurses' mindfulness about physical restraint use and complications help to establish nurses' clinical reasoning process. Most nurses have a conflict about the necessity of application of physical restraint and the patients' autonomy. [18]

However, the nurses' knowledge and intentions towards using physical restraint are critical factors that contribute to implement this procedure. In PICUs, physical restraint still implemented despite standards of care and clinical protocols for physical restraint usage**.** In addition, studies have concluded that the nurses' knowledge about the proper use of PR was unsatisfactory, and other studies showed that nurses have mixed feelings about physical restraint usage. [19,20]

The best approach to advance knowledge and practices regarding the use of physical restraint is through educational interventions program in the PICUs. [21- 23] It is necessary to implement an effective educational program on physical restraints use in PICUs to improve nurses' practice and to increase pediatric patient safety. [24] Therefore, the present study conducted to improve pediatric critical care nurses' knowledge and practice regarding restraint application and children's outcomes.

Significance of the study

Physical restraint is an intervention that is used to reduce the risk of treatment interference and abrupt discontinuation of medical device used for monitoring, diagnosing, and treating children. It used to prevent critically ill children from harming themselves and others. There is a lack of research that focus on ongoing training in the proper and safe use of physical restraints especially in PICUs. [25,26] Commitment to children and pediatric nurses' safety is a top priority for health care organizations. Since nurses' knowledge and practice play a significant role in physical restraint application. It was important to develop an educational training program for pediatric critical care nurses on safe application, reassessment, and documentation to physical restraint use. Therefore, the current study was carried out to improve pediatric critical care nurses' knowledge and practice regarding restraint application and children's outcomes.

Aim of the study

This study aims to improve pediatric critical care nurses' knowledge and practice regarding restraint application and children's outcomes.

Hypotheses

H_1: Pediatric critical care nurses' knowledge and practice regarding restraint application are expected to be improved after implementation of the training program.

H_2: Children's outcomes are expected to be improved after implementation of the training program.

Subject and Methods

Study design:

A quasi-experimental design was used in the current study.

Setting:

This study was conducted in Pediatric Intensive Care Units (PICUs) at Mansoura University Children's Hospital (MUCH) affiliated to Mansoura University, Egypt. The MUCH has many department and ICUs. Medical PICU is available for all pediatric patients with different critical medical condition. The capacity of PICU is nine beds separated by curtains and equipped with monitors and

ventilators. Nurses to children ratio were 2:1 in the morning shift and 1: 2 in the afternoon and evening shift.

Subjects:

The current study involved two groups (nurses and children) as follow:

A convenience sampling of 43 nurses working in the previously mentioned study setting. Nurses from both genders, with different ages, educational background, and years of experience were involved in the present study.

A convenience sampling of 40 children from both gender who were admitted to the previously mentioned study setting and exposed to physical restraint application were involved in the current study.

Tools:

Three tools were used in the current study namely. The tools were developed by the researchers in the guidance of the following references. **(27-29)**

Tool I: Pediatric Critical Care Nurses' Knowledge and Reported Practice Regarding Restraint Application

A structured questionnaire sheet was used to determine PICU nurses' knowledge regarding to restraint and reported practice related to restraint application. The questionnaire includes three parts as follow:

Part (1): comprise of demographic characteristics of the nurses such as age, gender, educational background, and years of experience.

Part (2): includes 10 statements about ethical and legal issues of restraint application, indication, purposes, complication, who should order the restraint. The response to the questions either with "true, false or I do not know".

Part (3): comprises of 14 items to judge nurses' reported practice regarding use of PR. This division covers questions related to the use of alternative measures before the application of restraints, physician's order before restraint application, parents' permission of restraint application. Furthermore, concerns in nursing care for children immediately before and during restraint application, observation every 2 hours, recording of restraint data, follow up for detection of restraint complications and assessment of the need for restraint removal. The correct answer of the

nurses scored (1), incorrect answer or I do not know scored (zero).

Scoring system:

The scoring system utilized for the total knowledge and reported practice adopted from [29] as follow:

High level of knowledge 75% and more.

Average level of knowledge 70% to less than 75%.

Poor level of knowledge less than 70%.

Tool II: Restraint Application Checklist

This tool includes 25 steps. Including checking physician order, assess the need for restraint, select the best type of restraint, apply the restraint in the correct technique that allow the child to move freely without defeating the idea of the restraint. In addition, assessment and observation criteria during restraint application and documentation of the restraint in the child file including skin condition under restrain, causes for removal and time for restraint application.

Correct and complete step scored (1). While, incorrect or not done step scored zero. The scoring system for nurses' practice as the follow: the nurses considered had competent practice if the score is 75% and greater, while incompetent practice calculated when the score less than 75%.

Tool III: Restraint Complication Assessment Sheet

It was developed by the researcher to gather information about children bio socio demographic data including medical condition. It was consisted of two parts as follow:

Part (1): Children bio-socio demographic data including age in years, gender, diagnosis.

Part (2): this part includes assessment of restraint type, assessment of restraint related complication (cyanosis, coldness of the restrained part, edema, skin ulceration), assessment of agitation and anxiety level**.**

Method:

Validity and reliability:

Data collection tools were reviewed by a panel of five professionals from pediatric and critical care nursing at Mansoura University. No significant modification on the tools based on their opinions was done. Tools' reliability was

done using Alpha Cronbach's coefficient test, which was (α =0.81) for the tool I, while it was (α =0.89) for tool II.

Pilot Study:

A pilot study was conceded on four nurses (10% of the total sample) to check the precision, practicability, applicability, and objectivity of the data collection tool. No modification required and the pilot study nurses were included in the study sample.

Ethical consideration:

Ethical endorsement from Ethical Research Committee of Faculty of Nursing, Mansoura University was obtained. An authorized agreement from the administrator of Hospitals and the heads of the departments in which the study was conducted was taken. The aim of the study was explained to the nurses and the mothers of children and they were informed that their participation in the study is considered. They also assured that their participation in this study is voluntary, so, they have the right to reject participation and to withdraw at any time from the study without any penalties, and their data was confidential and used only for research publications.

Fieldwork:

Data collection:

Data collection of this study was carried out over a six month period that started from 1st of October 2020 to the end of March 2021. Data collection was conducted through three phases (assessment phase, implementation, and evaluation phase).

Assessment phase:

An explanation about the aim and nature of the study were discussed with the head nurse and nurses in the PICU. Throughout this phase, the investigators measured nurses' knowledge and practice about restraint application using tool I. Then, each nurse was given a code number to be used as an identifier throughout the study. The investigators conducted direct observation to appraise nurses' practical level. The researcher observed each nurse throughout different shifts, on an average 3 hours a day- 3 days a week for one-month using tool II, the researcher was filling out the observational checklists and was

documented nurses' practices regarding to restraint application. The researchers collect data related to the children and recorded the complication developed for children related to restraint application using tool III.

Implementation phase:

The researcher developed and implemented training program for the study nurses. The program included two sessions "one practical and one theory session". The program delivered throughout one month, every week including two sessions, and every session lasts about thirty to forty-five minutes. The nurses assigned to groups five nurses in each group. The session timing was between morning and afternoon shift or during morning shift after giving the routine care to the critically ill children.

The theoretical sessions focused on definition of restraint, purpose, indication, types, complication, ethical and legal issue related to restraint, alternative to restraint application, parents' approval and consent for restraint application and nursing assessment care for children before, during and after restraint application. Practical session concentrated on the application and demonstration of different types of restraint and the needed data for documentation in nurses' notes related to restraint. Every practical session was carried out during the shift work. Nurses divided into small groups (for each five nurses); practical sessions were done in the nurses' working area to facilitate the training. Enough time was given for discussions, clarifications, and any questions regarding the practical skills. Many teaching methods was used in each session included demonstration and return demonstration, displaying simple training videos for practical skills and power point presentation with pictures used in theoretical part.

Evaluation phase:

Nurses' knowledge and practice were appraised pre and immediately post after implementation of the training program using the previously mentioned study tools. Evaluation of the condition of the studied children regarding occurrence of restraint complication were also done

after the implementation of training program using tool III.

Data Analysis:

Collected data was prepared, reviewed, tabulated, and analyzed using the number and percentage distribution. Data analysis was done using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA), version 20 for Windows. Categorical variables described using number and percent. Continuous variables presented as mean ±SD (standard deviation). The following statistical test used Paired sample t test, Wilcoxon signed-rank test and Spearman and Pearson correlation (r) performed to measure the strength and the way of relationship among the main study variables. All tests done at a level of significance (P-value) equal or less than 0.05 considered statistically significant.

Results

Table (1) shows that, most of the studied nurses (67.4%) were in the age group of 30 years old with a mean age of (35.27±5.37) years. With regard to years of experience, it was observed that, more than half of the study nurses (53.5%) had 15 or more years of experience in the ICUs. An identical percentage (44.2%) of the nurses' diploma and bachelor's degree of nursing and a minority of them (11.6%) had technical institute of nursing.

Table (2) illustrates that approximately one third of children (32.5%) in the age group of six years or more. In addition, 37.5% of children diagnosed with respiratory problem. Moreover, nearly half (57.5%) of children were boys.

Table (3) shows nurses knowledge about application of physical restraints for children pre and post implementation of educational sessions. It was found that there is either significant or highly significant improvement of nurses' knowledge post training program implementation in all items related to knowledge about application of physical restraints for children except the item that mentioned that child restraints increase the stay hospital length of p (≤ 0.005 and ≤ 0.001).

Table (4) reveals reported practice of the studied nurses' pre and post implementation of training program. It

shows that nurses' practices improved regarding decision taken for restraints application for children; the most common type of restraints used in PICU, age group most commonly implement restraints, obtain parent approval to use restraint and documentation of the restrain in the child's medical records. There were statistically significant differences in nurses' practice with P value (≤0.001) all through two assessments.

Table (5) demonstrates the prevalence of restrain complication among critically ill children pre and post intervention. It is obvious that approximately one third of children (30%) had skin ulcers and injury in pre intervention and the minority of them (15%) had no complication compared to more than half of them (60%) who did not have any complication from the restraint in post intervention with statistically significant difference (P = 0.017).

Table (6) total score of the studied nurses' knowledge, reported and observed practice about restraint application for children in PICU. It is obvious that there is an improvement in the total mean knowledge scores post implementation as compared to pre implementation (8.51±1.05- 3.95±2.22) respectively. In addition, the same table documents an apparent increase in the subtotal mean reported practice score post implementation as compared to pre implementation (22.39±0.49-13.79±6.59 respectively. (11.93±3.76 and 22.11±2.63).

Table (7) correlation between the total studied nurses' knowledge and their practice regarding implementation of physical restraint for children in PICU. The table reflected positive statistically significant correlation between the nurses' knowledge and total studied nurses' reported and observed practice, (r/p= -0.919*/0.001-0.306/0.046) respectively post implementation.

Table (1): Distribution of the studied Nurses according to their demographic characteristics (n=43)

Variables		No (43)	%
Age	20-<30ys	8	18.6
	30-<40ys	29	67.4
	≥40ys	6	14
	Mean ±SD	**35.27±5.37**	
Qualification	Diploma of nursing	19	44.2
	Technical institute of nursing	5	11.6
	Bachelor's degree of nursing	19	44.2
Years of experience	< 5 years	4	9.3
	5 - < 10 years	7	16.3
	10- <15 years	9	20.9
	≥15 years	23	53.5

Table (2): Characteristics of studied children (n= 40)

Variables	No (40)	%
Age		
Less than 1 year	11	27.5
1-3 years	9	22.5
3-6 years	7	17.5
More than 6 years	13	32.5
Gender		
Boys	23	57.5
Girls	17	42.5
Diagnosis		
Respiratory problem	15	37.5
Neurological problem	10	25
Cardiac problem	5	12.5
Medical problem	10	25

Table (3): Nurses knowledge about restraints application for children in PICU pre and post training program implementation (n=43)

Knowledge' items	Pre-implementation (43)						Post-implementation (43)				Test of significance	
	Yes		No		I don't know		Yes		No		Z	P-value
	No	%	No	%	No	%	No	%	No	%		
Its legal and important to use restraints to protect the child from injury	39	90.7	4	9.3	0	0	43	100	0	0	2.00	0.046*
The mother has the right to know the restrain cause and to refuse restraints	20	46.5	22	51.2	1	2.3	43	100	0	0	4.79	≤0.001**
Physician orders is necessary to apply or remove the child restraints	20	46.5	21	48.8	2	4.7	43	100	0	0	4.79	≤0.001**
The restraint should be used when nobody observes the child	14	32.6	29	67.4	0	0	41	95.3	2	4.7	5.19	≤0.001**
Sedative children should be restrained	11	25.6	32	74.4	0	0	43	100	0	0	3.31	≤0.001**
Child restraint prevent falling from the bed and decrease injury	30	69.8	13	30.2	0	0	41	95.3	2	4.7	2.84	0.005*
Child restraints increase the mortality rate in the hospital	1	2.3	36	83.7	6	14	9	20.9	34	79.1	2.53	0.011*
Child restraints increase the hospital length of stay	40	93	3	7	0	0	4	9.3	39	90.7	2.00	0.046
Child restraints is not congruent with child rights	11	25.6	26	60.5	6	14	4	9.3	39	90.7	1.80	0.071
Child restraints safe for health care provider work	24	55.8	19	44.2	0	0	43	100	0	0	4.35	≤0.001**
Skin areas should be examined every 2 hours and position of the child should be changed	26	60.5	17	39.5	0	0	38	88.4	5	11.6	3.20	≤0.001**

* Significance at level P < 0.05 ** Significance at level P < 0.001

Table (4): Distribution of the studied nurses' reported practice regarding restraint application for children in PICU pre and post training program implementation (n=43)

