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Summaries the key findings, outcomes or information in your report

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Association between Perineal Tear during Vaginal Delivery And Striae Gravidarum Score

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Abstract

Background: Perineal tear is common during vaginal delivery varied from minor superficial mucosal lacerations to major tears involving the musculature of the perineum. Striaegravidarum (SG) are stretch marks occurred during pregnancy that may be an indicator of poor skin elasticity. The most common injury during vaginal birth is a perinealtear. **Aim**: The study aimed to assess the association between perineal tear during childbirth and striaegravidarum score. **Research design**: A cross-sectional descriptive research design was used. **Setting:** The study was conducted in the Obstetrics and Gynecology departments at Beni-Suef University Hospital and Helwan General Hospital, Helwan. **Sample:** A purposive sample included 300 pregnant women admitted for vaginal delivery was selected. **Tools:** Three tools were used as the following: **Tool 1:**A structured interview questionnaire, **Tool 2**: Initial assessment sheet and **Tool 3**: Atwal numerical scoring system. **Results:** In the current study more than half of the studied pregnant women developed perineal tear, second degree perineal tears had the highest percentage of perineal tears followed by third, first and fourth degree perineal tears. The mean length of perineal tear was 5.21±2.36. More than two third of the studied women with perineal tear had single tear and less than one third of them had two perineal tear. There was strong relation was observed between perineal tear during labor and striaegravidarum score. Conclusion: There was significantly association between perineal tear during vaginal delivery and striaegravidarum score. **Recommendation:** All categories of health professionals can utilize the striaegravidarum score as a simple and noninvasive technique to better classify women at risk for perineal tear.

Keywords: Perineal tear, Vaginal Delivery, striaegravidarum score.

Introduction:

During vaginal delivery, perineal tear(PT)can range from modest superficial mucosal lacerations to extensive tears affecting the perineum and rectum musculature **(1)**. PT can result in a range of consequences, including bleeding, dyspareunia, perineal abscess, rectovaginal fistula, and incontinence, all of which are harmful to women's physical, psychological, and quality of life **(2).**

During vaginal birth, the foetal head presses heavily on the vaginal and perineal tissues. Even with a little infant and a seemingly simple birth, this could result in tissue tears. Others, despite huge babies or malpresentation, can deliver with an intact perineum**(3).**

Striaegravidarum (SG) is a physiological skin change that many pregnant women experience during pregnancy. SG islinear lesions frequently found on the abdomen, breasts, buttocks and thighs. The type and amount of collagen in connective tissue are considered to determine the individual's elastic Index**(4).**Stretch marks called striaegravidarum (SG) occur during pregnancy and can indicate a lack of skin elasticity. The elastic index of an individual is determined by the kind and amount of collagen in connective tissue. A complicated network of crossing tiny lines makes up the skin's surface. Biopsy tissue samples from striaegravidarum show disorder, shortening, and weakening of the elastic fibre network when compared to tissue samples from normal skin **(5).**When compared to women with higher striaegravidarum, those who do not have striaegravidarum may have a lower risk of developing perineal tear during birth. According to Evidence-Based Nursing, episiotomy should not be given as a rule, although it is impossible to entirely control episiotomy due to a lack of a standardized instrument to assist

midwives in making decisions about whether or not to give episiotomy **(6).**

Striaegravidarum can be used as an additional way for identifying women who are more prone to undergo perineal damage during delivery, despite the fact that there are multiple factors that contribute to the formation of perineal tear during labour. Midwives in distant health centres without advanced facilities can use striaegravidarum score as an additional non-invasive technique to detect whether women are at higher risk of perineal injury **(7).**

SG generally begins after the 24th week of pregnancy on the hips, buttocks, belly, breasts, and thighs. The prevalence of SG varies, ranging from 43 percent to 88 percent **(8).**

The severity of SG was assessed using Atwal's numerical rating technique. This rating is based on four common SG regions that have been seen (abdomen, hips, buttocks, and breast). The final score for each body part is determined by the quantity and colour of SG, which runs from 0 to 6. The TSS (total striae score) is a number that ranges from 0 to 24. Mild striae were found in women with a TSS of 12 or less, moderate striae in women with a TSS of 13-18, and severe striae in women with a TSS of >18 **(9).**

A relationship was established in a prior study on this topic between the degree of PT and the severity of SG. SG on the hips and breasts, in particular, revealed the prevalence of first- and second-degree PT **(10).**

Nurses and midwives can determine the severity of SG with no special equipment or training, using noninvasive, simple observation and can aid in making decisions regarding the woman's care throughout labour **(11)**.Moreover, the maternity nurses can stitch and suture most perineal first and second degree rips and episiotomies. A physician should be seen if there is a suspicion that the rupture includes the anal sphincter muscles, is a grade three or four perineal rip, or is extremely serious,

such as one that bleeds so much that suturing is difficult (**12).**

Significance of the study:

In low-income country, vaginal birth is prevalent. Following vaginal delivery, perineal tear is prevalent, as are major short- and long-term morbidities(Atwal et al., 2006). Assessing the SG score may be a useful tool for predicting the occurrence of perineal injury. Although episiotomy appears to be effective in preventing PT, it is still disputed whether episiotomy should be used for this purpose because episiotomy is related with morbidity (**13**). Therefore the current study was performed to assess the association between perineal tear during labor and SG score.

Aim of the study

To assess the association between perineal tear during childbirth and striaegravidarum score through the following objectives:

- Assess the striaegravidarum score among pregnant women.
- Assess the perineal tear during childbirth.
- Investigate the association between perineal tear during childbirth and striaegravidarum score.

Research questions:

1. What is the striaegravidarum score among pregnant women?
2. What is the degree of perineal tear during childbirth?
3. Is there an association between perineal tear during childbirth and striaegravidarum score?

Subjects and Methods:

Research design:

Across-sectional descriptive research design was used to achieve the objective of the study. The researcher examined the result and exposures in the research participants at the same time in a cross-sectional study. This form of research can be used to identify community features, but it cannot be utilized to determine cause-and-effect links between variables. This strategy is frequently used to infer possible links or to collect early data to

enable additional research and experimentation.

Setting:

The current study was conducted in the study was conducted in the Obstetrics and Gynecology departments at Beni-Suef University Hospital and Helwan General Hospital, Helwan. These settings were selected due to they had higher pregnant women' attendance rate, serves the biggest region of the population from regions and provide free services to pregnant women who are resident in the previously selected settings.

Sample:

A purposive sample included 300 pregnant women admitted for vaginal delivery was selected to achieve the aim of this study within six months who were available at the time of collecting data and met inclusion criteria.

Inclusion criteria included:

1. Multipara
2. Pregnancy of Singleton
3. Full-term (37- 40 weeks)

Exclusion criteria included:

1. Previous history of caesarean section
3. Pretermlabor
4. Malpresentation
5- Foetalmacrosomia
6- Women are suffering from chronic diseases such as diabetes and hypertension

Tools of data collection:

Three tools were used as the following:

Tool (1): A structured interview questionnaire: was developed by the researchers; it was written in simplified Arabic language**, (6 items),** included demographic data of the pregnant women such as age, educational level, occupation, residence, gravidity, weight gain during pregnancy (Kg), and newborn weight (Kg).

Tool (2): Initial assessment sheet: It was adopted form **(14)** and modified by researcher in English language to assess perineal tear. It contains four

items: information about the degree, location, number, and length. A metal graded and sterilizing ruler was used to measure the length of the perineal tear.

Tool (3):Atwal numerical scoring system:

Using the numerical scoring system of **(9)** it was utilised to assess the severity of striaegravidarum. The striaegravidarum is the most usually observed striae in this scale, which is based on observation of four locations (abdomen, hips, buttocks and breast).

The scale is based on the number of SG at each body site (0 = no striae, 1 = 1-4 striae, 2 = 5-10 striae, 3 = more than 10 striae) and the color of the SG, which ranges from pale to purple (0 = no redness, 1 = pink, 2 = dark red, 3 = purple). Silvery white striae were not included in this study because they were deemed ancient striae that had formed prior to pregnancy.

Scoring system:

Each body site's number and color are factored into the overall score, which ranges from 0 to 6. As a result, the TSS for each of the four body sites varied from 0 to 24. Mild striae were defined as a score of 12 or less, moderate striae as 13-18, and severe striae as a score of 18 or more. Each study participant was tested for PT after vaginal birth.

Validity of the tools:

The content validity of the tools, its clarity, comprehensiveness, appropriateness, and relevance were reviewed by three experts' professor in Obstetrics and Gynecology nursing field. Modifications were made according to the panel judgment to ensure sentence clarity and content appropriateness.

Reliabilityof the tools:

The Cronbach's α test was used to assess the reliability of the first tool which was 0. 87, the second tool's reliability was 0.89 and the third tool's reliability was 0.84.

A pilot study

To assess the clarity and feasibility of the research method, a pilot study was

conducted on 10% (30 pregnant women) of the entire sample. To build the final form of the tools, modifications were made. Pregnant women who participated in the pilot study were not included in the study.

Methods of data collection:

The official letters were obtained to conduct the study. The researchers explained the aim of the study at the beginning for all participants, so they were reassured that all gathered information would be confidential. - The study was conducted in the previously mentioned settings for a period of six months (from September 2020 to February 2021).

Data collection: -

- Official permission was obtained from the previous selected settings' administrators and the manager of the Obstetrics and Gynecology departments. Permission was also acquired from the Obstetrics and Gynecology department's head nurse. Each pregnant woman gave her consent orally. The researchers visit pregnant women's places of childbirth to assess the child' weight.
- The researchers attended to the previous selected settings of the study two times / a week from nine am to two pm. The subjects at first were determined through previous inclusion criteria, and the data were collected by using study tools. The participants took approximately 30-40 minutes to complete the tools.