Practice' items	Pre-implementation		Post-implementation		Test of significance	
	No.	%	No.	%	Z	P-value
Application of the restraint for children in PICU						
Yes	25	58.1	43	100	4.24	≤0.001**
No	18	41.9	0	0		
Type of restraints used with the children in PICU						
Chemical restraint	23	53.5	0	0	4.79	≤0.001**
Physical	20	46.5	43	100		
The decision for restraints taken by						
Nurse	24	55.8	4	9.3	3.87	≤0.001**
Physician	19	44.2	39	90.7		
Supplies needed to apply the restraint						
Gauze	41	95.3	43	100	1.41	0.157
Bandages	2	4.7	0	0		
The most common type of restraints used in PICU						
Clove Hitch restraints	38	88.4	43	100	2.23	0.025
Mummy restraints	5	11.6	0	0		
Age group most commonly implement restraints are						
Infant and toddlers	15	34.9	0	0	4.14	≤0.001**
School age children	6	14	1	2.3		
All ages	22	51.2	42	97.7		
How many time you assess the child restraints site						
No assessment	6	13.95	0	0	1.80	0.071
Every 2 hours	32	74.4	39	90.7		
Every 4 hours	3	7	2	4.7		
Every 8 hours	2	4.7	2	4.7		
Obtain parent approval to use restraint						
No	16	37.2	4	9.3	5.38	≤0.001**
Oral approval	10	23.3	39	90.7		
Not applicable	17	39.5	0	0		
Documentation of the restrain in the child medical records						
Yes	11	25.6	39	90.7	5.29	≤0.001**
No	32	74.4	4	9.3		

* Significance at level P < 0.05 ** Significance at level P < 0.001

Table (5): Reported Complications of Physical Restrain Among Pediatric Critically Ill Children Pre and Post Training Program Implementation (n=40)

Variables	Pre-intervention (n=20)		Post-intervention (n=20)		Test of significance	
	No.	%	No.	%	X^2	P-value
No complication	3	15	12	60	8.133	0.017*
Skin ulcer and injuries	6	30	4	20		
Edema of the restrained Extremities	4	20	2	10		
Cyanosis of the restrained Extremities	4	20	0	0.0		
Increase anxiety and irritable	3	15	2	10		

Table (6): Total score of the studied nurses' knowledge and practice regarding restraint application for children in PICU pre and post training program implementation (n=43)

Total score	Pre-implementation		Post-implementation		Test of significance	
	No.	%	No.	%	t	P
Total knowledge score						
Poor	22	51.2	0	0	15.99	≤0.001**
Fair	20	46.5	4	9.3		
Good	1	2.3	39	90.7		
Mean ± SD	**3.95±2.22**		**8.51±1.05**			
Total reported practice score						
Poor	18	41.9	0	0	18.61	≤0.001**
Fair	22	51.2	4	9.3		
Good	3	7	39	90.7		
Mean ± SD	**11.93±3.76**		**22.11±2.63**			
Total observed practice score						
Incompetent practice	29	67.4	0	0	8.25	≤0.001**
Competent practice	14	32.6	43	100		
Mean ± SD	**13.79±6.59**		**22.39±0.49**			

* Significance at level P < 0.05 ** Significance at level P < 0.001

Table (7): Correlation between the total studied Nurses' knowledge and their practice regarding restraint application for children in PICU pre and post training program implementation (n=43)

Item	Pre-implementation		Post-implementation	
	r	***P***	***r***	***P***
The total studied Nurses' knowledge				
Total studied Nurses' reported practice	0.765	≤0.001	0.919	≤0.001
Total studied Nurses' observed practice	0.421	0.005	0.306	0.046

* Significance at level P < 0.05 ** Significance at level P < 0.001

Discussion

Pediatric Intensive Care Unit (PICU) is specialized area of nursing care for children with life-threatening conditions. Using physical restraint to prevent harm for critical ill children. Restraint application is an important nursing care in PICU that is usually associated with many adverse effects and raises many ethical and practical concerns. Therefore, in-service training program for pediatric critical care nurses about physical restraints in PICU is a necessary step to improve their knowledge, and practices. Therefore, the current study conducted to improve pediatric critical nurses' knowledge, practice, and to find out pediatric patient outcomes regarding restraint application. The current study showed that more than one third of studied children admitted to PICU with respiratory problem. This finding agreed with the study conducted by **Mohammed et al. (2016)** [(26)] who revealed that nearly one third of the restrained children had respiratory disorders. This result interpreted in the fact that the primary causes of morbidity among children under six years is a respiratory problem and children are always in need for monitoring and assistive respiratory devices.

Regarding nurses' knowledge about application of physical restraints for children in PICU, the results of the present study showed that there is a statistically significant difference regarding nurses' knowledge post implementation to all items of the knowledge about application of physical restraints for children. Most of nurses know that it is legal and important to use restraints to protect the child from injury pre and posttest. These results were supported with **Chang et al. (2016)** [(30)] who recommended that using PR was based on healthcare staff considerations and their expression of moral and ethnic values and related healthcare authority policies. Changing physical restraint implementation policy is a multidisciplinary team responsibility. Three quarters of nurses reported that restrain should not be applied to sedated children in the pretest. Higher dosage and frequency of sedative drug administration are most important reasons supporting the high level of non-restraint attained in PICU for sedated child.

There was statistically significant difference in relation to nurses' practice pre and post implementation of training program. In the present study regarding documentation of the restrain in the child

medical records, only one quarter of nurses reported that, they document the restraint in child's file in the pre implementation of training program compared to most of nurses' post implementation. This finding supported with **Moradimajd et al. (2015)** [31] their findings concluded that restraint standards implementation failure might be due to nurses' unfamiliarity with the standards, absence of documentation sheets, and supervisors' low sensitivity related to restraint use and recording. So, they recommended to educate nurses who are the first decision makers for using restraint and informing them with clinical guidelines are critical and judging the effects of education program on physicians and nurses' restraint use. Similarly, **Gu et al. (2019)** [32] in their study concluded that using physical restraint in Chinese ICUs was higher than that reported in previous investigations. Incomplete documentations in the patients' nursing notes about physical restraint were obvious, so they recommended a need for physical restraint use standard guidelines and policies for in china hospital ICUs.

The collaboration of parents in restraint application for their children can minimize the feelings of guilt and the ethical dilemmas that nurses may experience [33].

The current results showed that most of nurses did not take approval from parents to implement physical restraint. As similar, **Kısacık et al. (2020)** [34]**,** their results showed the ICU nurses act as independent decision-makers to use physical restraints due to commonly used PR in ICUs in Turkish hospitals for ensuring patient safety. However, they did not consider patient and family rights to obtain the order for using PR.

In the present study, the causes for applying physical restraints in PICU were to inhibit the child from disconnecting medical equipment and to protect them from falling out of bed. It was also evident that all nurses apply restraint to improve patient safety especially for mechanically ventilated pediatric patient with agitation even with sedation administration. This result is congruent with the study of **Younis and Ahmed (2017)** [35] who mentioned that, most common explanations given by ICU nurses for applying PR were to preserve the patient's safety and confirm that treatment continued. This may be due to nurses are responsible for safeguarding children safety, recognize physical restraints as a simple solution to accomplish this common goal.

In current study two third of nurses reported their practiced during using physical restraint, child skin areas should be examined every 2 hours and change child position pre intervention but improved to most of them pot intervention. Similarly, **Younis and Ahmed (2017)** [35] results showed that the majority of nurses after application of clinical guidelines, demonstrate the intervention correctly such as assessment of restraint limb, every 2 hours renewing PR orders, perform frequently range of motion exercises, assess skin color, limbs movement, sensation and peripheral circulation assessment and remove restraints for 30 minutes every two hours. These results reflect that, in-services training program content improve the nurses reported practice of physical restraint using.

Most of nurses' post intervention compared to three quarter in pre intervention in the current study disagreed about physical restrained increased risk to suffocation. The use of physical restraint increases the children risk to suffocation and strangulation. Consequently, training nursing staff to advance their knowledge and skills concerning physical restraint has become necessary. This goes in the line with **Perez et al. (2021)**[37] who concluded that new information proves nurses' understanding of the possible harm caused by physical restraints and the way in which existing practices conducted by workplace customs and expectations rather than on critical thinking and decision-making.

The current results revealed that approximately one third of children develop skin ulceration at the site of restrained limp and one fifth developed edema and cyanosis in the pre intervention. The prevalence of restraint related complication was reduced after training program implementation as represented in the current study result that approximately two thirds did not have complication and the difference was statistically significant. The results could be interpreted in the fact that the most common type of restraint used in PICUs is clove–hitch restraint and the nurses was applying the restraint without adding cotton under the gauze. In addition, fixation of the restraint in the side rails that allows friction between gauze and children skin and increase the risk of skin ulceration. The practice of nurses was advanced after application of training program that in turn decreasing the prevalence of restraint related complication in children. This result agreed with **Mohamed et al. (2016)** [29]

who reported in his study that one third of studied children had extremities edema as a complication of physical restraint. This result could be interpreted as the proper implementation of PR endorses the excellence of nursing care for children and reduces their risk to physical complications. This study highlights the importance of modifying health care professionals' thoughts and concepts related to the PR use as a hospital strategy for childcare.

Additionally, in the study conducted by **Taha and Ali (2013)** [(26)] their study concluded that relatively short-term in-service guidelines can significantly advance nurses' knowledge and practice regarding physical restraining of ICU patients, with successive decrease in the occurrence of related complications among these patients. These findings indicated that the nurses repeatedly use their knowledge and apply it to their daily practice, which helps recall and memorization. Similar to **Chang et al. (2016)**[(30)] in their study concluded that in-service education for physical restraints improves relevant knowledge and techniques.

Educational interventions are the best method to improve knowledge, practice regarding restraint application, and diminish their intention to implement physical restraint. Current findings showed increase in the total mean knowledge, reported and observed practice score in post intervention as compared to pre intervention with statistically significant difference. This result agreed with study conducted by **Mohamed et al. (2016)** [(29)] who concluded that there was significantly improvement in nurses' knowledge and practice concerning to physical restraint application after implementation of physical restraint guidelines. In addition, **Chang et al. (2016)** [(30)] concluded that in-service education significantly enhances the proper implementation of restraints by nursing staff and the implementation of physical restraint requires not only professional knowledge but also correct technique. Another study supported current results conducted by **Eskandari et al. (2018)** [(18)] and displayed a significant increase in the mean knowledge and practice score and a significant reduction in the mean intention score of nurses to physical restraint application after intervention. In addition, the same study highlighted that nurses' knowledge towards using physical restraint are important aspects that may contribute to this practice.

Moreover, **Lee et al. (2021)** [38] in their study findings showed that nurses had good restraint-related knowledge and practices, also reveals some areas of misunderstandings, and incompetent practices related to physical restraints. Many studies conducted by **Kassew et al. (2020)** [39] **and Nasrate et al. (2017)** [40] their study findings reflect that educational package can advance ICU nurses' knowledge and enhance their practice toward PR. Which positively effect on the excellence of nursing care conveyed to the patients and reducing the complications of malpractice regarding physical restraint. Finally, in-service training program about restraint achieved their goals in improving pediatric critical nurses' knowledge ad practice and patients' outcome.

Conclusion

In conclusion the current study delivers valued data to pediatric intensive care nurses, educationalists and policymakers to guide future practices and improve children' outcomes by highlighting the importance of education on PR performance and in the development of policies and guidelines. The training program has positive effect on improving nurses' knowledge and practices and more favorable outcomes as represented in the results. In addition, the prevalence of restraint related complication decreased in the post intervention phase.

Recommendations

Family involvement in decision making in restraint application must be as a part of policy in PICU.

Documentation system that includes physical and chemical restraint assessment and evaluation and restraint related complications documentation is mandatory.

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Impact of Psycho-Educational Nursing Intervention about Covid-19: on the Pregnant Woman's Knowledge, Anxiety, Depression, and Protective Practices

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Abstract

Background: Covid-19 is a new viral disease that has caused a pandemic in the world. Due to the shortage of specific definitive vaccines and treatments, protective behaviors became a vital way to overcome the disease. As a special category, pregnant women need more attention. **Aim**: To determine the impact of psycho-educational nursing intervention about Covid-19 on knowledge, anxiety, depression levels, and protective practices among pregnant women. **Subjects and Method: Study Design:** A quasi-experimental (pre-post) design used. Subjects: convenient sample of (243) pregnant women admitted for antenatal care from Kelby and Bahary health care centers in Shebin Elkom district-Menoufia Governorate-Egypt from September to December 2020. **Tools:** Two tools were utilized for data collection: Structure Interview Schedule and Hospital Anxiety Depression Scale. The period of implementation was (3) months, the implementation was passed into three phases (pre-assessment, implementation, and evaluation phase). **Results:** There was an association between some variables of socio-demographic characteristics and its total post-anxiety-depression and reproductive history. There was a highly statistically significant difference (P<0.000) between the total mean score of participants' anxiety and depression pre and post-test psycho-educational nursing intervention. **Conclusions:** According to the results, psycho-educational nursing intervention increased women's knowledge and significantly reduce the anxiety and depression levels during Covid-19 pandemic for pregnant women**. Recommendation:** Effective strategies targeting maternal stress, anxiety, and depression such as effective risk communication and the provision of psychological first aid may be particularly useful to prevent negative outcomes for pregnant women and their fetuses during Covid pandemic.

Keywords: Covid-19, Psychoeducation, Anxiety, Depression, Protective practices.

Introduction

The Coronavirus Disease (COVID-19) is rapidly spreading over the world, posing a threat serious to public health, particularly psychiatric health. As the global infection and death rate of COVID-19 climbs in the wave of illnesses, and a vaccine is still at least a year away, it is critical to properly treat pregnant women during this difficult time. This "new normal" should be made easier for women. This means that everyone must work together to combat the coronavirus while preserving hand washing and social distance [1]. Hope to achieve the best for patients while also looking after families, friends, and selves. Women may suffer depression and anxiety during pregnancy because of possible obstetrical complications such as fetal mortality or abnormalities. During infectious illness outbreaks, depression and anxiety levels may also rise. There is currently little research on the psychological impact of the COVID-19 epidemic, its impact on individuals' social and/or psychological elements, and the mental health of pregnant women [2].

Fear, isolation, uncertainty, and economic misery have all contributed to an upsurge in anxiety and depression in the general community during the COVID-19 pandemic. Pregnant or postpartum women are at a higher risk of acquiring depression or anxiety disorders. Pregnancy adds to the pressures during this pandemic [3,4,5]. Pregnant women are especially prone to becoming extremely ill or dying from COVID-19, according to a recent report from the Centers for Disease Control and Prevention [6]. Women's anxieties for themselves and their children are heightened because of this information.

Perinatal depression affects about 10% of pregnant women worldwide [7,8] . Perinatal depression, if left untreated, can have negative obstetric consequences, and is linked to poor maternal health, inadequate prenatal treatment, and postpartum depression [9]. Perinatal depression is linked to impaired maternal-infant bonding, increased irritability, and decreased activity, in addition to the possible detrimental influence on pregnancy outcomes. Many papers on COVID-19 have been published in the recent six months. Because pregnant women and their unborn children are at risk for COVID19, over 1000 studies have looked at the issue. A high rate of pregnancy complications was recently reported in a case series with 10 SARS-CoV-2 infected pregnant women, with 50% of them requiring an emergency cesarean section due to fetal distress

(30%), premature rupture of the membrane (10%), and stillbirth (10%), despite the severity of COVID-19 in most of these patients being mild to moderate, with only one developing severe pneumonia, indicating that preventive measures should be taken [3].

During COVID-19, Ifdil et al. (2020) [10] emphasized the importance of treating depression and psychological distress in pregnant and postpartum women. They underlined how pregnant women who were denied access to health treatments during the Covid-19 outbreak faced psychological distress and had a higher risk of maternal death. Although the availability of health care and pregnancy outcomes differs by country, data suggests that COVID-19 causes substantial levels of psychological stress in pregnant women. It claims that to control the physical and psychological effects of COVID-19 during pregnancy, a collaboration between medical and psychological professionals is required.

Women's mental health might be harmed by a lack of proper domestic and emotional care. Women are also at a higher risk of anxiety, depression, and post-traumatic stress disorder (PTSD) [11,12] .According to Mrs. Phumzile Mlambo-Ngcuka, Executive Director of the United Nations (UN) Women, the Covid-19 pandemic is more than a health issue; it is a profound shock to our societies, exposing the flaws in public and private arrangements that currently work only if women play multiple and underpaid roles. This is an opportunity for governments to acknowledge both the magnitude of women's contribution and the precocity of many of them[11]. Pregnant women have always been seen as a high-risk group. Mental problems such as anxiety and depression are more common during perinatal periods in low- and middle-income nations than during non-pregnancy times, according to the systematic reviews [8].

Pregnant women's reality interacts with a series of inequalities, affecting a population that is particularly vulnerable to the pandemic's side effects. Pregnancy is an additional risk factor for the emergence of psychological discomfort, the development of some psychopathological diseases, and an increase in severity as the pandemic progresses. In this context, a thorough and exact evaluation of pregnant women will be a crucial input for the following design, planning, and implementation of health policies with the main goal of preventing and counteracting harmful effects on

mothers' and children's mental and psychological health [13,14].

Many pieces of research on the link between maternal mental health and COVID-19 have also been reported. Increased symptoms of anxiety and depression and lower quality of mental life [9, 3, 15- 18] increased perceived levels of distress [13] and mild psychological impact owing to isolation [14] have all been observed in these investigations among pregnant women.

According to a prior study, contracting an infection at a young gestational age may result in a poor or negative pregnancy outcome for the mother and fetus. Although the psychological health and mental condition of the pregnant women were not reported in this research, psychological health problems including anxiety, depression, and stress have been linked to preterm birth and low birth weight. Furthermore, a combination of viral infections and poor mental health could have bad or catastrophic consequences for maternal and newborn health. So, during this pandemic, pregnant women need great emotional support to prevent maternal and neonatal complications [19, 20].

During this epidemic, health care practitioners must be mindful of the additional psychological difficulties that pregnant and postpartum women face. Although more telemedicine visits during pregnancy and postpartum make screening more difficult, the increased risk of mental health symptoms during the pandemic highlights the need for expanded efforts to screen women for mental health concerns during pregnancy and the postpartum period. It's critical that kids have access to supportive care and, if necessary, medication. To alleviate irrational fears, health care providers must have current information on COVID-19's effects on pregnancy, infants, and breastfeeding. This study is critical for all the following to prevent and treat depression, anxiety, and stress caused by Covid -19, as well as to follow the safety precautions to avoid Covid- 19 infection during pregnancy [18].

Significance of the study:

Because of the physiologic and immunologic changes that occur during pregnancy, pregnant women are thought to be more prone to developing severe cases or death from COVID-19 infection than the public [21-23]. Additionally, the presence of comorbidities, a high body mass index (BMI), and a greater maternal age are all considered risk factors for a more severe

infection during pregnancy [21,24]. Preventing COVID-19 infection in pregnant women is particularly very important and crucial. In the prevention of infectious diseases such as COVID-19, knowledge and attitude are a critical issue. Inadequate information may result in a delay in diagnosing this highly contagious condition, as well as diseases transmission due to poor infection control procedures [25].

A study carried out in Spain by Romero-Gonzalez et al.(2020) [26] has shown that perceived stress, specific pregnancy stress, as well as insomnia are predictive variables in most anxiety and depressive symptoms related to COVID-19 in pregnant women. However, The World Health Organization has recommended preventive/safety measures such as frequent hand washing with soap and water, physical/social distancing, wearing a face mask in public, covering the mouth while coughing, and avoiding touching the eyes, nose, and mouth to prevent the spread of COVID-19 infection [22, 27]. So, this study is very important to design a psycho-educational nursing intervention about Covid-19 for pregnant women to enhance their knowledge, protective practices, and reduce anxiety& depression levels among them.

A study done by Hong Jiang et al. 2020 [28] concluded that during the COVID-19 epidemic occurrence of experiencing perceived stress, anxiety, and depression is high among pregnant women. Mental health care is urgently needed to reassure and support pregnant women during this duration. Developing specific content for pregnant women on how to cope in emergency situations and major diseases outbreak via special programs could be an effective way to mitigate mental health disorders in epidemic preparedness and response.

The previous research findings suggest that acquiring infection at an early gestational age might lead to worse or negative pregnancy outcomes. Although these studies did not report the psychological health and mental state of pregnant women. Psychological health problems especially anxiety, depression, and stress of pregnant women have been associated with preterm birth including low birth weight. Furthermore, an interplay between viral infections with poor psychological health may have negative or fatal effects on maternal and neonatal health. So, during this pandemic, pregnant women need great emotional support to prevent maternal and neonatal complications [19, 20].

Aim of the Study

To investigate the impact of psycho-educational nursing intervention about Covid-19 on the pregnant women's knowledge, anxiety and depression levels, and protective practices

Hypotheses of the study:

-Women's knowledge regarding Covid-19 will be significantly higher post- psycho-educational nursing intervention rather than pre-intervention.

-Women's anxiety and depression mean scores will be significantly lowered post-psycho-educational nursing intervention than pre-intervention.

-The psycho-educational nursing intervention will help in changing the false beliefs and enhance protective health practices for Covid-19 among pregnant women.

Study question

At the end of the study, the researchers will answer the following question:

What is the impact of psycho-educational nursing intervention on pregnant woman's knowledge, anxiety, depression, and protective practices about Covid-19?

Subjects and Method

Research Design:

A quasi-experimental research (pretest, posttest) design was utilized to achieve the aim of this study.

Subjects:

Sample size was calculated at where sample size by Steven K. Thompson, 2012 [29] used to calculate sample size according to this formula: **n =** $\frac{Np(1-p)}{[(N-1)(d^2 \div z^2)] + p(1-p)}$

N: population size.

n: sample size.

Z: conference level at 95% (1.96).

d: error level (0.05)

P: probability (50%)

According to the above-mentioned equation, the sample will include a convenient sample of participants of women volunteers was selected according to their responses in scales. The total number of samples (sample size) will be (243) women. (135) from the urban areas and (108) from the rural areas.

Criteria for inclusion were read and write ability for women, outpatient clinic, participants were not undergoing any psychiatric management, and participants agree to participate in the study.

Exclusion criteria were illiterate women, women who has a history of psychiatric disorders, and women who refuse to participate in the study.

Research Setting:

The study was conducted at Kebly and Bahary Maternal& Child Health Care Centers in Shebin Elkom at Menoufia Governorate, Egypt. These setting was selected for women's continuation of these centers. Health Care Centers consist of clinics for children, gynecologic, family planning methods, pregnancy follow-up, dentists, and analysis. Also, a hall to explain for health education

Tools for data collection: Two tools were utilized by the researchers for data collection.

Structure Interview Schedule: This tool was developed by the researchers after reviewing the related literature and it is divided into four parts: a) Socio-demographic data for the purpose of collecting socio-demographic characteristics which include age, gender, residence, educational level, and type of occupation. b) History of previous pregnancies and deliveries: to collect data about numbers of pregnancies, deliveries, and history of abortion and its causes if occurred. c) Maternal complications for previous pregnancies and deliveries such as anemia, pregnancy-induced hypertension, preterm labor, and postpartum hemorrhage. d) Knowledge and protective practices of pregnant women related to the COVID-19 pandemic such as methods of the virus transmission, methods of the protective practices (frequent hand washing, masking, and keeping social distance), and the healthy food that increase body immunity.

Hospital Anxiety Depression Scale (HADS): Developed by Zigmond et al. 1983 **[30].** The HADS is a fourteen-item scale that generates ordinal data. Seven of the items related to anxiety and seven related to depression. Each item on the questionnaire is scored from 0-3 and this means that a person can score between 0 and 21 for either anxiety or depression. Therefore, **the score** is between (0 and 21) for either anxiety or depression: 0–7 is normal, 8–10 is borderline abnormal, and 11–21 is abnormal. This tool was translated into Arabic, validated, and tested for reliability in 2017 by Terkawi et al. 2017 **[31]**

Ethical consideration

Written approval was obtained by the researchers from responsible authorities after explaining the purpose of the study.

The researchers introduced themselves to every participant and explain the purpose of the study and assured them that confidentiality would be maintained throughout the study if the participant needs it. Also, the researchers emphasized that participation in the study is entirely voluntary and withdrawal from it can be done at any time, then informed consent was obtained from the participants who accepted to participate in the study.

Validity and reliability

The first tool was constructed by the researchers after reviewing the relevant literature. Tool II HADS revised Arabic translation by the researchers then was tested for content validity by 5 experts in nursing and medical psychiatric and obstetric fields. Modifications were done according to ascertain relevance and completeness. This tool was tested using a test-retest methods and a Pearson correlation coefficient formula was used. It was (r. = 0.7 56) for the tool.

Pilot study

Prior to the actual study, a pilot study was conducted on 10% of the study sample (20 volunteers) to test the feasibility and applicability of the tools and then necessary modifications were carried out accordingly. Data obtained from the pilot study were not included in the current study.

Data collection

The study was carried out in the period from September to December 2020. The researcher collected the data during the morning four days/week from 10 am to 1.30 pm with by taking all the precautionary measures for COVID19 considering the social distance and protective masking. Each group of them consisted of 20 pregnant women. The period of implementation was 3 months. The implementation of the study was passed into three phases (pre-assessment phase, implementation phase, and evaluation phase).

Pre-assessment phase:

A comfortable and private place was chosen for interventions in the health centers. Orientation was done about researchers' names, purposes, and content of the study. Subjects interviewed individually at their rooms where pre-assessment was done using a demographic questionnaire, and Hospital Anxiety Depression Scale. Implementation phase, the researchers divided the participants randomly into 12 sub-groups. Every sub-group was 20 women, every group attended (10) intervention sessions every session takes

one hour within two days/week from 10 AM to 11.30 AM and from 12 PM to 1.30 PM. (two groups per day). The period of implementation was 10 weeks for each group. This was achieved through several teaching methods such as lecture, discussion, and providing examples. Videos, booklets, and pictures were used as media. At the end of each session, a summary, feedback, further clarification, and homework assignment were given.

The implementation phase:

This was applied by the researchers through introducing the psycho-educational intervention.

Psycho-Educational Nursing Intervention:

The general aim of the Psycho-educational intervention for management about COVID19 was to enhance knowledge and health practices of pregnant women regarding their readiness. The intervention took about 3 months from the beginning of September to December 2020, two sessions per week for each group. At the end of the nursing intervention, 15 minutes were allotted for a discussion and feedback. In answering these questions discussing psychological issues can be embarrassing for both the researchers and the women. They often carry the feeling of failure or that they are abnormal. The researchers anticipate the embarrassment of women and acknowledge that it could be difficult talking about such issues. For example, the clinician may say, "Most people find it difficult to talk about these things and may feel a bit embarrassed. I'd just like to reassure you that everything you say is confidential and that I'd like to help you if I can. The first step is to find out exactly what is going on so that we can figure out how to make things right again. Please feel free to be open with me and to ask questions.

The sessions of the Psycho-educational Intervention:

Session one: was carried out by the researchers for orienting pregnant women about the benefits of psycho-educational intervention, collecting baseline socio-demographic data, and giving pre-test questionnaires

Session two and three: These sessions include the knowledge about COVID19: Information about how to overcome an accident or a crisis and give support. Where raised levels of anxiety or depression may occur in COVID-19 pregnant women and their families, ensure they access the psychosocial care and support they need during their rehabilitation process.**Session four:** This

session aimed to help the pregnant women identify their emotions, and the feelings of others through providing the women with information about emotional regulation; definition, how to deal with emotions efficiently, identify the causes of emotions, avoiding or changing the causes of emotions, how to deal with emotions that can't be avoided.

Session five and sex: These sessions aimed to help the women to manage fetal and uterine contraction monitoring based on gestational age, when appropriate, Individualized delivery planning, A multispecialty, team-based approach that may include consultation with obstetric, maternal-fetal medicine, infectious disease, pulmonary-critical care, and pediatric specialists, as appropriate. In general, the therapeutic management of pregnant patients with COVID-19 should be the same as for non-pregnant patients. The COVID-19 Treatment Guidelines Panel recommends against withholding treatment for COVID-19 vaccination from pregnant or lactating individuals because of theoretical safety concerns.