An interview questionnaire was used to collect demographic data. The TSS was computed for each pregnant woman using the Atwal numerical scale, which was used to assess the total striaegravidarum score by evaluating the four body parts presented in the Atwal SG score (abdomen, hips, buttocks, and breast). The score is based on the following factors: (a) the color of the SG, which ranges from light to purple (0=no redness, 1=pink, 2=dark red, 3=purple) and (b) the number of striae signs (0=no striae signs, 1=1-4 striae,

2=5-10 striae, 3=more than 10 striae). The final grade for each body site is based on quantity and color and ranges from 0 to 6. As a result, the TSS was created.Pregnant women with a TSS score of up to 12 were judged to have mild SG, those with a TSS score of 13-18 were thought to have moderate SG, and those with a TSS of more than 18 were regarded to have severe SG.

-The partogram was used to follow all pregnant women in the study until the second stage of labour. The active approach was used to examine the birth canal after the placenta was delivered. Any perineal tear was recorded in terms of its severity, location, quantity, and duration. A metal graded and sterilized ruler was used to measure the length of the perineal tear. There were no more vaginal or cervical tears found. There were no more vaginal or cervical tears found.

Ethical considerations:

Before the research started, Approval of the Ethical Research Committee of the Faculty of Nursing was obtained before conducting the study. The researchers met both medical and nursing directors of the selected settings to clarify the purpose of the study and take their approval. Oral consent was obtained from all the pregnant women to gain their cooperation. The aim of the study was explained and the expected outcomes from the implementation of the study were included in this letter to obtain permission for data collection. The objective of the study was explained to pregnant women. The researchers informed the pregnant womenthat, the study was voluntary; they were allowed to refuse to participate in the study. Women who were pregnant had the right to withdraw from the study at any time and for any reason. Pregnant women were told that their personal information would be kept private and onlyutilized for research purposes.

Administrative design:

Administrative permission was obtained through an issued letter from the Dean of Faculty of Nursing to the Directors of the Obstetrics and Gynecology departments at Beni-SuefUniversity Hospital and Specialized Obstetrics and Gynecology Hospital, Port Saidto achieve the current study.

Statistical analysis:

Statistical Package for Social Science (SPSS) version 23 was used to summarize the data in terms of mean, SD, frequency, and percentages, which were then displayed in tables. The variables that were statistically significant in the PT and SG scores were investigated. P-values less than 0.05 were deemed statistically significant (S), while p-values more than 0.05 were deemed statistically insignificant (I) (NS).

Results:

Table 1 Illustrated that the pregnant women' mean age was 25.52 years, mean gravidity was 2.32,The average newborn birth weight was 2.98 kg, while the average weight growth was 9.82 kg. Regarding residence, (56%) of them were living in rural areas, (46%) of them were educated to the secondary level, and 68% of them were housewives.

Figure 1 According to the overall striae score, the pregnant women were divided into four categories: those without striae, those with mild striae, those with moderate striae, and those with severe striae. It was determined that a large majority of pregnant women (41%) had moderate striae, whereas only 12 percent and 14 percent of pregnant women, respectively, had no striae and severe striae.

Table 2 Shows that more than half of the studied pregnant women (56%) developed perineal tear, while 44% of them not developed. Second degree perineal tears had the highest percentage of perineal tears (54%) followed by third, first and fourth degree perineal tears (24.1%, 16% &

5.9 respectively). The mean length of perineal tear was 5.21±2.36. More than half of the studied women had single perineal tear (68.7%). Also, less than one third of them had two perineal tear (28.25%).

Table3 Illustrated that perineal tear and striaegravidarum score had a statistically significant (p0.001) relationship.

Table 4 revealed a statistically significant link between striaegravidarum severity, gestational age, gravidity, weight growth during pregnancy, newborn birth weight, place of residence, educational level, and occupation.

Table 1: Distribution of the studied pregnant women regarding their demographic and obstetrical characteristics (n=300)

Variables	Mean	Standarddeviation
Age(years)	25.52	2.67
Gravidity	2.32	1.13
Weight.gain(Kg)	9.82	2.24
Newbornweight.(Kg)	2.98	0.23
	No	**%**
Residence		
Urban	132	44%
Rural	168	56%
Educational level		
Primary	105	35%
Secondary	138	46%
University	42	14%
Occupation		
Working	96	32%
Housewife	204	68%

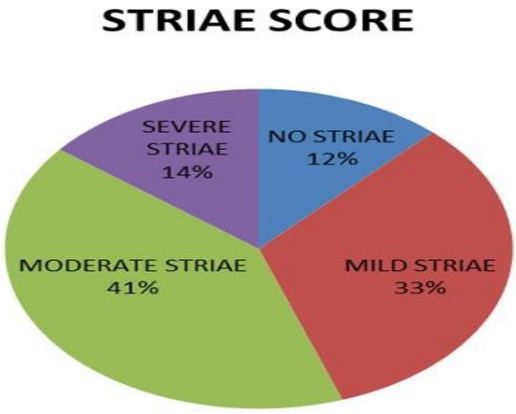

Figure 1: Distribution of the studied pregnant women regarding their Severity of striaegravidarum (n=300)

Table (2): Distribution of the studied pregnant women regarding their perineal tear (n=300)

Variables	Frequency	(%)
Perinealtear		
Yes	168	56%
No	132	44%
Degree of perineal tear (n=168)		
First degree	27	16.0%
Second degree	91	54%
Third degree	40	24.1%
Fourth degree	10	5.9%
Length of perineal tears (cm)	5.21±2.36	
Number of perineal tears(n=168)		
Single tear	116	68.7%
Two tears	47	28.25%
Three tears	5	3.1%

Table(3):Relation between striae gravidarum and perineal tear among the studied pregnant women (n=300)

Striaegravidarumscore	No perineal tear (n=132)		Perinealtear(n=168)		P-value
	No	%	No	%	
Mild striae	69	52	27	16	< 0.001
Moderate striae	50	38	91	54	
Severe striae	13	10	50	30	

P-value was computed by Chi-square test; 0.05 was accepted as level of significance

Table(4): Relation between total score of striaegravidarum and pregnant women' demographic variables

Variables	X2	P-value
Age	4.23	P<0.001
Gravidity	7.78	P<0.001
gaining weight during pregnancy	9.23	p<0.001
newborn birth weight	8.09	p<0.001
Residence	12.3	p<0.001
Educational level	23.7	p<0.001
Occupation	21.6	p<0.001

Discussion:

Perineal tears occur frequently mild mucosal lacerations to severe mucosal lacerations during vaginal birth. Serious injuries involving the perineum and rectum musculature. Vaginal lacerations during birth can be predicted using striaegravidarum.

Using Atwal's score system, the current study found that a large number of pregnant women were in the moderate striae group. This could be explained by the women's average age in the study, which is 25.52 years, and the age-dependent

reactions of maternal skin caused by pregnancy hormones. Moreover, Connective tissue in younger women has more collagen and less cross-linking, making it more vulnerable to partial ripping caused by the stretch associated with SG development **(15).** These findings are similar to the result Women with SG were younger than women without SG (26.743.57), according to a research by **(14)**titled "Prediction of perineal damage during labour by assessment of striaegravidarum score."

Furthermore, the high proportion of pregnant women with moderate striaegravidarum could be due to racial differences that could influence the occurrence of SG. This was to evaluate the severity of SG, because the amount and color of striae at four body regions, the abdomen, breasts, hips, and buttocks, determine Atwal's score. As a result, we employed Atwal's score in the study because it was thought to be more accurate in assessing SG.

This result is similar to the study of **(16)** who studied "Striaegravidarum as a predictor of delivery vaginal lacerations" who reported that prevalence of SG was higher among American pregnant women. **(17)**.Also, studied "Inprimipara, the prevalence of striaegravidarum and its risk factors are investigated." who observed that a rate of about two thirds of Thailandian women was in the moderate striaegroup.

Similarly, (18) found rates of majority among a cohort of 587 Iranian women were in the moderate striaegroup. The high frequency of SG in the current study could be related to the study participants' features, as they were all multipara and young in age**,(19).**

The current study's findings revealed that more than half of the studied pregnant women developed perineal tear. This result is similar to **(14)** and found that more than one third of the pregnant women developed perineal tear.

According to the findings of this study, the second degree perineal tears had the highest percentage of perineal tears followed by third, first and fourth degree perineal tears. This might be due to the fact that, different obstetric practices must be considered.

In the same line**(11)** mentioned that second degree tears accounted for the majority of tears (40.6 percent). The incidences of class A, B, and C third-degree tears were 4.1, 1.1, and 2.1 percent, respectively. A fourth-degree perineal tear was contracted by only two women (0.35 percent).Also, study conducted in the Sweden by **(20)** reported a 78.3 percent incidence of second degree perineal tears in an interventional study's control group.

The results of the present study illustrated that that there was a highly statistically significant relation was observed between perineal tear and striaegravidarum score. These results were supported by **(14)** who studied "Using the striaegravidarum score to predict perineal damage during labour"and revealed that Total StriaeScore was a substantial independent predictor of the probability of perineal tears. Similarly, in this regard **(21)** observed that PT was found to be statistically significant associated with the severity of SG. Also, **(18)**noticed that a link was found between the breast SG score and the occurrence of perineala nd vaginal tears.

The present study revealed that there was a highly statistically link between the severity of striaegravidarum and the severity of the condition. and all variables of demographic data among pregnant women.**(9)**who conducted a study titled with "Association between striaegravidarum severities and Obstetric Anal Sphincter Injuries," and found that SG was substantially associated with maternal age.

Also, on the same line (**22)** reported in a study about "Association of StriaeGravidarum Score with Perineal Trauma among Primi-para Mothers" demonstrated a statistically significant

link between striaegravidarum score and episiotomy, as well as episiotomy and perineal tear.

Previous studies done by **(23)**revealed the occurrence of striae was linked to maternal age, baseline and delivery BMI, neonatal birth weight, length, and head circumference.

Conclusion:

The study findings indicated that the results support the research aim of women with moderate/severe striae during pregnancy being warned about the likelihood of perineal tears during vaginal delivery, based on the results and questions of the current study. Perineal tear and striaegravidarum score were found to be associated during birthing.