Session seven and eight: These sessions aimed to improve pregnant women's mental health and reduce anxiety and depression related to COVID19 and find opportunities to amplify positive and hopeful stories and positive images of local people who have experienced COVID-19. For example, stories of people who have recovered or who have supported a loved one and are willing to share their experience. Take care of yourself at this time. Ensure that good quality communication and accurate information updates are provided to pregnant women. Ensure that pregnant women are aware of where and how they can access mental health and psychosocial support services and facilitate access to such services. Minimize watching, reading, or listening to news about COVID-19 that causes you to feel anxious or distressed; seek information only from trusted sources and mainly so that you can take practical steps to prepare your plans and protect yourself and loved ones. Seek information updates at specific times during the day, once or twice. The sudden and near-constant stream of news reports about an outbreak can cause anyone to feel worried. Get the facts; not rumors and misinformation. Facts can help to minimize fears.

Session nine and ten: These sessions aimed to help the women apply several

therapies for decreasing anxiety and depression from COVID19 through coping strategies: Eat well-balanced meals: Do not skip any meals. Do keep healthful, energy-boosting snacks on hand. Limit caffeine, which can aggravate anxiety and trigger panic attacks. Get enough sleep: When stressed, your body needs additional sleep and rest. Exercise daily: To help you feel good and maintain your health. Check out the fitness tips below. Take a time-out: Practice yoga, listen to music, meditate, get a massage, or learn relaxation techniques. Stepping back from the problem helps clear your head. Take deep breaths: Inhale and exhale slowly. Count to 10 slowly: Repeat, and count to 20 if necessary. Deep breathing: Is another calming skill you can use when you are in a stressful situation. Find forms of exercise: That are fun or enjoyable. Extroverted people often like classes and group activities. People who are more introverted often prefer solo pursuits. Distract yourself: With other portable media player to download audiobooks or music. Many people find it's more fun to exercise while listening to something they enjoy.

III Evaluation phase:

The last phase in which the researchers assess the achievement of the aim of the study through reintroducing the research tool (Hospital Anxiety Depression Scale), post-test for pregnant women to assess the effectiveness of the program. The program evaluation tool was developed by the researcher and introduced to the study group to evaluate the program itself.

Statistical analysis

Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package for Social Science (SPSS) version 25 (SPSS, Inc, Chicago, Illinois, USA), where the following statistics were applied: **Descriptive statistics:** in which quantitative data were presented in the form numbers and percentages. **Analytical statistics:** used to find out the possible association between studied factors and the targeted disease, the used tests of significance included: **A) Reliability analysis Cronbach's Alpha:** was used to measure validity and reliability of the questionnaire which was greater than 70%, so we can say that its results can be taken. **B) Kolmogorov-Smirnov test:** was used to determine if the data

was normally distributed or not. **C) Chi-Square (X^2) test (nonparametric test):** was used to know if there was an association between two categorical variables or not, which were not normally distributed. **D) Fisher's Exact test (non-parametric test):** also, was used to know if there was an association between two categorical variables or not but here categorical must be 2*2 just like these variables (Residence and occupation) which were not normally distributed. **E) Spearman Rank-correlation coefficient (ρ):** was used to measure the strength and direction of the association. Thus, their correlation with each other was existed or not, which means if one of them changes the other must be change. If P-value was higher than the level of significance (α = 0.05) considered that the test was statistically non-significant. If P-value was lower than or equal the level of significance (α = 0.05) considered that the test was statistically significant.

Results

Table (1): There was an association between residence (Urban, Rural) and its socio-demographic characteristics, history of pregnancy, previous births, previous pregnancy, and childbirth complications of the study group, where the P-value was equal to zero less than the level of significance α = 0.005. Highly significant difference among the age group, the larger percent (55.6%, 41.7%) respectively were urban and rural university-educated women . Highly significant difference regarding educational level. The larger percent were worked women. In relation to the history of pregnancy and previous birth among urban women were 40% first pregnancy while among rural women 50% were second pregnancy. 20% of urban women had a history of abortion.

Table (2): There was an association between the total score of pre-anxiety depression and its socio-demographic characteristics and reproductive history of the study group, where the P-value was equal to zero less than the level of significance α = 0.005. A highly significant difference was found among the age group, residence, education level, occupation, history of pregnancy, and previous birth of women regarding pre-anxiety and depression levels.

Table (3): There was an association between some variables of socio-demographic characteristics and the total post-anxiety-depression and

reproductive history where the P-value was less than the level of significance (α=0.05) which means the tests were statistically significant. In relation to age (22.2%) have severe anxiety and depression 50% respectively at age 20-25 years and 31-35 years. In relation to residence (22-21%) of have severe anxiety and depression. A highly significant difference was found among the age group, residence, education level, occupation, history of pregnancy, and previous birth of women during post-anxiety and depression levels.

Table (4): This table showed the test of rank correlation coefficient was not significant where the (P-value) was equal to 0.316 bigger than level of significance (α = 0.05) which means there was no powerful relation between these two variables so, there was no correlation between them where the (ρ = 0.065). This means all the participants were achievement the aim of study well and the psycho-educational nursing intervention was very effective.

Figure (1): This figure refers to there was no correlation between responses of the sample before and after the intervention, which means the program was succeeded in its purpose that we made for it.

Table (5): This table showed the relationship between COVID19 information and socio-demographic characteristics (pre-intervention) among pregnant women. There was a highly statistically significant difference (P<0.000) in relation to women's age, educational levels, and residence.

Table (6): This table showed the relationship between healthy practices of COVID19 and socio-demographic characteristics (pre-intervention) among women. There was a highly statistically significant difference (P<0.000) in relation to women's age, educational levels, and residence.

Table (7): This table showed the comparison between the total mean scores of participants' pre and post-information about COVID19 and anxiety-depression levels. There was a highly statistically significant difference (P<0.000) between the total mean scores of participants' pre and post-test.

Table (8): This table showed the relationship between the importance of healthy nutrition to increase immunity and socio-demographic characteristics (post-intervention) among women. There was a highly statistically significant difference (P<0.000) in relation to women's age, educational levels, and residence

Table (1): Socio-demographic characteristics of the study group

Socio demographic characters	Residence N=243				P-value (X^2)
	Urban N = 135		Rural N =108		
	No.	%	No.	%	
1. Personal data					
Age / years					
< 20	**18**	**13.3**	**15**	**13.9**	
20 – 25	**27**	**20**	**27**	**25**	
26 – 30	**15**	**11.1**	**33**	**30.6**	**0.000**
31 – 35	**27**	**20**	**0**	**0**	**Sig.**
36 – 40	**30**	**22.2**	**30**	**27.8**	
> 50	**18**	**13.3**	**3**	**2.8**	
Educational level					
Read & write	**3**	**2.2**	**33**	**30.6**	
Secondary	**54**	**40**	**15**	**13.9**	**0.000**
University	**75**	**55.6**	**45**	**41.7**	**Sig.**
Postgraduate	**3**	**2.2**	**15**	**13.9**	
Occupation					
Work	**81**	**60**	**81**	**75**	**0.014**
Not work	**54**	**40**	**27**	**25**	**Sig.**
Spouse's education level					
Secondary	**57**	**42.2**	**54**	**50**	**0.000**
University	**51**	**37.8**	**54**	**50**	**Sig.**
Postgraduate	**27**	**20**	**0**	**0**	
Spouse work					
Worker	**12**	**8.9**	**0**	**0**	**0.000**
Employee	**21**	**15.6**	**27**	**25**	**Sig.**
Teacher	**27**	**20**	**0**	**0**	
Special business	**75**	**55.6**	**81**	**75**	
2. History of pregnancy and previous births					
No. of pregnancy					
1st	**54**	**40**	**27**	**25**	**0.000**
2nd	**27**	**20**	**54**	**50**	**Sig.**
3rd	**27**	**20**	**27**	**25**	
4th	**27**	**20**	**0**	**0**	
No. of births					
1st	**54**	**40**	**54**	**50**	**0.000**
2nd	**27**	**20**	**54**	**50**	**Sig.**
3rd	**54**	**40**	**0**	**0**	
No. of abortion					

Non	**108**	**80**	**108**	**100**	**0.000**
1st	**27**	**20**	**0**	**0**	**Sig.**
Causes of abortion					
Non	**108**	**80**	**108**	**100**	**0.000 Sig.**
Repeat pregnancy without spaces.	**27**	**20**	**0**	**0**	
3. Previous pregnancy and childbirth complications					
During pregnancy					
Non	**81**	**60**	**54**	**50**	**0.000**
Abortion	**27**	**20**	**0**	**0**	**Sig.**
Anemia	**27**	**20**	**54**	**50**	
During childbirth					
Non	**81**	**60**	**81**	**75**	**0.000**
Premature birth	**27**	**20**	**27**	**25**	**Sig.**
Postpartum birth	**27**	**20**	**0**	**0**	
After childbirth					
Non	**108**	**80**	**81**	**75**	
The uterus does not return to its normal size.	**27**	**20**	**0**	**0**	**0.000 Sig.**
Having a rupture uterus.	**0**	**0**	**27**	**25**	

Statistically Significant at $p \leq 0.05$

Table (2): Relationship between total score of pre-anxiety and depression, socio-demographic characteristics, and reproductive history of the study group

Socio demographic characters	Total score of pre-anxiety and depression								P-value
	No N = 27		Mild N = 81		Moderate N = 81		Severe N = 54		
	No.	%	No.	%	No.	%	No.	%	
1. Personal data									
Age / years									
< 20	**6**	**22.2**	**21**	**25.9**	**6**	**7.4**	**0**	**0**	
20 – 25	**0**	**0**	**0**	**0**	**27**	**33.3**	**27**	**50**	
26 – 30	**9**	**33.3**	**30**	**37**	**9**	**11.1**	**0**	**0**	**0.000**
31 – 35	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**50**	**Sig.**
36 – 40	**12**	**44.4**	**24**	**29.6**	**24**	**29.6**	**0**	**0**	
> 50	**0**	**0**	**6**	**7.4**	**15**	**7.4**	**0**	**0**	
Residence									
Rural	**27**	**100**	**54**	**66.7**	**27**	**33.3**	**0**	**0**	**0.000**
Urban	**0**	**0**	**27**	**33.3**	**54**	**66.7**	**54**	**100**	**Sig.**
Educational level									
Read & write	**3**	**11.1**	**3**	**3.7**	**30**	**37**	**0**	**0**	
Secondary	**6**	**22.2**	**27**	**33.3**	**33**	**40.7**	**3**	**5.6**	**0.000**
University	**6**	**22.2**	**48**	**59.3**	**18**	**22.2**	**48**	**88.9**	**Sig.**
Postgraduate	**12**	**44.4**	**3**	**3.7**	**0**	**0**	**3**	**5.6**	
Occupation									
Work	**27**	**100**	**81**	**100**	**27**	**33.3**	**27**	**50**	**0.000**
Not work	**0**	**0**	**0**	**0**	**54**	**66.7**	**27**	**50**	**Sig.**
Spouse's education level									
Secondary	**27**	**100**	**3**	**3.7**	**54**	**66.7**	**27**	**50**	**0.000**
University	**0**	**0**	**78**	**96.3**	**0**	**0**	**27**	**50**	**Sig.**
Postgraduate	**0**	**0**	**0**	**0**	**27**	**33.3**	**0**	**0**	
Spouse work									
Worker	**0**	**0**	**3**	**3.7**	**6**	**7.4**	**3**	**5.6**	
Employee	**0**	**0**	**27**	**33.3**	**21**	**25.92**	**0**	**0**	**0.000**
Teacher	**0**	**0**	**0**	**0**	**27**	**33.3**	**0**	**0**	**Sig.**
Special business	**27**	**100**	**51**	**62.96**	**27**	**33.3**	**51**	**94.4**	
2. History of pregnancy and previous births									
No. of pregnancy									
1st	**0**	**0**	**54**	**66.7**	**0**	**0**	**27**	**50**	
2nd	**0**	**0**	**27**	**33.3**	**54**	**66.7**	**0**	**0**	**0.000**
3rd	**27**	**100**	**0**	**0**	**0**	**0**	**27**	**50**	**Sig.**
4th	**0**	**0**	**0**	**0**	**27**	**33.3**	**0**	**0**	
No. of births									**0.000**
1st	**0**	**0**	**81**	**100**	**0**	**0**	**27**	**50**	**Sig.**

2nd 3rd	27 0	100 0	0 0	0 0	54 27	66.7 33.3	0 27	0 50	
No. of abortion No 1st	27 0	100 0	81 0	100 0	54 27	66.7 33.3	54 0	100 0	0.000 Sig.
Causes of abortion Non Repeat pregnancy without spaces	27 0	100 0	81 0	100 0	54 27	66.7 33.3	54 0	100 0	0.000 Sig.
3. Previous pregnancy and childbirth complications									
During pregnancy Non Abortion Anemia	27 0 0	100 0 0	27 0 54	33.3 0 66.7	54 27 0	66.7 33.3 0	27 0 27	50 0 50	0.000 Sig.
During childbirth Non Premature birth Postpartum birth	27 0 0	100 0 0	54 27 0	66.7 33.3 0	54 0 27	66.7 0 33.3	27 27 0	50 50 0	0.000 Sig.
After childbirth Non. The uterus does not return to its normal size. Having a rupture uterus.	27 0 0	100 0 0	54 0 27	66.7 0 33.3	81 0 0	100 0 0	27 27 0	50 50 0	0.000 Sig.

Statistically Significant at $p \leq 0.05$

Table (3): Relationship between total post anxiety and depression, socio-demographic characteristics, and reproductive history of the study group

	Total post-anxiety and depression				P-value
	No N = 120		Mild N = 123		
	No.	%	No.	%	
1. Personal data					
Age / years					
< 20	**9**	**7.5**	**24**	**19.5**	**0.000 Sig.**
20 – 25	**15**	**12.5**	**39**	**31.7**	
26 – 30	**30**	**25**	**18**	**14.6**	
31 – 35	**24**	**20**	**3**	**2.4**	
36 – 40	**30**	**25**	**30**	**24.3**	
> 50	**12**	**10**	**9**	**7.3**	
Residence					**0.368 FE Not sig.**
Rural	**57**	**47.5**	**51**	**41.4**	
Urban	**63**	**52.5**	**72**	**58.5**	
Educational level					0.407 Not Sig.
Read & write	18	15	18	14.6	
Secondary	36	30	33	26.8	
University	57	47.5	63	51.2	
Postgraduate	9	7.5	9	7.3	
Occupation					**0.177 FE Not sig.**
Work	**75**	**62.5**	**87**	**70.7**	
Not work	**45**	**37.5**	**36**	**29.3**	
Spouse's education level					
Secondary	**57**	**47.5**	**54**	**43.9**	**0.209 Not sig.**
University	**54**	**45**	**51**	**41.5**	
Postgraduate	**9**	**7.5**	**18**	**14.6**	
Spouse work					
Worker	**6**	**5**	**6**	**4.9**	
Employee	**18**	**15**	**30**	**24.3**	**0.045 Sig.**
Teacher	**9**	**7.5**	**18**	**14.6**	
Special business	**87**	**72.5**	**69**	**56.1**	
2. History of pregnancy and previous births					
No. of pregnancy					
1st	**48**	**40**	**33**	**26.8**	**0.003 Sig.**
2nd	**30**	**25**	**51**	**41.5**	
3rd	**33**	**27.5**	**21**	**17.1**	
4th	**9**	**7.5**	**18**	**14.6**	
No. of births					
1st	**57**	**47.5**	**51**	**41.5**	**0.015 Sig.**
2nd	**30**	**25**	**51**	**41.5**	
3rd	**33**	**27.5**	**21**	**17.1**	
No. of abortion					**0.102 FE**
Non	**111**	**92.5**	**105**	**85.4**	

1st	**9**	**7.5**	**18**	**14.6**	**Not sig.**
Causes of abortion **Non** **Repeat pregnancy without spaces**	**111** **9**	**92.5** **7.5**	**105** **18**	**85.4** **14.6**	**0.102** **FE** **Not sig.**
3. Previous pregnancy and childbirth complications					
During pregnancy **Non** **Abortion** **Anemia**	 **51** **9** **60**	 **42.5** **7.5** **50**	 **84** **18** **21**	 **68.3** **14.6** **17.1**	**0.000** **Sig.**
During childbirth **Non** **Premature birth** **Postpartum birth**	 **78** **33** **9**	 **65** **27.5** **7.5**	 **84** **21** **18**	 **68.3** **17.1** **14.6**	**0.054** **Not sig.**
After childbirth **Non** **The uterus does not return to its normal size.** **Having a rupture uterus.**	 **87** **24** **9**	 **72.5** **20** **7.5**	 **102** **3** **18**	 **82.9** **2.4** **14.6**	 **0.000** **Sig.**

FE: is Fisher's exact test

Statistically Significant at $p \leq 0.05$

Table (4): Correlation between the total scores of pre and post anxiety and depression levels

Variable	P	P-value
Total scores of pre-anxiety and depression levels	**0.065**	**0.316** **Not sig.**
Total scores of post-anxiety and depression levels		

Spearman correlation coefficient (ρ)

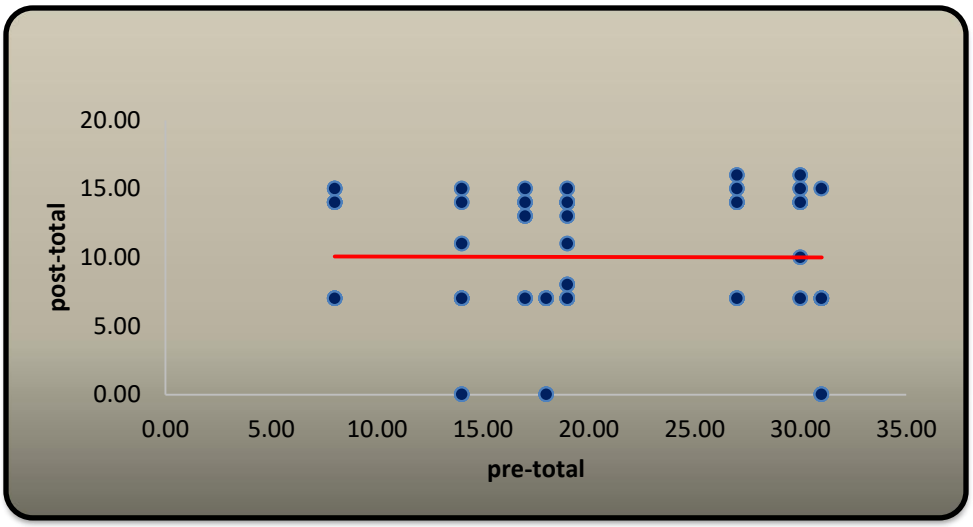

Figure (1): Correlation between pre and post psych-educational intervention among women

Table (5): Relationship between COVID19 information in study cases and socio demographic characters pre intervention

Socio demographic characters	Total score of coronavirus information N=243				P-value (X^2)
	Incomplete answer N = 216		Full answer N = 27		
	No.	%	No.	%	
Age / years					
< 20	**33**	**15.3**	**0**	**0**	
20 – 25	**27**	**12.5**	**27**	**100**	
26 – 30	**48**	**22.2**	**0**	**0**	**0.000**
31 – 35	**27**	**12.5**	**0**	**0**	**Sig.**
36 – 40	**60**	**27.8**	**0**	**0**	
> 50	**21**	**9.7**	**0**	**0**	
Educational level					
Read & write	9	4.2	27	100	
Secondary	69	31.9	0	0	0.000
University	120	55.6	0	0	Sig.
Postgraduate	18	7.3	0	0	
Residence					**0.000**
Rural	**81**	**37.5**	**27**	**100**	**FE**
Urban	**135**	**62.5**	**0**	**0**	**Sig.**

Statistically Significant at $p \leq 0.05$

Table (6): Relationship between coronavirus preventive health practices in study cases and socio-demographic characteristics pre-intervention

Socio demographic characters	Healthy practices N=243				P-value (X^2)
	True N = 54		False N = 189		
	No.	%	No.	%	
	1. Washing hands				
Age / years					
< 20	**21**	**38.9**	**12**	**6.3**	
20 – 25	**0**	**0**	**54**	**28.6**	
26 – 30	**18**	**33.3**	**30**	**15.9**	**0.000**
31 – 35	**0**	**0**	**27**	**14.3**	**Sig.**
36 – 40	**12**	**22.2**	**48**	**25.4**	
> 50	**3**	**5.6**	**18**	**9.5**	
Educational level					
Read & write	0	0	36	19.0	0.000
Secondary	18	33.3	51	27.0	Sig.
University	36	66.7	84	44.5	
Postgraduate	0	0	18	9.5	
Residence					**0.357**
Rural	**27**	**50**	**81**	**42.9**	**FE**
Urban	**27**	**50**	**108**	**57.1**	**Not Sig.**
	2. Wearing mask 3. Removing mask				
	N = 27		N = 216		
Age / years					
< 20	**9**	**33.3**	**24**	**11.1**	
20 – 25	**0**	**0**	**54**	**25**	
26 – 30	**12**	**44.4**	**36**	**16.7**	**0.000**
31 – 35	**0**	**0**	**27**	**12.5**	**Sig.**
36 – 40	**6**	**22.2**	**54**	**25**	
> 50	**0**	**0**	**21**	**9.7**	
Educational level					
Illiterate	**0**	**0**	**3**	**1.4**	
Read & write	**0**	**0**	**36**	**16.7**	**0.000**
Secondary	**0**	**0**	**69**	**31.9**	**Sig.**
University	**27**	**100**	**93**	**43.1**	
Postgraduate	**0**	**0**	**15**	**6.9**	
Residence					**0.000**
Rural	**27**	**100**	**81**	**37.5**	**FE**
Urban	**0**	**0**	**135**	**62.5**	**Sig.**

Statistically Significant at $p \leq 0.05$

Table (7): Comparison between total mean scores of participants' pre and post information about COVID19 protective practices, anxiety, and depression levels (n=243)

Variables	Mean ± SD Pre	Mean ± SD Post	(X^2)	P-value
Washing hand	**1.333 ± 0.473**	**1.000 ± 0.0000**	**6.325**	**0.0000 Sig.**
Wearing mask	**1.235 ± 0.454**	**1.0114 ± 0.000**	**27.939**	**0.000 Sig.**
Removing mask	**1.555 ± 1.497**	**1.022 ± 0.000**	**17.393**	**0.000 Sig.**
Nutrition during pregnancy	**0.559 ± 0.497**	**1.000 ± 0.000**	**13.798**	**0.0000 Sig.**
Anxiety	**1.343 ± 0.668**	**0.769 ± 0.526**	**10.312**	**0.000 Sig.**
Depression	**2.000 ± 0.668**	**0.679 ± 0.467**	**23.554**	**0.0000 Sig.**

Statistically Significant at $p \leq 0.05$

Table (8): Relationship between proper nutrition methods in study cases and socio-demographic characteristics post-intervention

Socio demographic characters	Proper nutrition methods N=243						P-value (X^2)
	False answer N = 27		Incomplete answer N = 27		Full answer N = 189		
	No.	%	No.	%	No.	%	
Proper nutrition to increase immunity							
Age / years							
< 20	**9**	**33.3**	**0**	**0**	**24**	**12.7**	
20 – 25	**0**	**0**	**0**	**0**	**54**	**28.6**	
26 – 30	**12**	**44.4**	**3**	**11.1**	**33**	**17.5**	**0.000**
31 – 35	**0**	**0**	**0**	**0**	**27**	**14.3**	**Sig.**
36 – 40	**6**	**22.2**	**21**	**77.8**	**33**	**17.5**	
> 50	**0**	**0**	**3**	**11.1**	**18**	**9.5**	
Educational level							
Read & write	0	0	3	11.1	33	17.5	0.000
Secondary	0	0	24	88.9	45	23.8	Sig.
University	27	100	0	0	93	49.2	
Postgraduate	0	0	0	0	18	8.5	
Residence							
Rural	**27**	**100**	**0**	**0**	**81**	**42.9**	**0.000**
Urban	**0**	**0**	**27**	**100**	**108**	**57.1**	**Sig.**

Statistically Significant at $p \leq 0.05$

Discussion

COVID19 infection is a public health issue, and effective care requires widespread public awareness [32] . It has been established that proper knowledge is required for the formation of preventive beliefs, the formation of a positive attitude, and the promotion of disease-prevention practices [33]. The present study aimed to determine the impact of psycho-educational nursing intervention about covid-19 on knowledge, levels of anxiety and depression, and protective practices among pregnant women.

In this study, the most common age group was 36-40 years old. This was comparable to similar age groups of 29- 38year old with a mean age of 30.78±4.71 years reported by Boma Awoala West et al. (2021) [34] and similar age groups of 30-39 years, 31- 35 years, 30-34 years, and 18- 39 years reported by Anikwe et al (2020) [35], Omozuwa et al. (2020) [36], and Reuben et al. (2020) [37].

Concerning the level of anxiety and depression, the results of the current study related to age and level of education indicated that women who were aged 20-35 years old were at higher risk of psychological problems than women who were aged above 35 years old. Several scholars' demons related that childbirth was a stressor, and all the pregnant women show various degrees of anxiety or depression symptoms. These results were congruent with the study of Hoque et al. (2021) [38], Okello et al. (2020) [39], and Zhong et al. (2020) [40]. In Benin, Omozuwa et al. (2020) [36] in Southern Nigeria illustrated that primigravida and young pregnant women are important risk factors for anxiety and depression during the Covid-19 pandemic.

The result revealed the higher frequency of anxiety and depression status at pre-intervention, which is like the findings of zhuh et al. (2020) [41] and Wang et al. (2020) [42], women between the ages of 18 and 30 were at a higher risk of psychological issues than women over the age of 30. It's most likely due to the lack of pregnancy experience among people of this age group. Furthermore, a lower level of education was linked to a higher prevalence of anxiety or depressive symptoms, which matches the findings of the current study. It's because people with a higher level of education are

more aware of their own safety and can actively gather essential information and knowledge about the epidemic in a variety of ways.

The level of practice of the respondents in this study varied greatly depending on the level of education and type of occupation of pregnant women and their spouses. Respondents with a post-graduate or graduate degree had a considerably higher practice score than those with only secondary education, these results are in accordance with Egbi et al. (2020) [43]. In contrast to the findings of this investigation, the study of Edet et al. (2020) [44] found that age was strongly correlated with COVID-19-related behaviors. In their study Kamal et al. (2021) [45] found a significant relationship between practice scores and age and place of residence, but Adesegun et al. (2020) [46] found no significant differences in respondents' practice levels based on age, occupation, marital status, degree of education, or place of residence. According to Edet et al. (2020) [44] marital status was not substantially associated with COVID-19 preventive knowledge and practice levels in the current study.