Recommendation:

Based on the current study results, the following recommendations are proposed:

- The striaegravidarum score can be used by all types of health workers as a simple and noninvasive tool to better classify women at risk for perineal tear. It requires no specific equipment or training, thus it can be performed by medical interns or nurses.
- In the clinical environment of women undergoing labour, striae scoring should be included as part of the obstetric evaluation. It is suggested that medical interns and nurses be trained to evaluate SG using the Atwal grading system which reflected the accuracy of Atwal scoring system.

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Effect of Precaution Guidelines on Breast Feeding Women during COVID -19 Pandemic in Beni Suef City

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Abstract

Background: Considering the benefits of breastfeeding and the insignificant role of breast milk in the transmission of respiratory viruses, the mother can continue breastfeeding, while applying all the necessary precautions, subject to medical advice. **Aim:** This study aimed to evaluate the effect of precaution guidelines on knowledge, attitude, and practice of breastfeeding women during COVID-19. **Subjects and Methods: Research design:** a quasi-experimental (one-group pretest/posttest) research design was utilized to accomplish the aim of this study. **Setting:** The study was carried out at maternal and child healthcare center in Beni Suef City. **Subjects:** The study included a convenience sample of 80breastfeeding women. **Tool:** Three tools used for data collection including a structured interview schedule, a reported practice sheet, and attitude rating scale. **Results:** Out of 80 studied breastfeeding women, 18.80% had good knowledge score pre-intervention, compared with 87.50% post-intervention. Also, 23.70% of them had satisfactory practice pre-intervention, versus 90% post-intervention. Additionally, 25% had a positive attitude related to COVID-19 pre-intervention, compared with 81.30% post-intervention. Prominently, there were a statistically significant differences related to studied women knowledge, attitude, and practice at $p<0.01$. **Conclusion:** These guidelines proved its effectiveness in improving breastfeeding women knowledge, attitude, and practices in the context of COVID-19.**Recommendations:**Precaution guidelines on COVID -19 pandemic should conducted at breastfeeding mothers attending on Maternal and Child Health Care Centers in Egypt.

Keyword: Precaution; Guidelines; Breast Feeding Women; COVID -19 Pandemic

Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the causal agent of a potentially deadly disease that is of considerable worldwide public health concern, is the cause of the new Coronavirus disease 2019 (COVID-19) [1-4].In December of 2019, the new corona virus emerged in Wuhan, Central China, and quickly spread across the country. At this time, every continent on the planet has been affected [5-7].The COVID-19 epidemic is wreaking havoc on people's lives across the world. The epidemic needs immediate intervention, and when new knowledge becomes available, reliable standards for care are required [8,9].

So far, there is no conclusive proof that the SARS-CoV-2 virus is transmitted through breast milk to newborns delivered to mothers who have been diagnosed with COVID-19 during the perinatal period[5,9-13].As a result, most neonatal recommendations do not advise against nursing in women who have Covid-19, believing that the advantages exceed any potential dangers of the virus being transmitted through breast milk. However, particular precautions must be taken[11,14].

Breast milk is the best source of nourishment for most babies and protects them from a variety of diseases[15].Breastfeeding promotes both mother and child's health, as well as providing advantages to families and having a good social and economic benefit[16,17].Breastfeeding prevents babies from illness and helps them stay healthy throughout their childhood. Breastfeeding is especially helpful in preventing infectious illnesses because it improves the immune system by transferring antibodies from the mother directly to the baby. Mothers with any symptoms who are nursing or practicing skin-to-skin contact, like with all confirmed or suspected COVID-19 cases, should seek medical attention immediately, and take precautions[18].

Breastfeeding and mother-infant interactions are normative guidelines and a standard of care[19].Despite recommendations for breastfeeding and other protective practices to reduce viral transmission, such as separating mother

and child temporarily during active infection, the exact numbers of maternal infant transmission are unknown due to the potentially large number of asymptomatic infected women who are not tested for COVID-19[20-22].

Nursing mothers should be advised that the advantages of breastfeeding much exceed the dangers of transmission. Mother and newborn should be allowed to be together when rooming-in throughout the day and night and engage in skin-to-skin contact, including kangaroo mother care, especially soon after birth and during the initiation of breastfeeding, whether they or their infants have suspected or confirmed COVID-19[23-24].

In line with Centers for Disease Control and Prevention[25]recommendations, a nursing mother who is not completely vaccinated against COVID-19 should take steps to safeguard herself and her breastfed infant. There are rare exceptions when breastfeeding or feeding expressed breast milk is not recommended. All breastfeeding people regardless of COVID-19 status who are using breast pumps should be educated about CDC information on how to properly clean and sanitize their breast pump.

Breastfeeding women should be advised to take all measures necessary to prevent infection, such as handwashing before contacting the child and using a cloth face covering when feeding at the breast. If breast milk is expressed by hand or with a breast pump, the newborn should be fed the expressed breast milk by a healthy caregiver who is not at risk for serious illness from COVID-19[24].Precautions while feeding at the breast including, a)masks should not be worn by children under the age of two, because of the danger of suffocation, b) wearing a mask during any close contact (i.e., less than 6 feet) with the child, andc) cleaning hands frequently (i.e., before and after touching their child). Recently pregnant women for at least 42 days following the end of pregnancy are at increased risk for severe COVID-19 illness. Healthcare professionals should counsel the breastfeeding mothers on the risks and benefits of continuing to feed

at the breast in the context of COVID-19 illness [25-26].

Mothers who contract the coronavirus soon before giving birth and begin nursing, as well as those who become infected during breastfeeding, generate immunological factors (antibodies) in their milk to protect their babies and boost their own immune responses. This implies that the best approach to combat the infection and safeguard your baby is to continue to breastfeed while taking precautions[27].According to the world health organization (WHO) interim guidance May 27**,** mothers with suspected or confirmed COVID-19 should be encouraged to initiate and continue breastfeeding while infection control measures are implemented and should not be separated from their infants unless the mother is too sick to care for her baby[28].As we are currently confronting the fourth wave of COVID19 globally, this study aimed at:

Aim of study

Evaluate the effect of precaution guidelines on knowledge, attitude, and practice of breast-feeding women during COVID-19 pandemic.

Subjects and Methods

Research hypothesis:

H_1: Breast feeding women's knowledge regarding precautions of breastfeeding during COVID-19 pandemic will be improved after implementing the precaution guidelines.

H_2: Breast feeding women's attitude regarding COVID-19 pandemic will be improved after implementing the precautionguidelines.

H_3: Breastfeeding women's practice regarding breastfeeding during COVID-19 pandemic will be improved after implementing the precaution guidelines.

Research design:

A quasi-experimental (one-group pretest/posttest) research design was utilized to accomplish the aim of this study.

Setting:

The study was carried out at(5)Maternal and ChildHealth Care Centersin Beni Suef City.These Centersnamed(Ghamrawi, the Green Salon, Marmah, the Military Police)and East Nile Medical Center.

Subjects:

A convenient sampling approach was used to find participants. The study enrolled 80 breast-feeding mothers from attending on the previously stated settings who agreed to participate. The study was extended for six months, from January 1st to June 30th, 2021.

Tools of Data Collection:

The current study's data were gathered using the following tools:

Tool I: **A structured interview schedule**

This tool was developed by the researchers in Arabic-language related to the current literature review, it consisted of two-parts as the following:

Part I: concerned with the demographic profile of the studied breast-feeding women,included sociodemographic characteristics of the studied women such as age, educational level, monthly income…. etc.

Part II: Concerned with the breast-feeding women's knowledge regarding COVID 9pandemic. It included 15 multiple choice questions regarding the definition of COVID-19, clinical picture, the mode of transmission, modeof prevention

Scoring system: The right answer will be scored as a single point and the wrong answer or I don't know will be scored as a zero point. These scores will be summed, converted into a percent score and the total score ranged 0 to 15. The total knowledge score was categorized as the following bad (< 60.0%), and good (≥ 60.0%).

Tool II: Areported practice sheet

It was adapted from[29&30] This tool consists of eight items and is used to assess breastfeeding women's practice toward protecting their neonates from COVID 19 pandemic as hand washing, wearing a face mask, a proper technique related to milk expression, extra care when formula feeding…. etc.

Scoring system:

The right answer will be scored as a single point and the wrong answer will be scored as a zero point. These scores will be summed, converted into a percent score and the total score ranged 0 to 8.It will be classified into 2 categories: satisfactory if score ≥ 60.0%., and unsatisfactory if score <60.0%.

Tool III: Attitude Rating Scale:

Three-point Likert rating scale developed by the researchers in the Arabic language after reviewing the current updated literature review [31&32]to assess the attitude of women regarding breastfeeding during COVID 19. It consisted ofeight items related to the stigma of COVID-19 disease, mothers' contact with the doctor in case of having symptoms that resemble those of COVID-19…. etc.

Scoring system:

Each statement will be assigned a score according to women's responses. Responses “agree”, “sometimes”, and “disagree” were respectively scored 3, 2, and 1. The scoring will be reversed for negative statements; the scores of the items are summed up and converted into a percentage score and ranged from 8 to 24. It was classified into 2 categories: positive attitude if score ≥ 60%, and negative attitude if score < 60%.

The preparatory phase:

A literature review, tool development, and evaluating the validity and reliability of the study's produced tools were all part of this phase. This includes a review of previous and current related literature and studies, as well as a familiarization with the different parts of the study research problems utilizing accessible books, journals, magazines, and articles.A statistician used Cronbach's alpha coefficient test in SPSS software version 21 to separate all questions on instrument and compute all correlation values for them, ensuring that the produced tool was reliable. It was done on 10% of the breast-feeding

women in the study (n=8), and the findings were Cronbach's =0.84.

Pilot study:

A pilot research was conducted with a group of eightbreast-feeding women. It is carried out prior to data collection to assess the feasibility, duration, cost, and adverse events of a full-scale research project and to enhance the study design. The appropriate changes were made as a result. Those who participated in the pilot study were excluded from the main study sample.