In the current study, there was an association between the total score of pre-anxiety depression and its socio-demographic characteristics and reproductive history of the women, above two third of the urban pregnant women suffering from moderate anxiety and depression, the majority of university educational level had severe anxiety and depression, the half of working women had severe anxiety and depression, the half of primigravida had severe anxiety and depression, one third of having a history of abortion had moderate anxiety and depression, the half of having a history of anemia and premature birth had severe anxiety and depression, these results in accordance with the study of Yanting et al. (2020) [47] , they concluded that a clinically significant increase in the prevalence of anxiety and depression symptoms after the threat of the COVID-19 epidemic especially for primigravida, working, and had a history of antenatal or postnatal complications. In the same line, in the study of Boma Awoala West et.al. (2021) [34] Anikwe et al. (2020) [35] in Nigeria, less than half of the respondents were aware that COVID-19 may be transferred to their offspring. This

information is critical to pregnant women whose that causing anxiety and depression. These results were also supported by Shaoqi Chen et al. (2020) [48] that concluded during the outbreak of COVID-19, pregnant women are prone to anxiety and depression, highlighting the necessity of further attention on those subjects. It is of vital and major significance to provide immediate psychological intervention and psychological counseling for pregnant women with poor mental health.The study results revealed that there was a highly statistically significant difference (P<0.000) between the total mean scores of participants' pre and post-test regarding protective practices, anxiety, and depression scores. Regarding the preventive health practice towards the prevention of COVID-19 in the present study showed that most pregnant women post-intervention changed the false beliefs and enhanced protective health practice for Covid-19 as frequent hand washing, admitted to wearing the face masks, and wearing the face masks all the time outside their homes in the present study after the intervention. As, Egbi et al. (2020) [43] in Bayelsa found 43.5 percent among health workers, whereas Mustapha et al. (2020) [49] in Yobe state, Nigeria, found 35 percent among the general population. Omozuwa et al. (2020) [36] found somewhat higher rates of 58.1 percent among pregnant women in Benin. This may be the effectiveness of the psych-educational nursing intervention on the importance of wearing a face mask on a regular basis in preventing the spread of COVID-19 infection, as well as the government's free distribution of face masks. In the current study, the majority (95.7%) of respondents reported washing their hands with soap and water, however, less than half (46.9%) did so on a regular basis. In Benin, Omozuwa et al. (2020) [36] , Nigeria, and Sudan, poor hand washing practices were recorded at 45.2 percent and 56 percent, respectively. Sayehahmed et al. (2020) [50] and Habib et al. (2020) [51] Other sections by Ejeh et al. (2020) [52] and Egbi et al. (2020) [43] of Nigeria showed good regular hand washing practices of 82 percent, 87.9%, 91.1 percent, 95.3 percent, and 99 percent, respectively. In a comparable study conducted among health care professionals in Yobe State, Nigeria, 100 percent hand washing was observed. These findings were also in accordance with Chidebe et al. (2020) [53] that illustrated the

study population has good knowledge, attitude, and preventive practices of COVID-19 disease and recommended that nursing education is needed to reduce anxiety and depression during pregnancy.

The findings of this study also demonstrated that a healthy diet helps keep the body in good shape to fight the infection. Food safety management and appropriate food practices are, however, required in addition to the dietary control requirements. This finding is consistent with Moscatelli et al. (2021) [54], Butler and Barrientos (2020) [55], who found that nutrition can prevent infection and enhance illness prognosis in COVID-19 patients. Malnutrition, overweight, and obesity have all been proven to have a deleterious impact on the immune system, leading to viral infections, and various studies have demonstrated that nutritional interventions can serve as immune stimulators, preventing viral infections. Even though numerous strategies, such as the adoption of a specific eating regimen, the use of dietary supplements, and other similar interventions, show promise in the prevention, management, and recovery of COVID-19 patients.

Regarding the relation of depression, anxiety, and residence the findings of this study revealed a statistically significant difference between rural and urban areas, with urban areas experiencing less depression and anxiety because of people in urban areas having adequate knowledge about Covid- 19 infection. Also, according to Liu et al. (2020) [56] and Kajdy et al. (2020) [57], there was a substantial link between proper knowledge and levels of depression and anxiety, as well as their management. The results of the current study showed that depression and anxiety are highly significant before and after safety measures such as staying mostly indoors and going outdoors only when necessary, practicing social distancing when absolutely necessary, wearing surgical masks in public places, and adopting good hand sanitation practices to reduce the risk of community spread of covid-19, which is consistent with the findings of Liu et al. (2020) [58] that reported that Pregnant women should be properly educated on preventive measures to limit the severity of covid-19-related sickness. So, this study is very important to apply the psych-educational nursing intervention to reduce psychological effects

of covid-19 as depression and anxiety during pregnancy. On the same line, these results are supported also by the study of Ryan et al. (2020) [59] that concluded in their cross-sectional online study knowledge can better guide clinicians to communicate better with Singapore pregnant women. Also, Gabriele et al. (2020) [60] and Allagoa et al. 2020 [61] concluded that the results can be used to formulate psychological interventions to improve mental health and psychological resilience during the COVID-19 epidemic among pregnant women.

Conclusion

Based on the findings of the present study, it can be concluded that there was a highly statistically significant improvement in women's knowledge was observed and the higher positive beliefs about perceived benefits of preventive health practices, susceptibility, severity, health motivation, and reduced infection with Coronavirus during pregnancy. Effective strategies targeting maternal stress, anxiety, and depression such as effective risk communication and the provision of psychological first aid may be particularly useful to prevent negative outcomes for pregnant women and their fetuses. Our study highlights the importance for clinicians and obstetricians to render appropriate psycho-educational intervention and focused clarification on the effect of COVID-19 among pregnant women for psychological support and mental wellbeing.

Recommendation

Based on the study findings the following recommendations are suggested:

1) Pregnant women should be encouraged to take responsibility for their own health and be active participants in the psycho-educational program.

2) More educational intervention is needed to encourage adherence to routine antenatal care with raising women’s awareness about Covid-19.

3) Health professionals should provide counseling sessions for pregnant women about the protective practices of Covid-19 and stress on the psychological and emotional state of the pregnant women during this pandemic situation for early detection and management of anxiety and depression during pregnancy.

4) Applying stress management techniques and giving emotional support to pregnant women is very important during the outbreak of the Covid-19.

Strengths and Limitations of the Study

This study is the first study to investigate the impact of the psycho-educational nursing intervention on pregnant women's knowledge, anxiety and depression levels, and the protective practices during the COVID-19 outbreak. There are some challenges in the current research. First, we conducted the pre-post-test by means of online questionnaires, which may ignore those pregnant women who do not have access to the internet and took a long time. All the protective practices were considered during the intervention of the psycho-educational nursing program. Secondly, the limitation of the regions involved may cause information bias.

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Clinical Efficacy of Supervised Pelvic Floor Muscle Training - assisted Biofeedback on Quality of Life and Functional Outcomes in patients with Fecal Incontinence

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Abstract

Background: Fecal incontinence (FI) is a prevalent, and embarrassing condition that drastically affects the quality of life (QOL). Pelvic floor muscle training (PFMT) is the first-line therapy in FI either alone or combined with biofeedback (BF). Little trials investigated the effectiveness of PFMT together with BF in improving FI and QOL **Aim:** To investigate the efficacy of supervised PFMT -assisted BF in improving FI, quality of life, and strength of the rectal muscle in adults with FI**. Methods**: A quasi-experimental design was conducted on 60 patients with FI attending the gastrointestinal motility unit affiliated to gastroenterology center Mansoura University Hospitals and referred for biofeedback and Pelvic Floor exercise. The Fecal Incontinence Quality of Life Questionnaire and the Cleveland Clinic Florida Fecal Incontinence scale were filled out at the first visit and then at follow-up after six months. The patients were directed to perform daily pelvic floor exercise at home. Data were analyzed using SPSS (version 20). **Results**: There was a significant improvement in fecal incontinence severity and quality of life domains post 8-sessions of PFMT -assisted BF P<0.001. A strong negative correlation was found between fecal incontinence severity and improvement in fecal incontinence quality of life. Strong positive correlation existed between improvements in quality-of-life domains. **Conclusion**: PFMT-assisted BF has proven to be an effective method for improving FI, QOL, and increasing the strength of the anal sphincter. **Relevance to clinical practice:** PFMT-assisted BF can be recommended as a safe, painless approach and a key element in the comprehensive management of patients with FI. It should be considered as a feasible option by healthcare providers**.**

Key Words: Biofeedback, Fecal incontinence, Quality of life, Pelvic muscle training

Introduction:

Fecal incontinence (FI) is the involuntary loss of fluid, gases and/or solid stool [1]. It is a particularly embarrassing and distressing condition, that drastically affects the patient's quality of life (QOL) and markedly diminishes the activity of daily living, with significant medical, social, and economic implications [2]. It is reported that FI affects 2% to 22.3% of the population but the actual prevalence has not been fully assessed due to the social stigma attached to the condition [3].

There are many causes of fecal incontinence, the most common of which is a weakness of the anal sphincter. This can occur secondarily to trauma, degeneration, connective tissue disease, and neuropathy. Other precipitating causes are, inability to perceive rectal filling "Known *as rectal hyposensitivity*", and rectal hypersensitivity sometimes called "the *inability to delay a bowel movement*" [4,5]. The severity of FI is described as a combination of stool type, frequency, use of dipper, and severity of urgency. This condition affects both women and men, regardless of their occupational, social, or financial status [6]. Fecal incontinence is divided into three subtypes: 1. Passive fecal incontinence; when stool leaks without any prior sense of pressure, 2. Urge fecal incontinence; when the patient is alert to push but can't wait to go to the bathroom, and 3. Exercise fecal incontinence; which occurs when increased intra-abdominal pressure due to coughing, laughing, sneezing and heavy lifting [7,8].

There are different treatment modalities for (FI) depending on the cause and severity. The recommended first-line therapy for mild and moderate conditions consists of a multi-modal track such as knowledge, anti-motility and antidiarrheal drugs, laxatives, dietary fiber supplements, PFMT, and /or BF [9,10]. On the other hand, the surgical option is chosen for patients who do not respond to conservative treatment and who have defects in the anal sphincter muscle [11]. The PFMT is regular training of the anal sphincter and pelvic floor muscles with the goal of enhancing muscle strength, coordination and/or endurance. However, BF provides positive reinforcement for patients who perform PFMT. Biofeedback guides the patient to perform PFMT correctly and motivates him to practice this correct response repeatedly through visual, auditory, and tactile means. So as to improve the capacity of anal sphincter muscle, thus improving FI and their quality of life [12]. In most recent studies, PFMT is

the first step in treating FI either alone or in combination with BF. However, standard treatment is still not available, and the purported benefits have not yet been determined [11,12]. Interestingly the details of when and how PFMT should be combined with BF have not been examined, and few recent studies has evaluated the efficacy of biofeedback associated with pelvic floor rehabilitation training [13]. Thus,

The Study Aims to

Evaluate the efficacy of supervised pelvic floor muscle exercise combined with biofeedback on reducing fecal incontinence severity, improving quality of life and strength of rectal muscle as measure by anorectal manometry in adults with fecal incontinence.

Study Hypotheses:

We considered the following hypotheses.

H1: Patients with fecal incontinence who completed eight- sessions of PFMT along with BF will have a significant improvement in FI severity post-training compared with FI pre-training.

H2: Fecal incontinence participants who completed eight- sessions of PFMT associated with BF will have a marked improvement in manometric parameters' mean scores post-training compared with pre-training mean scores.

H3: There are statistically significant changes in fecal incontinence quality of life' mean score after eight- session of PFMT combined with BF among FI patients who completed the study when compared to the mean score before training.

H4: Fecal incontinence is inversely proportional to patients' quality of life.

Study variables:

Independent variables/ Interventions: Include pelvic floor muscle training (PFMT) combined with Biofeedback (BF).

Dependent variables /Main Outcome Measures: Fecal incontinence severity, fecal incontinence quality of life and anorectal manometry were used to measure anal sphincter strength.

Operational definitions:

Functional outcomes: According to the study tools, functional outcomes described to include 1. Fecal incontinence severity index measured by Wexner scale and 2. Strength of rectal muscle that measured by biofeedback manometric parameters.

Significance of the study:

Fecal incontinence is an embarrassing and disturbing condition for patients. It has a negative impact on their quality of life and increases financial burdens on the individual and the government. Several studies investigated the effectiveness of

biofeedback alone on fecal incontinence, and other studies uses PFMT to improve QOL and bowel function. So far, few well controlled studies in Egypt evaluated the effect of biofeedback in combination with supervised PFMT on FI severity and QOL. The evidence from these studies was inconclusive and the researchers point to, the need for additional studies in this field [14]. Therefore, there is an urgent need to relieve these symptoms by using biofeedback along with pelvic floor muscle exercise as a safe and painless maneuver. Therefore, the decision was made to carry out this study.

Subjects and Method:

Research design:

A quasi-experimental pre/post design was utilized.

Setting:

This study was conducted at gastrointestinal motility investigation unit in gastroenterology center at Mansoura University Hospitals, Egypt.

Study sample:

A purposive sample of sixty patients with FI, attending the previously mentioned setting, diagnosed by gastroenterology team, and referred for BF and Pelvic Floor rehabilitation training.

Sample Size Calculation

The sample size for studying the efficiency of biofeedback in the management of FI was calculated using DSS research.com software. At alpha error 1% (significance 99%) and β error 2% (study power 98%) and mean resting anal pressure = 33.3 ± 14.19 before intervention (Santos et al., 2018) [15]. with 25% expected improvement (increase) in this pressure after intervention. The sample size is 56 by adding (10%) to compensate for drop out. Thus, the calculated sample size is 60 patients.

Inclusion criteria

Sixty adult patients aged from 20 to 60 years, both sexes, with a history of FI defined as involuntary leakage of gas, solid and/or liquid stool more than 3 episodes / week for more than 24 weeks that impairs quality of life. Underwent biofeedback treatment, psychologically stable, ready to adhere to a strict follow-up schedule, unsuccessful conservative treatment and can read and write.

Exclusion criteria

Patient using other treatment methods, with acute or inflammatory bowel disorders, those with neurological conditions or patients who missed a treatment session. A history of laxative abuse, fecal impaction, implanted pacemaker, or bleeding disorders and pregnant women were excluded.

Study tools:

The following four tools were used to collect data pertinent to the study after extensive literature review.

1. Structured interview questionnaire

1.1 Demographic and physical examination data form

Was constructed by the researcher to assess demographics as age, sex, marital status, occupation, and educational level, complete medical history, and causes of FI. Abdominal examination, inspection of perineum, endorectal ultrasound, pelvic MRI, and barium enema.

1.2 Patient-reported outcomes (Daily Bowel Diaries)

Used to calculate the frequency of fecal incontinence per week.

2. Anorectal Manometric Parameters

This tool was developed Elhemaly and modified by the researcher [16]. Two categories of anorectal manometric parameters were measured at referral and after 6 months of PFMT-assisted BF, it composed of 1. Anal sphincter pressure that assesses resting pressure & Squeeze pressure, and 2. Rectal sensations that determine initial sensation, urge to defecate and maximum tolerable volume.

Scoring system: Normal range of resting pressure in adults (40:80 mmHg), squeeze pressure (90:200 mmHg), and rectal sensation classified into three categories, 1. Initial sensation (20:50 cc), 2. Urge to defecate (75:150 cc) ,3. Maximum tolerable volume (150:350 cc).

3.Cleveland Clinic Florida Fecal Incontinence (CCF-FI) Scale

This scale was first proposed and described by Wexner et al., and widely used to assess fecal incontinence severity score [17]. The Wexner scale measures accidental leakage of solid stool, liquids and gases, the need to wear a diaper and impact on quality of life. It is a self-administered tool of 5 elements that are distributed as (Never / Rarely / Sometimes / Usually / Always), scored from 0-4". The scale can also be classified into four categorical levels (no incontinence /never =0), (Slight incontinence / Rarely (1 episode in past month), (Moderate incontinence / Sometimes (2-4 episodes) / Weekly (>1 week - <1-day episodes), (Sever incontinence / Daily (1 or more daily episodes). The total CCF-FI score ranged from zero (perfect fecal continence) to 20 (severe fecal incontinence). The higher the score, the more severity anal incontinence [18]. ***The construct and discriminative validity*** of the Wexner scale was confirmed [19]. ***The reliability*** of the scale was performed by test-retest method r=85 [20].

4. Fecal Incontinence Quality of Life (FIQOL) Questionnaire

Fecal Incontinence Quality of Life (FIQL) questionnaire is a disease-specific instrument, constructed and described by Rockwood et al., to investigate the effect of FI on four domains of patients' QOL; lifestyle; coping behavior; depression; and embarrassment. The scale consisting of 29 questions in four domains on a scale of 1-4 score [21]. FIQOL questionnaire widely used, ***validated*** in women & men approved by the American Society of Colorectal Surgeons. ***The reliability*** of the scale was confirmed and the internal reliability (Cronbach's alpha = 0.8 to 0.96) [22].

Pilot study:

The pilot study was conducted on 10% of the total sample (6 patients). It has been applied to check the applicability and clarity of the study tools as well as to estimate the time required to fill out the questionnaire. Modifications were made accordingly.

Ethical considerations and patients' rights Ethical approval was granted by scientific research ethics committee, Faculty of Nursing Mansoura University. The purpose and nature of the study were clarified to patients who expressed their willingness to participate in the study, and informed consent was obtained from them. The researcher emphasized that participation is not mandatory. Privacy, security, confidentiality, and anonymity were maintained throughout the whole study. Participating patients have the right to withdraw at any stage of the study without accountability, blame or influence on the care provided to them. The study was conducted in accordance with the Helsinki Declaration and the University's research ethics standards.

Procedure

Once the necessary approvals were granted to proceed with the proposed study, the patients who met sampling criteria and agreed to participate in the pelvic floor training program at the above-mentioned setting were interviewed individually by an independent researcher to fill in the study questionnaire. The patients were interviewed in a quiet room before stating the program and were briefly informed about the aim and nature of the study. The researcher assistance filled out FIQOL questionnaire and FISI before the training program and after eight sessions of PFMT-assisted BF (the end of 6^{th} months of training).

Data collection

At the initial interview, the condition of each patient was examined by colorectal physician, to inspect perineum, and

endorectal ultrasound, pelvic MRI, and barium enema was performed before referral for biofeedback using tool (1). The patient who meets inclusion criteria were assigned to receive PFMT-assisted BF. To measure strength of sphincter muscle, the colorectal nurse measured anorectal manometric parameters using tool (2) by using catheter attached with small balloon and the balloon can be inflated in the rectum, the colorectal nurse directs the patient to relax, squeeze and push. The pressure of anal sphincter was measured during each of these maneuvers. The rectal sensations were also measured by gradual inflation of the balloon and explore the maximum tolerable volume, urgency, and initial sensation. Manometric examination provides accurate measurement to squeeze, resting pressures and rectal sensation. Then independent researcher used Wexner scale to assess fecal incontinence severity score by tool (3). To investigate the impact of FI on patients' QOL, the researcher assistant used tool (4). These outcome measures were assessed initially before training, at each follow-up session and at the end of six months of the training program.

Development of Supervised PFMT-assisted BF

The training program in the present study was designed for FI adults guided by previous programs to improve anal sphincter pressure, rectal storage capacity, continence ability and regular bowel habits and practice pelvic floor exercise at home correctly [7,8]. The training program was established and revised in collaboration with the gastrointestinal motility doctors, according to the requirements and capabilities of each patient. The content validity of training program was assured by three professors in gastroenterology unit and two experts in medical surgical nursing.

Description of Supervised PFMT -assisted BF

The study was conducted over a period of 6 months from the beginning of November 2020 to the end of April 2021**.** Informed consent was obtained from participating patients after explaining aim and nature of the study. The study's' questionnaire was assessed pre, at every follow up visit and post 6 months of the program by the colorectal nurse and an independent researcher who don't know the nature of the study to avoid bias. The study's' participants were received eight face -to- face sessions (weeks 0, 2, 4, 6, 10, 16,20 and 26; 60 minutes for the first training session and 45 minutes for subsequent sessions. The previously prepared sessions were delivered by a trained colorectal nurse who has more

than 5 years of experience in gastro-motility unit.

In session one, the researcher used a pelvis model and simulated pictures to explain the anatomy and function of PFM. In this session, a background was explained about the causes and prevalence of fecal incontinence, and a brief description of the biofeedback -assisted PFM technique and preparation for it before each session. The principal researcher directed patients to eat a fiber-rich diet of 25 to 30 grams/day to improve consistency and increase stool volume to gradually reduce the potential for gas and bloating. In the same context, they were also instructed to avoid caffeine, carbonated drinks, milk, and alcohol if they caused diarrhea, and drink enough water, 2.5 to 3 liters per day, to prevent constipation. During the training, patients were instructed to maximally squeeze PFM in response to rectal distensions while at the same time minimizing contraction of abdominal wall. This mauver is referred to as *coordination training.*

Implementing of Supervised PFMT - assisted BF

The patients were taught correct pelvic floor contractions and directed" to "squeeze around the anus in an attempt to block the passage of air or stool from the intestines for strengthening pelvic floor muscles. Patients received instrument-assisted biofeedback during the pelvic floor training with use of catheter attached with a balloon. Patients viewed a computer screen showing intra-rectal pressure and anal canal pressure as line graphs. The patients were asked to isolate the puborectalis muscles of the anal sphincter and asked to contract it for 5-10 seconds and then relax and repeat it 10 times. A catheter connected to balloon was inserted in the rectum, and gradually inflated till the sensation of rectal filling. Reinflation of the balloon with a smaller volume, to detect rectal distension at the lower volume. The function of PFM was examined by BF.

In the initial visit, a biofeedback assessment was performed when the patient was in the side-lying position, and from the 2nd session, the side-lying, sitting, and standing position was used. As well as the ability to contract PFM during walking, coughing, sneezing, and lifting was determined. Based on the results of the BF measurements, individualized home training was developed considering the capabilities of each patient. It consisted of three sets of 10 pelvic floor muscle contractions lasting 10 seconds and two sets of three contractions lasting 30 seconds. The participants were instructed to have a one-minute rest between each set. The patient with reduced muscular

endurance was directed to decrease the number and duration of contraction and gradually increase it to achieve the prescribed training. Patients experiencing difficulties in achieving a correct contraction of the pelvic floor muscles were directed to palpate the perineum and /or anus to achieve a correct contraction. The patients were also taught how to tighten PFM in cases of urgency and increased abdominal pressure.

During the performance of pelvic muscle contractions, the participant was instructed to take pursed-lip breathing, ensure that, patients are able to breathe freely without using the abdominal, thigh or gluteal muscles. They also received written training handout with illustrations along with the instructions provided both orally and digitally. The patients were informed to fill out training diaries that were used as a motivational tool and to determine their commitment to the individual home training. At follow-up visits, training diaries were assessed and, accordingly the participants who have made progress were directed to demonstrate PFMT in sitting, standing, walking, while transferring, lifting, sneezing, and coughing.

Statistical Analysis:

Data for 59 people were analyzed due to the exclusion of one patient who was transferred to another hospital. The collected data were coded, processed, and analyzed using the SPSS (Statistical Package for Social Sciences) version 20 for Windows® (SPSS Inc, Chicago, IL, USA). Qualitative data was presented as number and percent. Comparison between groups was done by Chi-Square test. Wilcoxon singed ranks test was used for comparison within group. Quantitative data was tested for normality by Kolmogrov-Smirnov test. Normally distributed data was presented as mean ± SD. Paired t-test was used for comparison within groups. $P < 0.05$ was considered to be statistically significant.

Results:

The patient's characteristics are illustrated in table 1. Fifty -eight patients were analyzed. All patients had persisting fecal incontinence with a conservative treatment. The mean age was 31.02 ± 12.50 years. Females were prevalent in the studied sample than males they constituted 86.4% (n= 51). The bowel movement frequency was 4.8 ± 2.1 per day and 100% of Biofeedback sessions were performed by colorectal nurse. Nearly half 45.8% were married and 59.3% read and write. Concerning the occupation, the majority of sample were working and 50.8% lived in rural areas.

Table2. clarified the causes of fecal incontinence in studied patients. Of 59 patients 33.9% (n=20) complained of idiopathic fecal incontinence. Meanwhile, 33.8% (n=20) suffer from chronic constipation. In the same context, 10.2% (n=6) of the participants had congenital anorectal malformation and 13.6% (n=8) were exposed to anal surgery indicated as the reason for fecal incontinence. Prolapsed hemorrhoids and fistulas accounted for 3.4% (n= 2%) of the causes in the participating patients. Obstetric trauma represented 1.7% (n=1) of the causes. Table 3. illustrates the clinical outcomes of anorectal manometry regarding anal sphincter pressure and rectal sensation before and after the training program. As regards anal sphincter pressure, the table revealed, maximum squeeze pressure and resting anal pressure mean score significantly improved after 6 months of training program ($p < 0.001$ & $p = 0.010$, respectively). Also, regarding sensitivity to rectal sensation there were statistically significant changes pre and post for initial sensation, maximum tolerable volume and urge to defecate ($p < 0.001$). However, anal pressure on staining clinically improved with no statistical significance differences. When comparing the change in fecal incontinence level in the study participants at baseline and after 6 months of training. It is noticed from table 4. that, the patients with severe incontinence dropped from (83%) pre intervention to (20.4%) post intervention and slight incontinence markedly increased from (1.7%) at baseline to (50.8%) after 6 months of the study. Overall, after 24 weeks of training, there was a considerable improvement in fecal incontinence level in studied patients where ($P < 0.001$). Table 5. presents Wexner components in patients with FI before and after rehabilitation training. In general, according to the findings of the current study, there was a significant difference in Wexner fecal incontinence severity mean score before and after training where $P < 0.001$. In particular, the mean incontinence score for solid feces was markedly reduced from (0.95 ± 1.12) pre-program to (0.31 ± 0.77) post program ($P < 0.001$). Before training program, the mean of diluted feces was (3.15 ± 0.98) and dramatically decreased to (1.69 ± 1.15) after pelvic rehabilitation program with significant improvement ($P < 0.001$).

At baseline, the patient's complaint from gas incontinence (3.02 ± 0.68) and only (1.78 ± 1.08) developed these symptoms after training program with a statistically

significant difference (P < 0.001). With regard to wearing a pad before the training program, the mean score was high and decreased significantly after the program (3.12 ± 0.97 and 1.24 ± 1.39) respectively (P < 0.001). There was a trend toward improvement in mean score QOL of incontinence patients post intervention(1.73 ± 1.24) when compared to QOL at baseline (3.24 ± 0.68) with a statistically significant change (P < 0.001). When investigating FIQOL mean scores pre and post 6 months of pelvic floor training, table 6. and figure 1. illustrated that, exercise training improved the four quality of life domains, (lifestyle, behavior, depression, and embarrassment) where there was a statistically significant differences in FIQOL mean score after the training program p< 0.001. A significant improvement in the severity of fecal incontinence was also observed post training p< 0.001. In relation to, the mean score of lifestyles was (15.75 ± 4.81) before and (26.49 ± 7.48) after. This is a trend that confirms the improvement of lifestyle of participating patients. In this study only (12.05 ± 3.18) have coping behavior pre-program, improved post training to reach (21.47 ± 6.55) with a statistically significant difference p< 0. 001. With respect to "depression" domain the mean score was dramatically changed from (14.37 ± 3.3) pre to (21.07 ± 5.86) post completion of the training where p< 0.001. As regards the mean score of embarrassment domain, there were marked improvement from baseline (4.15 ± 1.14) to (7.92 ± 2.73) after finishing the training with a statistically significant difference p< 0.001. Interestingly, table 6. and figure 1. showed a significant enhancement in FIQOL and FISI after 6 months of intervention p< 0.001. Overall, according to the findings of the present study we can conclude that, there was a significant difference between the studied patients in terms of the quality of life and fecal incontinence severity index before and after training.

When analyzing correlation between fecal incontinence and quality of life domains, table 7**.** demonstrated that there was a strong negative correlation between FIQL and FISI scores. As regards FIQOL subdomains, a strong positive correlation was emphasized between lifestyle & coping, depression, and embarrassment domains. Interestingly, Positive correlation appeared between coping behavior and depression & embarrassment. Finally, depression correlated positively with embarrassment where P < 0.001

Table (1): Characteristics of studied patients with fecal incontinence N= 59

	No	%
Age (years)		
20- 35	42	71.2%
>35- 45	4	6.8%
> 45	13	22%
Mean ± SD	31.02 ± 12.50	
Gender		
Female	51	86.4%
Male	8	13.6%
Marital status		
Single	32	54.2%
Married	27	45.8%
Educational level		
Read and write	35	59.3%
Secondary School	17	28.8%
Higher education	7	11.9%
Employment status		
Student	8	13.6%
Working	46	78%
Housewives	5	8.4%
Residence		
Urban	29	49.2%
Rural	30	50.8%
Persistence of fecal incontinence with conservative treatment	59	100%
Bowel movement frequency / week	**Mean ± SD** 4.8 ± 2.1	
Who perform Biofeedback sessions		
Colorectal nurse	59	100%
Preparation		
Enema	59	100%
Laxatives	24	40.7%

Data are shown as mean and standard deviation if applicable.