Fieldwork:

The researchers were available at MCH center for two days a week for each setting, in the morning shift from 8.00 a.m. to 2.00 p.m.Data was collected over a six-month period from January 1st to June 30th, 2021, for the pretest, precaution guidelines sessions implementation, and posttest. The data was gathered through interviews with the breast-feeding mothers. Women were interviewed one by one. Each interview took 10-15 minutes to complete.

The framework of the study was carried out through the following four phases:

I. Assessment phase:

Assessment of mother's knowledge, attitude, and practicesregarding breastfeeding during COVID-19 before the implementation of precaution guidelines sessions was done.

II. Planning phase:

Based on the findings of the assessment phase; goals, priorities, and expected outcomes will be formulated to meet mother's needs of knowledge and practices regarding breastfeeding precautions during COVID-19.

III. Implementation phase:

Booklets, boosters, and brochures for teaching the studied participants were prepared by researchers in simple Arabic language. Implementation of the precaution guidelines sessions was carried out at the previously mentioned settings. The precaution guidelines consisted of 3 sessions once every week & every session continued

for 20- 30 minutes. The first session focused on the correct relevant knowledge related covid-19. The second session focused on mother's correct practices and precautions regarding breastfeeding in context COVID-19. The third session concerned with correct the breastfeeding women's negative attitudes regarding breastfeeding during pandemic COVID-19.

IV. Evaluation phase:

Re-evaluation of breastfeeding women's knowledge, attitude, and practice regarding breastfeeding during COVID-19immediately after implementing the precaution guidelines sessions and were compared with pretest results.

Administrative design:

An official permission was obtained through proper communication.

Ethical Considerations:

The research approval was obtained from the director of MCH center.Informed consent was also acquired from each mother once the researchers told them of the study's purpose. Furthermore, moms who volunteered to participate in the research were told that all information obtained would be kept private. They also have the option to leave the study at any moment.

Statistical Analysis:

Data was sorted, classified, and the results were shown in tables. The Statistical Package for the Social Sciences was used to analyze the data on a suitable personal computer (SPSS Inc; version 21; IBM Corp., Armonk, NY, USA). The one-sample Kolmogorov–Smirnov test was used to determine the data's normality. Numbers and percentages were used to describe qualitative data. Continuous variables were presented as means ± standard deviation. The *t*-test was used to compare two means. The results were considered significant when the probability of error is less than 5% ($p< 0.05$) and highly significant when the probability of error is less than 0.1% ($p< 0.001$).

Results:

Table 1 shows that out of 80 breast-feeding women who responded to be included in the study, 41 (51.2%) of

them were in the range of age 30– <40 years with a mean of 31.93±5.20. Among the participants, 37 (46.3%) graduated fromelementary schools, and only 7 (8.7%) had a bachelor's education. Of all respondents, 56 (70%) had insufficient monthly income. Additionally, 71 (88.7%) did not suffer from previous COVID-19 infection, the vast majority of them76 (95%) didn't attend training courses related to COVID-19.

Regarding the breastfeeding women's knowledge, table 2 illustrated that as regard COVID definition, 15% of participants had good knowledge pre-intervention compared to 92.5% post-intervention. Moreover, 18.7% of them had good knowledge related to the clinical picture of COVID-19 pre-intervention, versus 78.7% post-intervention. Concerning preventable ways of COVID transmission, 17.5% had good knowledge pre-intervention, which significantly changed to 73.7% post-intervention. Furthermore, related to the mode of the transmission 30% had good knowledge pre-intervention compared with 87.5% post-intervention. About signs and symptoms that appear at infant-related COVID-19, the knowledge level improved from 28.8% to 90% pre/post-intervention respectively. Finally considering the benefits and challenges of breastfeeding, 38.8% of breast-feeding women had good knowledge pre-intervention compared with 95% post-intervention. Additionally, there were a highly statistically significant differences at $p < 0.01$ for all.

Concerning the total knowledge score about COVID-19, figure 1 reveals that 18.80% of the total participants had good level of knowledge score pre-intervention, compared with 87.50% post-intervention with a highly statistically significant difference at $t = 18.663$, and $p < 0.01$.

Regarding studied women's practices related breastfeeding in context COVID-19, table 3 revealed that 36.3% of participant's women had satisfactory practice regarding regular hand washing pre-intervention compared to 90.0% post-intervention. As regard, the

precaution of wearing mask during breastfeeding, 25.0% of them had satisfactory practice pre-intervention, versus 80.0% post-intervention. Moreover, 23.8% had satisfactory practice related to the proper technique of milk expression pre-intervention, which significantly increased to 83.3% post-intervention. Related to extra care of formula feeding, transmission 38.8% had satisfactory practice pre-intervention compared with 93.8% post-intervention. Furthermore, 20% of them regularly wipe and disinfect surfaces pre-intervention, compared with 81.3%. Considering avoiding coughing and sneezing in front of infants, 27.5% of breast-feeding women had satisfactory practice pre-intervention compared with 97.5% post-intervention. Additionally, there were a highly statistically significant differences at $p < 0.01$ for all.

Regarding to the level of their reported practice related COVID-19, **figure 2** revealed that 23.70% of the breast-feed women had satisfactory practice pre-intervention, versus 90% post-intervention with a highly statistically significant difference at $t = 19.025$, and $p < 0.01$.

Figure 3 demonstrated that 25% of the total respondents to the questionnaire had a positive attitude related to COVID-19 pre-intervention, compared with 81.30% post-intervention with a highly statistically significant difference at $t = 19.654$, and $p < 0.01$

Table (1) : Distribution of studied breast-feeding women according to their characteristics (n=80)

Items	No	%
Age		
20 - <30	27	33.8
30 - <40	41	51.2
40 or more	12	15
Mean (SD) 31.93±5.20		
Educational level		
Not read and write	7	8.7
Read and write	13	16.3
Primary	16	20
Elementary schools (Preparatory& Secondary)	37	46.3
Bachelor	7	8.7
Monthly income		
Sufficient	24	30
Insufficient	56	70
Suffered from previous COVID-19 infection		
Yes	9	11.3
No	71	88.7
Training courses related COVID-19		
Yes	4	5
No	76	95

Table (2): Distribution of studied breast-feeding women related their knowledge level at pre and post intervention (n=80)

Items	Pre			Post			T test P value
	Good		Bad	Good		Bad	
	No	%	No %	No	%	No %	
Definitions of COVID-19	12	15	68 85	74	92.5	6 7.5	14.202 <0.01**
Clinical picture of COVID-19	15	18.7	65 81.3	63	78.7	17 21.3	13.044 <0.01**
Ways of prevention transmission COVID-19 to their infant	14	17.5	66 82.5	59	73.7	21 26.3	14.963 <0.01**
Mode of transmission of COVID-19	24	30	56 70	70	87.5	10 12.5	12.717 <0.01**
Signs and symptoms appear at infant related COVID-19	23	28.8	57 71.2	72	90	8 10	11.500 <0.01**
Benefits and challenge of breast feeding	31	38.8	49 61.2	76	95	4 5	15.098 <0.01**

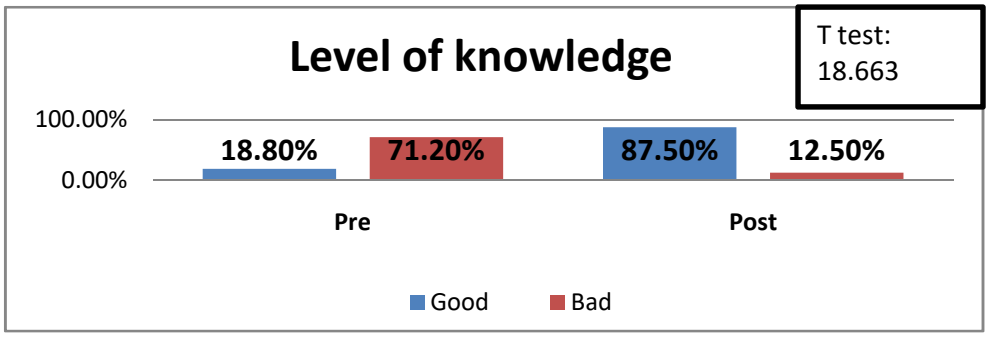

Figure (1): Distribution of studied breast-feeding women related to level of knowledge regarding COVID-19 at pre and post intervention (n=80)

Table (3): Distribution of studied breast-feeding women related their practice at pre and post intervention (n=80)

Items	Pre			Post			T test P value
	Satisfactory		Unsatisfactory	Satisfactory		Unsatisfactory	
	No	%	No %	No	%	No %	
Wash hands regularly	29	36.3	51 63.7	72	90	8 10	13.465 <0.01**
Wear face mask during breast feeding	20	25	60 75	64	80	16 20	11.474 <0.01**
Proper technique related expression milk "Using breast pump"	19	23.8	61 76.2	75	93.8	5 6.2	12.055 <0.01**
Extra care when formula feeding	31	38.8	49 61.2	75	93.8	5 6.2	12.467 <0.01**
Wipe and disinfect surfaces regularly	16	20	64 80	65	81.3	15 18.7	16.887 <0.01**
Use a bottle to feed babies with expressed breast milk when too sick	30	37.5	50 62.5	71	88.8	9 11.2	14.691 <0.01**
Avoid coughing and sneezing front the infant	22	27.5	58 72.5	78	97.5	2 2.5	15.711 <0.01**
Wash breast and nipple with soap and water before breast feeding	14	17.5	66 82.5	70	87.5	10 12.5	12.600 <0.01**