Table (2): Causes of fecal incontinence in study participants N= 59

Causes of fecal incontinence	No	%
Idiopathic	20	33.9
Chronic Constipation (CC)	20	33.8%
Congenital anorectal malformation	6	10.2%
Obstetric trauma	1	1.7%
Anal surgery	8	13.6%
Prolapsed hemorrhoids	2	3.4%
Fistulas	2	3.4%

Efficacy of pelvic floor muscle training-- assisted BF on Functional Outcomes in Fecal Incontinence Participants

Table (3): Changes in anorectal manometric mean scores before and after pelvic floor muscle training-assisted biofeedback in fecal incontinence participants N=59

Anorectal manometric parameters of bowel function control	Before PFRT-assisted BF Mean ± SD	After 6 months of PFRT-assisted BF Mean ± SD	t	P
	Anal sphincter pressure			
Resting anal pressure	52.63 ± 12.3	55.05 ± 10.76	2.655	0.010*
Maximum Squeeze pressure	100.61 ± 46.63	141.02 ± 41.68	5.246	<0.001*
	Rectal sensation			
Anal pressure on straining	32.88 ± 6.45	33.56 ± 9.96	0.782	0.437
initial sensation	57.54 ± 15.63	41.69 ± 11.47	8.224	<0.001*
Urge to defecate	137.29 ± 43.94	98.98 ± 31.44	8.095	<0.001*
Maximum tolerable volume	229.83 ± 59.06	188.64 ± 51.14	5.799	<0.001*

Paired t-test (t) * Significant P < 0.05

Abbreviations: PFRT - assisted BF, Pelvic Floor Rehabilitation Training - assisted Biofeedback; FI, fecal Incontinence

Table (4): Comparing Fecal incontinence level at baseline and after 6 months of pelvic floor muscle training-assisted biofeedback in studied patients N= 59

Cleveland Clinic Florida Fecal Incontinence severity CCF-FIS	Baseline		After 6 months of PFRT-assisted BF		Test of significance	
	No	%	No	%	Z	P
Slight incontinence	1	1.7%	30	50.8%	5.961	<0.001*
Moderate incontinence	9	15.3%	17	28.8%		
Sever incontinence	49	83%	12	20.4%		

Wilcoxon sign-rank test (Z) * Significant P < 0.05

Abbreviations: PFRT - assisted BF, Pelvic Floor Rehabilitation Training - assisted Biofeedback; CCF-FIS, Cleveland Clinic Florida Fecal Incontinence severity

Table (5): Improvement in fecal incontinence severity index according to Wexner fecal incontinence scale before and after pelvic floor muscle training-assisted biofeedback in studied sample N=59

Wexner FI components	Before PFRT-assisted BF Mean ± SD	After 6 months PFRT-assisted BF Mean ± SD	t	p-value
Solid feces	0.95 ± 1.12	0.31 ± 0.77	5.584	<0.001*
Diluted feces	3.15 ± 0.98	1.69 ± 1.15	11.752	<0.001*
Gas	3.02 ± 0.68	1.78 ± 1.08	10.828	<0.001*
Using pad	3.12 ± 0.97	1.24 ± 1.39	10.681	<0.001*
Impact on Quality of Life (QOL)	3.24 ± 0.68	1.73 ± 1.24	10.073	<0.001*

t: paired t-test * Significant P < 0.05

Abbreviations: PFRT - assisted BF, Pelvic Floor Rehabilitation Training - assisted Biofeedback; FI, fecal Incontinence; QOL, Quality of Life, FISI, fecal incontinence severity index

Clinical efficacy of pelvic floor muscle training-assisted biofeedback on fecal incontinence quality of life.

Table (6): Comparing fecal incontinence quality of life and fecal incontinence severity mean score before and after 6 months of pelvic muscle training in studied subjects N=59

FIQL domain/ Wexner FI SI	Before PFRT-assisted BF Mean ± SD	After 6 months PFRT-assisted BF Mean ± SD	t	p-value
Lifestyle	15.75 ± 4.81	26.49 ± 7.48	12.676	<0.001*
Coping Behavior	12.05 ± 3.18	21.47 ± 6.55	11.96	<0.001*
Depression	14.37 ± 3.3	21.07 ± 5.86	8.769	<0.001*
Embarrassment	4.15 ± 1.14	7.92 ± 2.73	11.526	<0.001*
Wexner FI SI	13.47 ± 3.31	6.75 ± 5.03	12.267	<0.001*

Paired t-test (t) * Significant P < 0.05

Abbreviations: PFRT - assisted BF, Pelvic Floor Rehabilitation Training - assisted Biofeedback; FI, fecal Incontinence; FISI, Fecal Incontinence Severity Index; FIQOL, Fecal Incontinence Quality of life

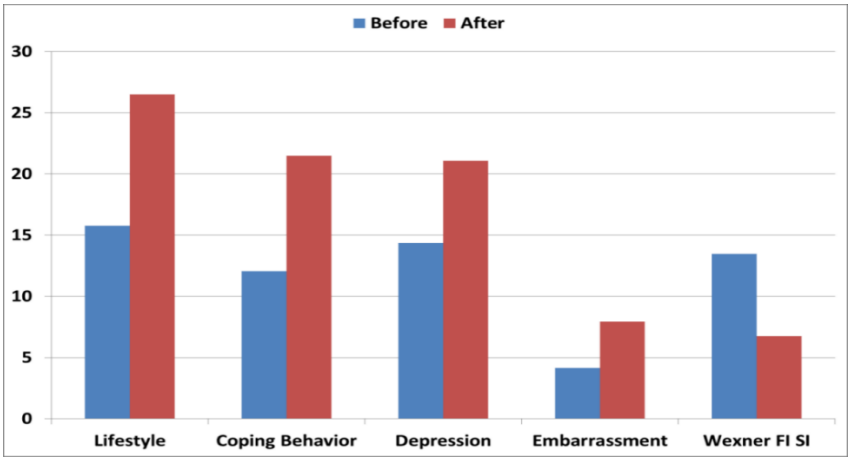

Figure 1: Effect of pelvic floor muscle training-assisted biofeedback on fecal incontinence severity and quality of life domains in studied patients pre and post 6 months

Relation Between Improvement in fecal incontinence severity index and fecal incontinence quality of life

Table (7): Correlation between fecal incontinence quality of life and Wexner fecal incontinence severity post 6 months of pelvic floor muscle training - assisted BF in studied participants N=59

FIQL/ Wexner FI severity	Wexner FI severity	Lifestyle	Coping Behavior	Depression	Embarrassment
Wexner FI severity		-0.520**	-0.648**	-0.662**	-0.610**
Lifestyle			0.807**	0.740**	0.773**
Coping Behavior				0.950**	0.935**
Depression					0.887**
Embarrassment					

Spearman correlation test ** Highly Significant P < 0.001

FI, fecal Incontinence; FISI, Fecal Incontinence Severity Index; FIQOL, Fecal Incontinence Quality of life

Discussion:

In this observational study, we investigated efficacy of an 8-sessions PFMT along with BF in reducing fecal incontinence, improving quality of life, and increasing strength of anal sphincter. Several causes contribute to fecal incontinence, such as anal surgery, hemorrhoidal fistula, idiopathic, chronic diarrhea/ or constipation and urinary incontinence [23,24]. The results of the current study were consistent with these findings. More than one third of the studied patient suffered from chronic constipation and reported idiopathic cause of FI. Meanwhile, rectal surgery and congenital anorectal malformation constituted more than ten percent while prolapsed hemorrhoids and anal fistula accounted for a lower percentage.

The first hypothesis stated that "Fecal incontinence patients who complete eight-sessions of PFMT along with BF will have a significant improvement in fecal incontinence severity post-training compared with FI pre-training ". The findings of the present study confirmed the 1st hypothesis and demonstrated a significant improvement in fecal incontinence as evidenced by a reduction in FI severity as shown in table 4. The results indicated that most of the patients experienced moderate to severe FI before the pelvic training program, and significantly decreased after 8-sessions of PFMT assisted BF with a significant difference where ($P < 0.001$). In the same context, it is noted from the study findings that, there was a trend toward decreasing the number of FI episodes in terms of (solid, liquid and gas), and reduction in using pads as shown in tables 5. The mean score was high at baseline and decreased markedly after the training program with a statistically significant difference ($P < 0.001$). Interestingly, in table 6. and figure 1. there was a significant improvement in fecal incontinence severity index as measured by Wexner scale after 6 months of pelvic training program-assisted BF, $P< 0. 001$.The likely rationale for improving the severity of FI symptoms can be explained by the fact that this maneuver strengthens the anal sphincter and PFM thus reduces the frequency of fecal leakage in participating patients.

The findings of the current study were consistent with previous trials that reported marked changes in FI severity among studied patients who received supervised BF with PFMT and the patient exhibited less frequency of involuntary loss of stool or

using pads per day [23,25,26,27]. It is worth noting that other recent RCT supported the beneficial effect of pelvic floor muscle exercise combined with feedback in reducing incontinence severity based on Wexner FI SI [28,29]. In addition, biofeedback combined with pelvic floor exercises is better than pelvic exercises alone, for alleviating FI symptoms in nearly three forth of patients after12sessions of supervised training[30-32]. When analyzing the effect of biofeedback-assisted PFMT on strength of anal sphincter, the present study results supported the 2nd hypothesis that: "Fecal incontinence participants who complete eight sessions of pelvic floor training associated with Biofeedback will have a marked improvement in manometric parameters'mean scores post-training compared with pre-training mean scores". The results briefly indicated that there were significant improvements in manometric measures regarding anal sphincter pressure and rectal sensation after pelvic floor rehabilitation-assisted biofeedback p< 0.001 table 3.In detail, the findings indicated that, maximum Squeeze pressure and resting anal pressure mean score significantly improved after 8-sessions training program (p <0.001 & p = 0.010, respectively). The findings of this study also suggested considerable improvement in urgency, initial sensation, and maximum tolerable volume pre and post rehabilitation training p <0.001). In conclusion, after 6 months of implementing PFMT assisted BF, there was a marked improvement in squeeze and, resting pressure, urge to defecate, and maximum tolerable volume resulting in improved bowel control. These findings come in accordance with Lee and colleagues.[33] who found that not only the squeeze pressure, but the duration of squeeze also improved and maintained post biofeedback training. This is due to the fact that the external sphincter of the anal canal affects up to thirty percentofrestingtone, this means; if external anal sphincter function improved, resting pressure will improve secondary. In the same context, the results of Bols and his associates [34]. supported our study's findings and reported that resting pressure and squeeze pressure were enhanced immediately after biofeedback training and one year later. It is also worth noting the combination of biological feedback with pelvic floor exercises over 3 months has been recommended by the American College of Gastroenterology as a suggestion for patients with hypotonia and/or impaired rectal sensitivity to achieve the best results. Schwandner et al. [35]. A multicenter study confirmed the results of this and previous studies[36

In our study, when considering the clinical efficacy of PFMT -assisted BF on fecal incontinence quality of life. Notably, table 6. and figure 1. illustrated improvement in the FIQOL subdomains, (Coping behavior, lifestyle, depression, and embarrassment) post-8- sessions of pelvic training where there were statistically significant differences in FIQOL mean score after the training program compared to pre-program mean score $p< 0.001$. Therefore, the third hypothesis was accepted, which assumed an improvement in FIQOL scores after completing 8- training sessions of biofeedback and pelvic floor exercises. Various studies have confirmed the efficacy of BF plus pelvic exercise in improving FIQOL.[37] In addition according to the findings of other studies [38-40]. Fecal incontinence has been observed to cause significant changes in quality of life, including patients' embarrassment and low self-esteem. After the training program, it was found that there was a significant improvement in all aspects of patients' quality of life domains. Positive changes in quality of life and symptom severity were observed among both patients with idiopathic FI [41]. Fecal incontinence of different causes [42]., and FI associated with scleroderma [43]. This goes in accordance with. [44] who proved that women who received BF-assisted PFMT were significantly more likely to report improvement in FIQOL compared to those who received PFMT alone. Many comparable studies indicated that a supervised rehabilitation program that includes PFMT and biofeedback can substantially enhance pelvic muscle strength and markedly improve FI and QOL [25,26, 28,45]. Hypotheses 4. Fecal incontinence is inversely proportional to patients' quality of life. As expected, there was a strong negative correlation between fecal incontinence and the four FIQOL domains after 8- sessions of pelvic floor muscles with the help of feedback as noted in table 7. Remarkably Thus, any improvement in QOL score was associated with decreased fecal incontinence severity, this is in line with some studies that reported strong correlation between FIQOL scores with the scores obtained in FISI scale [22, 46,47]. The results of similar study indicated that restoring the strength of the anal sphincter muscle is strongly associated with improved symptom severity and quality of life [48]. As regards FIQOL subdomains, a strong positive correlation was reported between lifestyle & coping behavior, depression, & embarrassment domains. Interestingly, Positive correlation appeared between coping behavior and depression & embarrassment

Conclusion:

Overall, supervised PFMT- assisted BF has proven to be an effective, safe, and low-cost intervention in improving quality of life, fecal incontinence, and strengthening anal sphincter muscle, thus should be presented as first-line therapy for adults with fecal incontinence.

Strengths and limitations:

The strengths of this study are that PFME with BF is standardized and structured based on the patients' needs and capabilities. All participants were directed on how to apply PFMT at home regularly. Moreover, patients who missed one of the training sessions were carried out in the nearest week. As regards limitations, recruitment of participants was based on their desire to engage in PFMT training, and thus, there is an inherent selection bias. Also, the non-random design and the small sample size constituted other limitations.

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Conflict of Interest:

The author asserts that there is no conflict of interest

Ethical approval:

The approval of the Scientific Research Ethics Committee, Faculty of Nursing, Mansoura University was obtained (Ref No P.0230) Permission was obtained from the Gastroenterology Hospital. The nature of the study was clarified to the participating patients, and written consent was obtained.

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