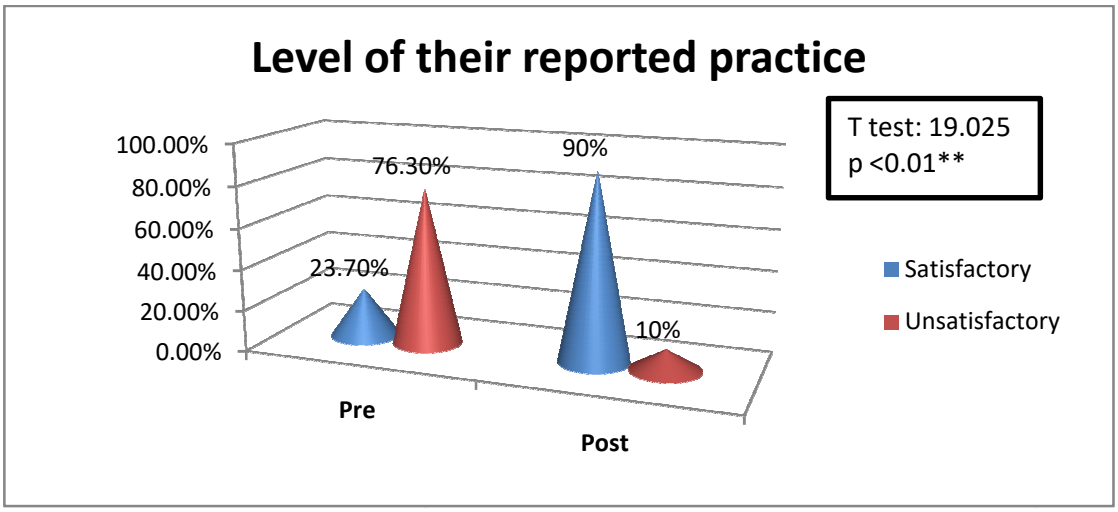

Figure (2): Distribution of studied breast-feeding women related to level of their reported practice regarding COVID-19 at pre and post intervention (n=80)

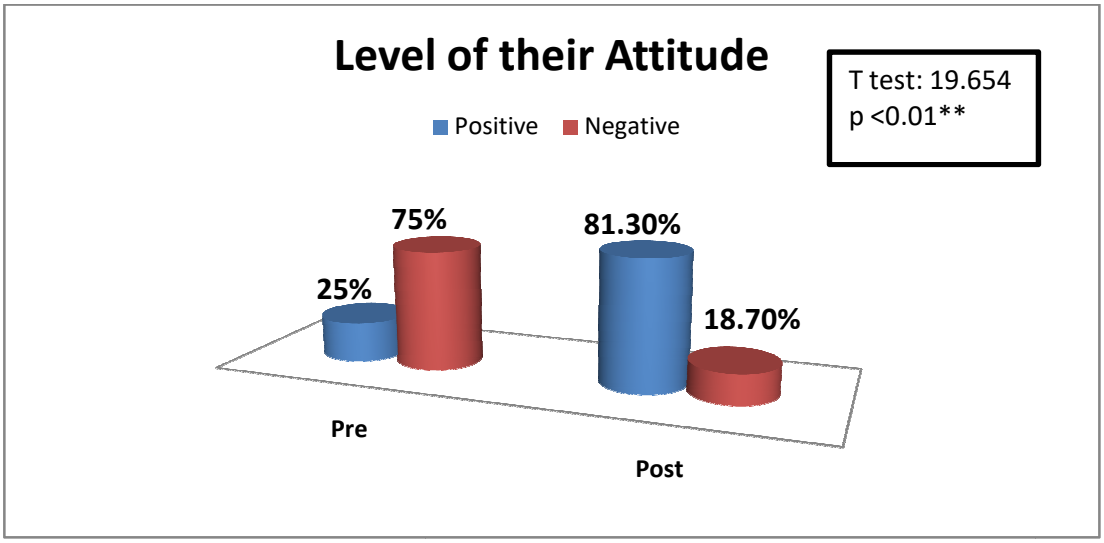

Figure (3): Distribution of studied breast-feeding women related to level of their attitude regarding COVID-19 at pre and post intervention (n=80)

Discussion:

Mothers with COVID-19 (or suspected COVID-19) can breastfeed their babies if they take appropriate precautions[30].As a result of the lack of evidence regarding direct transmission through breast milk, the main concerns about SARS-CoV-2 in addition to evidence of contact and aerosol dissemination with mother and infant in close proximity when breastfeeding, the recommendations of the guidelines are measures relevant to breastfeeding in the context of COVID-19. Therefore, either affected or suspected COVID-19 infected mothers should be informed about the importance of breastfeeding, and that this goal can be achieved by adopting appropriate respiratory hygiene, precautions, and safety practices[33].The WHO's recommendations on Infection Prevention and Control (IPC) are that mother with suspected, probable, or confirmed COVID-19 should be counseled about droplet and contact precautions during contact with their infant [34].Hence, this study aimed to evaluate the effect of precaution guidelines on knowledge, attitude, and practice of breastfeeding women during COVID-19 pandemic.

The current study findings reported a significant improve on breast feeding women's knowledge, attitude, and practice regarding breastfeeding during COVID-19 after implementing the precaution guidelines. The current study findings were supported by**Limaet al.(2020)**[11]who revealed in their study entitled "Breastfeeding consultancy during the COVID-19 pandemic" that it was noticed that all studied mothers were breastfeeding and practicing social distancing as recommended by the health authorities, in addition to basic personal hygiene care, such as hand washing, use of 70% alcohol and more frequent baths. With the baby, it was observed that the breastfeeding women maintained routine care but emphasizing the cleaning of the house and the restrictions of visits. From view of researchers the restriction of visits, although it is a recommendation for this moment of pandemic, has repercussions on the absence of the support network

(mothers, sisters, grandparents) much needed for some women.

On the other hand, contradictory findings were reported by **Adhikari et al. (2020)**[35] in a cross-sectional study entitled "Evaluation of knowledge, attitude, practice, and hospital experience regarding COVID-19 among post-partum mothers at a tertiary care center. **Adhikariet al. (2020)**[35]showed that out of a total of 203 postpartum women who participated in the study. Almost all the participants had heard of COVID-19. The majority of them were aware of how COVID-19 is transmitted and its preventive measures. Most of the participants knew that COVID-19 has effects on pregnancy. Almost all participants wore a mask during their hospital stay. All women washed their hands with soap and water or an alcohol-based sanitizer, but some did not wash their hands before and after breastfeeding (2.5%). The majority of mothers were wearing the mask while breastfeeding their baby from view the researchers these results may be because of the majority of participants have elementary school education and health awareness through various media.

Regarding the mother's attitude, the result of current study showed that only one quarter of studied breastfeeding women had a positive attitude related to COVID-19 pre-intervention compared with more than three quarters of the post-intervention, other similar finding illustrated in a qualitative studycarried by **De Oliveiraet al. (2020)**[36]which evaluated the feelings of women in the period of the Zika virus epidemic showed reports of feelings of concern, fear, and uncertainty in contracting the disease, as well as in generating harms to their baby.

Moreover, across sectional study conducted by **Gonçalves-Ferriet al. (2020)**[21] entitled "The impact of coronavirus outbreak on breastfeeding guidelines among Brazilian hospitals and maternity services" demonstrated that among hygiene measures, washing hands and the use of masks were recommended, but other body surfaces as mother's face, and breasts were not specified. Also, all hospitals evaluated in this study recommend maintaining

breastfeeding and distancing by at least 2m in the home environment.

From the results of the current study, it was revealed that almost all the participants followed proper hand hygiene after touching objects or while breastfeeding after the intervention[37]**.** They reported that hand washing and hand rubbing with an alcohol-containing disinfectant is the simplest and most effective way to prevent the spread of respiratory infections such as COVID - 19. Also, a study conducted by**Davanzo et al. (2020)**[38]concluded that hand washing and face mask use by mothers can reduce transmission of COVID-19 to newborns.

After implementing the precaution guidelines intervention on breastfeeding women during COVID-19, the objective and hypotheses were largely achieved as the results indicated that the majority of the breastfeeding women had good knowledge and most of them obtained satisfactory practices regard COVID - 19after the intervention. From view of the researchers these improvements may be due to the impact of the precaution guidelinesintervention, which was introduced to the breast feeding women and they were also excited to participate in the intervention and ready to attend future health education programs as they mentioned.

Opposite to our study findings[32]in a study entitled **"**Knowledge, attitude and practices towards covid-19 outbreak in Maharashtra State", revealed that the study participants overall KAP level towards Covid-19 was 23.31% of the respondents had good knowledge score, 99% of the respondents had good practice score and 38% of the respondents had positive attitude towards covid-19. Moreover, [31] i*n* a study aimed to assess the knowledge, practices and attitude of mothers on newborn care during COVID-19 Pandemic, revealed the average knowledge, practices and attitude scores to be 70.90%, 79.45% and 81.72% and also, the results of current study disagreed with study on knowledge, attitude, and practices of mothers towards children immunization during COVID-19 Pandemic by**Khalil and Mohamed(2020)**[39]who found that about half of the mothers have a good

level of knowledge and the majority of them had a satisfactory level of practice without intervention and also, in disagreement with results of the study by **Khaton** on awareness and practices of rural mothers regarding COVID-19 Pandemic and their role in protecting their families who shows that about two thirds of mothers had good knowledge scores and half of them had satisfactory practices scores[(40)].

Conclusion

Based on the results of the current study, it was concluded that the precaution guidelines effectively improve mother's knowledge, attitude, and practices regarding breastfeeding during COVID-19.

Recommendation

Based on the previous findings we can recommend that more efforts should be made to properly advise, encourage, and support mothers with breastfeeding, even in instances when the mother has confirmed or suspected COVID-19 infection. These guidelines should be adapted to local healthcare facilities, counseling principles for breastfeeding with necessary modifications applied to COVID-19 is also recommended. Additionally, this study recommends antenatal counseling regarding the benefits and management of breastfeeding in the context of COVID-19.

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Effect of Utilizing Pregnancy Simulator among Midwifery Student Nurse on their Physical Difficulties, Empathy, Attitude and Satisfaction

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Abstract:

Background: Pregnancy simulations can be used as educational deep learning tools to help students and professionals connect what they know to what they see in real life.**Aim:** This study aimed to assess the effect of utilizing pregnancy simulator among midwifery student nurse on their physical difficulties, empathy, attitude and satisfaction. **Subjects and Method: Study design:** A quasi-experimental research design was used. **Setting:** This study was carried out at Faculty of Nursing, Mansoura University**. Study subjects:** A non-probability purposive sample of 100 midwifery nursing students was allocated either to the control group taught by traditional lecture or to the intervention group taught by utilizing the Empathy Belly TM Pregnancy Simulator. **Tools:** Three tools were used for data collection**;** a structured interview questionnaire (general characteristics, Physical difficulties questionnaire, Jefferson Scale of Empathy), students' attitude toward pregnant women questionnaire and satisfaction Likert scale. **Results:** After the application of pregnancy simulation, the total mean score of empathy scale in the simulation group markedly improved (56.28±2.19) compared to slight improvement (42.04±5.34) in the lecture group, there was a highly statistical significant difference in experiences of pregnancy's physical difficulties among the control and simulation groups ($p < 0.001$). The student's attitude toward pregnant women was improved before and after intervention among the pregnancy simulation students ($P<0.001$). More than two third of the students (68%) were satisfied that the pregnancy simulator was better educational method. **Conclusion:** Applied simulation methods had an optimistic influence on the improvement of students' empathy, attitude, and feeling of physical difficulties toward pregnant women thus the tested hypotheses were accepted. **Recommendations:** Simulation is an effective teaching method that enables students to improve their empathy and attitude toward pregnant women.

Keywords: Attitude, Empathy, Physical difficulties, Pregnancy, Pregnancy simulator, Satisfaction**.**

Introduction

The nursing students of today are the health care providers of tomorrow, so it is essential for nursing educators to prepare the midwifery nursing students for their future work to develop the requisite competence to become skilled and safe practitioners through utilizing different teaching methods[1].

Pregnancy is a powerful and distinct female experience. It is a natural process that causes physiological and psychological changes in expecting mothers. Pregnancy brings about a series of hormonal, immunologic, gastrointestinal and metabolic changes that are necessary for fetal growth and have a great impact on a woman's body.These changes induce uncomfortablefeelings and fatigue [2].

Several simulation gameshave been utilized effectively with nursing students by allowing students to be actively included in the learning activities to improve students' knowledge empathy and attitudes toward pregnant women and increase their motivation to care for them[1, 3, 4].

Empathy is a critical communication skill that is defined as the ability to put oneself in another's shoes in order to comprehend and express their feelings, experiences, concerns, and opinions. Empathy is widely recognized as an important aspect of good communication, comprehension and patient satisfaction.Empathy is regarded as one of the most important attributes of medical practitioners and is commonly linked to enhanced clinical treatment and health outcomes. It has the potential to promote patient satisfaction, compliance and adherence to treatment as well as facilitate the building of mutual trust in a patient's relationship with health care providers [5].

Before, during and after pregnancy, most mothers seek safety and empathy from their health care professionals. Therefore, negative attitudes towards them could create barriers in the

therapeutic relationships and may affect the quality of care provided to them [6]. Although the majority of the midwives had positive attitudes, still several midwives had either negative or neutral attitudes. Other studies on the attitude and quality of care suggest that the more negative the attitude, the poorer the quality of care [7].

Empathy can be taught to nursing students and physicians in a variety of ways.Physicians' personal experiences with sickness and physical difficulties as well as learning about illness through patient histories, novels, fictional stories, role playing, discussion and paintings have been all recommended as useful methods of teaching empathy[8, 9].

Educational simulations are innovative teaching tools that have been shown to promote critical thinking, equip students with a novel learningstrategy that combines cognitive and affective learning making it easier for them to remember and recall information. Several simulation games have been utilized effectively with nursing students to increase their knowledge and attitude[3].

The Empathy BellyTM Pregnancy Simulator is a "multi-component, weighted "garment that allows female wearers to experience more than twenty normal pregnancy symptoms and effects through accurate simulation like body weight gain, postural changes, enlarged breasts, etc.Wearers explore what it feels like to be pregnant and develop a true grasp of pregnancy situationthrough this hands-on, experimental method of learning[10].Medical and nursing students studying Maternity Health Care and Education will benefit from the Empathy Belly. They will gain a greater knowledge and their sensitivity to and experienceof the pregnant condition will be increased by wearing the Empathy Belly.

Significant of the study

Forthe preparation of adistinct generation of nursing caregivers, the midwifery curriculum could be

improved to promote professional values, patient-centered and respectful care to women to prepare the future competent nursing students that respect, understand feeling, empathy, physical and psychological difficulties among pregnant women. So, nurse educators utilize many teaching strategies like traditional lectures, jigsaw methods, problem-solving and simulation.Many studies reflect that simulation of the reality of a clinical environment may promote empathy, understanding, and positive attitude towards pregnant women and their fetuses. In addition, patients who are treated withcompassionby a professional nurse are more satisfied with the care provided to them [(11)].There are little researches that explore or investigate students' empathy, experience of physical difficulties and attitude toward pregnant women after utilizing of empathy belly pregnancy simulator in their education versus traditional lecture. Accordingly, the researchers attempted to fill such a gap by conducting this study.

Aim of the study

This study aimed to assess the effect of utilizing pregnancy simulator among midwifery student nurse on their physical difficulties, empathy, attitude and satisfaction.

Hypotheses of the study:

- Midwifery nursing students who participate in pregnancy simulation exhibit a positive empathyand attitude toward pregnant women compared to the lecture methods' students.
- Midwifery nursing students who participate in pregnancy simulation experience physical difficulties of pregnant women compared to the lecture methods' students.
- Midwifery nursing students who participate in pregnancy simulation have a positive satisfaction toward the simulation teaching method.

Subjects and Method

Design:

A quasi-experimental research design was used.

Setting:

This study was performedatWoman's Health and Midwifery Nursing Department,Faculty of Nursing-Mansoura University.

Sample type:

A non-probability purposive samplewas used.

Studysubjects:

One hundred nursing students was enrolled in this study according to the following:

Inclusion Criteria:

(1) Regular undergraduate female nursing students

(2) At the third level

(3) Enrolled in the Professional Midwifery nursing course during the first-semester academic year 2020/2021.

Exclusion Criteria:

Pregnant students or who had a previous pregnancy

Sample size:

Based on data from previous study by**Saleh et al. (2017)**[1]to investigate the impact of simulated aging game versus traditional lecture on nursing students' knowledge and attitude towards elderly. Considering level of significance of 5%, and power of study of 80%, the sample size can be calculated using the following formula:$n = [(Z_{\alpha/2} + Z_{\beta})^2 \times \{2(SD)^2\}]/$ (mean difference between the two groups)^{2}whereSD = standard deviation $Z_{\alpha/2}$: This depends on level of significance, for 5% this is 1.96 Z_{β}: This depends on power, for 80% this is 0.84 Therefore, $n= [(1.96 + 0.84)^2 \times \{2(2.6)^2\}]/ (1.46)^2=49.7$. Based on the above formula, the sample size required per each group is 50 students.

Recruitment of the sample:

The total number of students enrolled in the Professional Midwifery nursing course during the first-semester academic year 2020/2021 was 160 nursing students, 100 of these nursing students were included in the study. The remaining 60 students; 3 refused to participate in the study, 5 were pregnant or had previous pregnancy and male students (52) thus excluded from the study leaving 100 eligible nursing students allocated either to the control or to the intervention group (n=50 per each group). To avoid pollution of the collected data, data were collected from the control group then the intervention group till finishing the required number per each group. Flowchart of the study sample indicated in Figure1

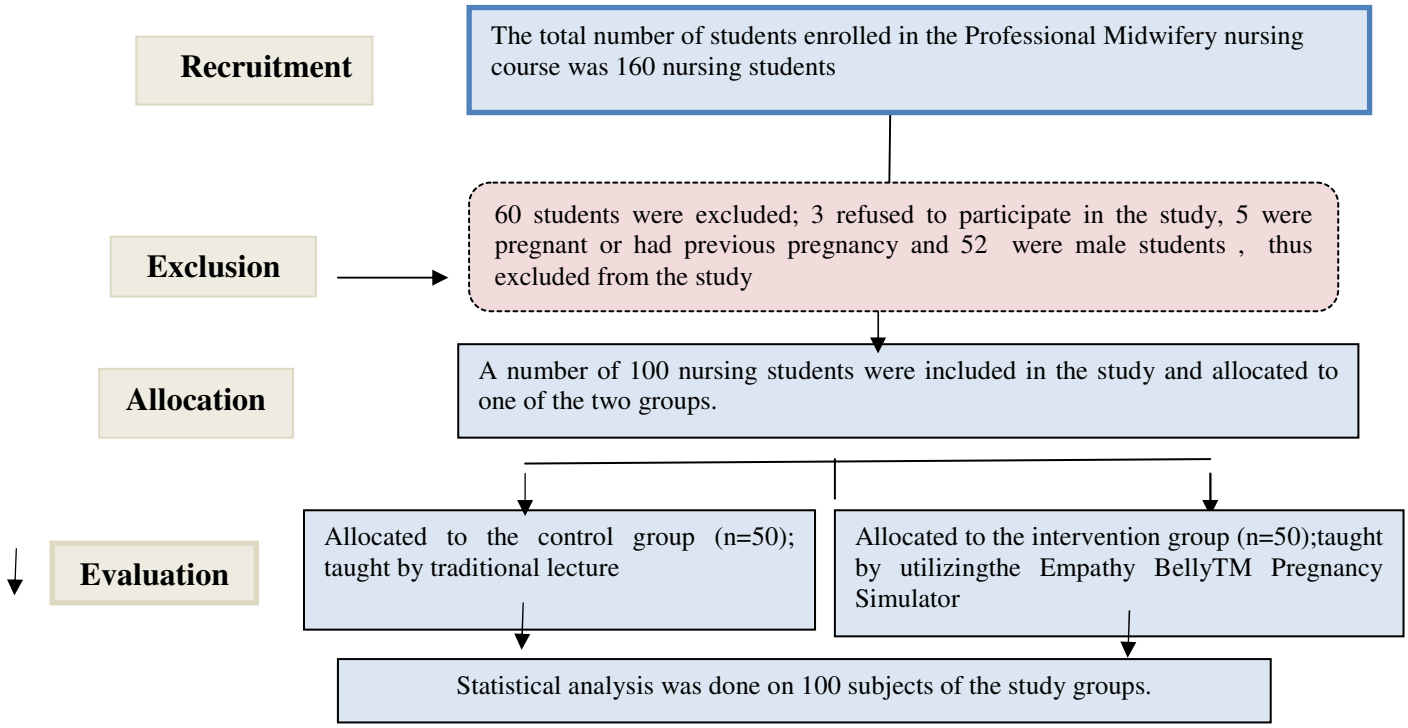

Figure1. Flow chart of the participation in the study

Tools of Data Collection:

To achieve the aim of this study, three tools were used for data collection.

Tool I: Structured interview questionnaire

It was developed by the researchers after extensive review of literatures. It included three parts

Part one:Covered data related to general characteristics of the students as name, age, previous pregnancy.

Part two: Physical difficulties questionnaire: It was adapted from**Yu et al. (2019)**[9]to assess difficulty level of activitiesduring pregnancy.It consisted of five questions like,picking the objects, climbing stairs, putting on and taking off shoes, changing T-shirts, and changing pants. The students were rating it from 1(extremely easy) to 10 (extremely difficult).

Part three: Jefferson Scale of Empathy: It was adapted from**Suh et al. (2012)**[12]to assess empathy in the context of health professions education and patient care. It is a20 item short self-report scale, scored using a 3-points Likert scale (strongly disagree scored (1),neither agree nor disagree scored (2), strongly agree scored (3) in the current study instead of 7 –point scale in the original one, ten of the items were positively scored; the other 10 items were reverse-scored.

Tool II: Student's' attitude toward pregnant women questionnaire: It was adopted from **Yu et al. (2019)**[9].It consisted of 7 questionsas; when i deal with a pregnant woman, I feel sympathy to her situation; even simple tasks will be difficult to do while pregnant..….etc. **The scoring system** was calculated as: (1) for strongly disagree, (2) for neither agree nor disagree and (3) for strongly agree. The questionnaire was evaluated giving a score of 7 – 21.

Tool III: Satisfaction Likert Scale:

It was developed by the researchers to assesss tudents' satisfaction with pregnancy simulation in teaching the physiological changes during the pregnancy. It consists of five

statements using a 3 point Likert scale; start from score (1) for not satisfied, (2) for neutral and (3) for satisfied.**Total score** ranges from5 to 15. The higher score indicated more satisfaction.

Validity of the tool:

The content validity of the developed tools was reviewed by a panel of 3 experts in the maternity nursing specialty before using it to make sure that the questions were consistently conveyed and carried the anticipated meaning they were prepared for. The suggested modifications were done as rephrasing of some statements.

Reliability of tools:

Cronbach alpha coefficients for internal consistency ofPhysical difficulties questionnaire was0.886. It was 0.902 for Jeffersonscale,0.927 for attitude scale and 0.877forsatisfaction Likert scale, hence the questionnaires were found to be highly reliable.

Pilot study

A pilot study was performed on 10% (10midwifery nursing students) in order to ensure the feasibility and validity of the tools. Accordingly, in order to achieve the aim of the study, some modifications were done as a rephrasing of some statements.

Ethical consideration:

An ethical approval letter was attained from Research Ethics Committee, Faculty of Nursing, Mansoura University.Official permission from the head of woman's health nursing and midwifery department was obtained. Informed consent was obtained from the enrolled students after clarifying the aim and approach of this study. Participation in the study is voluntary. Each student has the right to withdraw from the study at any time without any consequences.

Procedure:

This study was carried out from October to the end of December 2020.Professional midwifery is a credit hours course. It includes 2hours/ week for theoretical content and 2 hours /week for clinical practice for a period of 14 weeks. The researchers attended

the previously mentioned setting once per week, (Thursday) from 10 a.m. to 12 p.m. until the calculated sample size of students was obtained. This work was conducted through four phases; preparatory, assessment, implementation and outcome evaluation.

- **Preparatory phase:** The tools for data collection were prepared after massive reviewing of literature then the contents of the lecture about physiological changes during pregnancy was prepared including Power Point Presentation, illustrative media and The Empathy Belly TM Pregnancy Simulator (EBPS) was prepared.
- **Assessment phase**
- The researchers interviewed students, introduced themselves to them, clarified the aim of the research work. Once eligibility for participation was confirmed, the researchers took the participant's written consent to share in this study. Data regarding socio-demographic characteristics, physical difficulties and empathy of students towards pregnant women were collected by using a structured interview questionnaire.
- The Students' attitude towards pregnant women was assessed using attitude questionnaire.

Implementation phase:

The researchers explained how to implement the pregnancy simulation method by utilizing the Empathy Belly TM Pregnancy Simulator (EBPS) to the students. Group one (G 1: "an intervention" n=50 students) accepted to be taught by a new teaching strategy while group two (G 2: "control group" n=50 students) decided to teach by only traditional lecture. Then the researcher gave the traditional lecture about physiological changes of pregnancy for both groups in the same classroom with a power-point presentation.

Control group

The control group (the lecture group) acquired education by only the lecture method plus power point presentation in the lecture room for 2 hours.

Intervention group

After the attendance of the lecture, the intervention group students (pregnancy simulation group) were divided into five subgroups; each subgroup consisted of ten students. The researchers explained how to utilize the EBPS and wear it in front of them, make simple markup to show skin changes like chloasma, then every student wore it and was walking, picking things, climbing stairs, putting on and taking off shoes, changing T-shirt, and changing pants etc.

- **Outcome evaluation phase**:
  - After finishing the procedure with each group, the researchers gave them post questionnaires immediately to complete it.

Data analysis:

All statistical analyses were performed using SPSS for windows version 20.0 (SPSS, Chicago, IL). All continuous data were normally distributed and were expressed in mean ±standard deviation (SD). Categorical data were expressed in number and percentage. Chi-square test was used for comparison of variables with categorical data. Cronbach's alpha test was performed to test for the internal consistency of the tools used in the study. Statistical significance was set at $p<0.05$.

Results

Table (1) shows the distribution of nursing students according to their general characteristics and experience with pregnancy in both groups. It was observed from the table that the age of the studied students ranged between 18 to 23 years old. Most students were among 18-20 years old (56% and54%). The majority of them did not have family or friends who were pregnant at the time (66%, 78%). Few students

were married in both groups (6%, 8%).No statistically significant difference was observed between both groups regarding all general characteristics.

Table (2) presents that there was a highly statistically significant difference in experiences of pregnancy's physical difficulty among control and simulation group ($p < 0.001$). Among the intervention group, it increased significantly before and after intervention ($p < 0.001$).

It was observed from **table (3)**, before the intervention, the total mean score of Jefferson empathy scale in the simulation group was 40.04±7.81 and 41.36±7.036 in the lecture group and the difference is not a statistically significant difference. After the application of pregnancy simulation the total mean score in the simulation group markedly improved (56.28±2.19), compared to slight improvement (42.04±5.34) in the lecture group and the difference was statistically significant (P<0.001).

Table (4)it was clear that the students' attitude toward pregnant woman was improved after intervention compared to before intervention among the pregnancy simulation students and there was a statistical significant difference (P<0.001). Also, there was a high statistical significant difference between the control and intervention groupP<0.001.

Figure (2)illustrates that the majority of the students in the pregnancy simulation group were satisfied that the utilized educational method help them for more awareness of pregnancy changes, increase their empathy, better understanding, and wishing more subjects will be conducted in the same manner (68%,64%,70%,68% respectively).

Table (5) shows that there was a significant positive correlation between the students' Empathy scores post intervention and their attitude post intervention r=0.368, P=0.009

Table (1): Frequency distribution according to studied sample general characteristics

Characters	Control group (50)		Intervention group (50)		Chi square &Significance test
	No	%	No	%	
Age (years):					
18-20	28	56.0	27	54.0	χ^2=0.040, P0.841
21-23	22	44.0	23	46.0	
Do you have any pregnant relatives or friends?					
- Yes	33	66.0	39	78.0	χ^2=1.786, P0.181
- No	17	34.0	11	22.0	
Have you ever lived or dealt with a pregnantwoman in a community setting?					χ^2=1.965, P0.161
Yes	40	80.0	45	90.0	
No	10	20.0	5	10.0	
Have you ever been married?					
Yes	5	10.0	7	14.0	χ^2=0.378, P0.538
No	45	90.0	43	86.0	

Table (2): Comparing the effect of pregnancy simulation versus lecture on the students experience of pregnancy physical difficulties

Physical difficulties	Time	Control group (50)	Intervention group (50)	Significance test
		Mean ± SD	Mean ± SD	
Picking things	Pre	4.88 ± 1.081	5.14 ± 1.429	t=0.026,P0.260
	Post	5.08 ± 0.986	8.66 ± 0.895	t=19.009,P<0.001
Paired t test		t=1.237,P0.222	t=13.928,P<0.001	
Climbing Stairs	Pre	5.30 ± 0.863	5.56 ± 1.264	t=1.201,P0.233
	Post	5.32 ± 0.683	7.86 ± 1.161	t=13.334,P<0.001
Paired t test		t=0.123,P0.903	t=10.733,P<0.001	
Putting on and taking off shoes	Pre	4.80 ± 1.309	5.26 ± 1.209	t=1.875,P0.071
	Post	5.02 ± 0.852	8.44 ± 1.198	t=17.894,P<0.001
Paired t test		t=1.372,P0.208	t=13.838,P<0.001	
Changing T-shirt	Pre	4.46 ± 1.541	4.78 ± 1.776	t=0.962,P0.320
	Post	5.04 ±1.394	7.60 ± 1.229	t=9.435,P<0.001
Paired t test		t=1.723,P0.089	t=9.137,P<0.001	
Changing Pants	Pre	4.66 ± 1.520	4.44 ± 1.886	t=0.642,P0.522
	Post	5.16 ±1.476	7.94 ± 1.077	t=10.760,P<0.001
Paired t test		t=1.766,P0.084	t=10.456,P<0.001	

Table (3): Comparison of Jefferson Scale of Empathy before and after intervention in both groups

Jefferson Scale	Control group (50)	Intervention group (50)	Significance test
	Mean ± SD	Mean ± SD	
Before intervention	41.36 ± 7.03	40.04 ± 7.81	t=0.888,P0.377
After intervention	42.04 ± 5.34	56.28 ± 2.19	t=17.405,P<0.001
Paired t test	t=1.614,P0.113	t=13.073,P<0.001	

Table (4): Midwifery students nurse attitude toward pregnant woman pre – intervention comparing to post-intervention

Attitude statement	Time	Control group (50)	Intervention group (50)	Significance test
		Mean ± SD	Mean ± SD	
When i deal with a pregnant woman,I feel sympathyto her situation	Pre Post	2.34 ± 0.479 2.42 ± 0.499	2.38 ± 0.490 2.94 ± 0.240	t=0.413,P0.681 t=6.646,P<0.001
Paired t test		t=0.850,P0.399	t=7.325,P<0.001	
Even simple tasks will be difficult to do while pregnant.	Pre Post	2.16 ± 0.510 2.26 ± 0.487	2.14 ± 0.452 2.70 ± 0.463	t=0.208,P0.836 t=4.631,P<0.001
Paired t test		t=1.043,P0.302	t=5.621,P<0.001	
Pregnant woman should be given special consideration because of their pregnancy.	Pre Post	2.56 ± 0.577 2.60 ± 0.535	2.54 ± 0.646 3.00 ± 0.000	t=0.163,P0.871 t=5.292,P<0.001
Paired t test		t=0.362,P0.719	t=5.039,P<0.001	
I would be aware of a pregnant woman's difficulties and treat herwith great care.	Pre Post	2.45 ± 0.579 2.56 ±0.501	2.52 ± 0.646 3.00 ± 0.000	t=1.151,P0.253 t=6.205,P<0.001
Paired t test		t=0.184,P0.855	t=5.250,P<0.001	
My way of life would vary if I or a friend became pregnant	Pre Post	2.00 ± 0.350 2.12 ±0.558	2.10 ± 0.505 2.58 ± 0.499	t=0.642,P0.522 t=4.345,P<0.001
Paired t test		t=1.288,P0.204	t=5.250,P<0.001	
My respect of life will increase when I feel fetal movement.	Pre Post	2.50 ± 0.647 2.58 ±0.538	2.52 ± 0.505 3.00 ±0.000	t=0.172,P0.863 t=5.521,P<0.001
Paired t test		t=0.704,P0.485	t=6.725,P<0.001	
My physical activity will be severely limited when I feel fetal movement.	Pre Post	1.86 ± 0.729 1.98 ±0.622	1.84 ± 0.650 2.58 ±0.609	t=0.145,P0.885 t=4.872,P<0.001
Paired t test		t=1.030,P0.308	t=7.537,P<0.001	

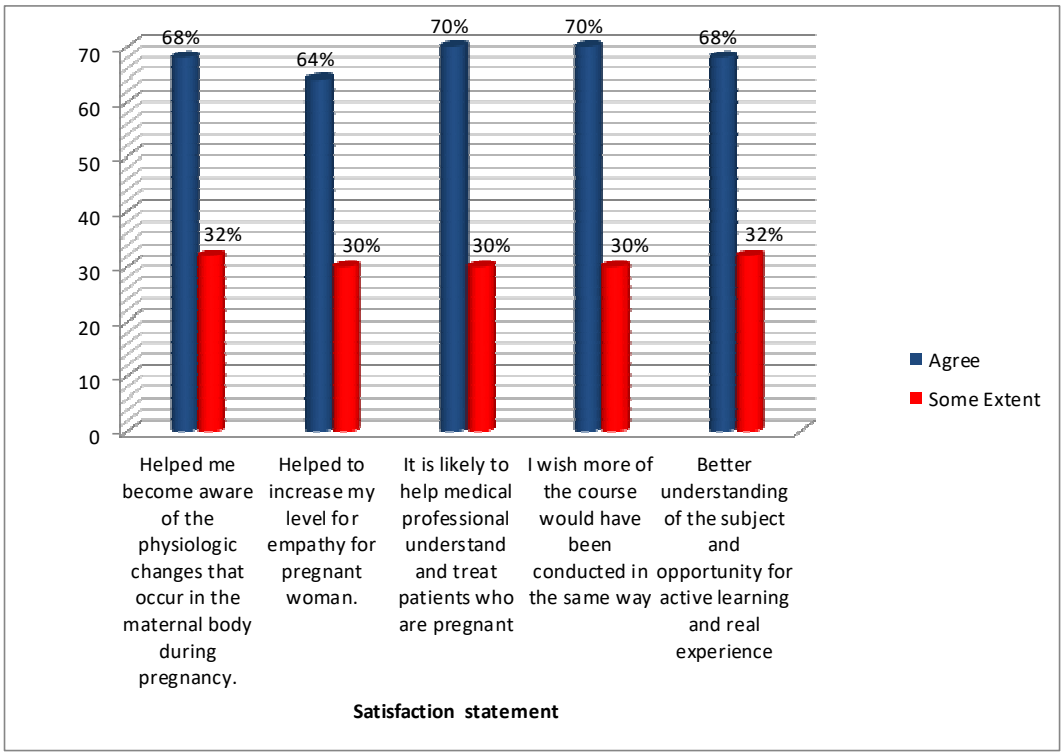

Figure (2): Midwifery student nurse satisfaction post-intervention among pregnancy simulation group

Table (5): Correlation coefficient between the students' total score of Jefferson Scale of Empathy and total score of attitude post-intervention among the intervention group

	Total score of Jefferson Scale of Empathy pre-intervention	**Total score of Jefferson Scale of Empathy scores post-intervention**
Total attitude scores pre-intervention	r= 0.216, p = 0.132	
Total attitude scores post-intervention		r= 0.368, p = 0.0.009**

Discussion

This study aimed to assess the effect of utilizing pregnancy simulator among midwifery student nurse on their physical difficulties, empathy, attitude and satisfaction. This aim was accomplished through the present study findings which revealed that, there was a highly statistical significant difference in experiences of pregnancy's' physical difficulty, students' empathy and attitude post-intervention in the simulation group compared to control group. Therefore, the hypotheses of current study "midwifery nursing students who participate in pregnancy simulation have a positive empathy, physical difficulties' experience, and positive attitude toward pregnant women compared to the lecture methods' students" were reinforced.

Simulation is a tool that is becoming more widely practiced in education and it is regarded as a suitable method for teaching. Better nursing education requires changes in the method of teaching in order to enhance students learning. Simulation games are one of the most widespread learning approaches used with students. The present study findings showed that, there was a highly statistical significant increase in students experiences of pregnancy's' physical difficulty among simulationthancontrol group. This can be attributed to participation in pregnancy simulation activity appeared to be helpful the nursing students in increasing their experiences about pregnancy and understanding of the problems that pregnant women face.In congruent with the present study findings,**Yu et al. (2019)**[9] conducted a study on 189 medical and nursing students and their professional peers to analyze if a pregnancy experience program (PREP) that simulates mothers' physiological changes during the third trimester of pregnancy will promote students and professional peers' empathy,

understanding and positive attitude. They claimed that following PREP, the overall group's physical difficulty score improved significantly (p 0.001), showedbetter understanding of pregnant women after participating in the pregnancy experience program (PREP).

The present study findings showed that,after the application of pregnancy simulation the total mean score of Jefferson empathy scale in the simulation group markedly improved compared to slight improvement in the lecture group and the difference was highly statisticallysignificant. This can be explained by the fact that learning by doing and role-play through using the Empathy Belly TM Pregnancy Simulator enhance students empathy compared with the superficial responses obtained from traditional lectures. In congruent with the present study findings, a study conducted by**Cotta et al. (2020)**[13]concluded that,the empathy analysis showed significant results in the general scale after applying the simulated clinical activity amongnursing students.

According to multiple systematic evaluations, empathy appears to be a significant part of patient and health care providers' well-being, andtailored educational programs could significantly improvemedical students and practitioners'empathy levels [14].On the other hand, other researchers havefound that simple interventions did not result insignificant increases in empathy [15].These conclusions may be as a result of the limitations of self-assessment, as one quasi experimental study found thatthe intervention grouphad considerably higher empathy levels than the control group but no significant differences were identified in self-rated empathy [8].

The simulation learning activity aimed at changing attitudes by having students personally experience related changes affecting pregnant women. The present study findings reported an improvement after the application of

the simulation game in attitude after intervention compared to pre intervention toward pregnant women in the simulation group than the lecture group. Parallel with the present study finding, another studyto evaluate the impact of simulated aging game versus traditional lecture on nursing students' knowledge and attitude towards elderly who concluded that, after the application of the simulation game,students' attitude changed to positive toward elderly in the simulation group than the lecture group[1].Another quasi-experimental study reported that negative attitude decreased significantly after simulation in the study group[16].

The present study findings revealed that, the majority of the students in pregnancy simulation group were satisfied with the utilized educational method. Parallel with the present study findings, study conducted by**Marzouk (2015)**[17]to investigate the perception of 117 nursing students on their satisfaction and self-confidence after engaging in clinical simulation and concludedincreasingtheir knowledge level because the used simulation methods were effective and gave them clear ideas of what was expected of them. Their self-confidence and satisfaction were increased as aresult of knowledge acquisition abilities.

In addition, this findings was congruent with a study aimed to assess nursing students' satisfaction with different teaching strategies including simulation based learning strategy and indicated that, following exposure to simulation based learning, the overall learning satisfaction levels were significantly improved after exposure to the simulated based learning[18].Additionally, study by **Abd El Fattah et al. (2019)**[19]found that the majority of students agreed that "the simulation affords students with a variety of learning materials and activities to support the learning curriculum". Also, students in the simulation sessions took opportunity to be prepared for real-life experience.

Tabatabaeian et al. (2018)[20] supported the present study finding, evaluated the impact of simulation based education about preeclampsia and eclampsia and reported that the satisfaction level with the educational method in the simulation group was significantly higher than that of the lecture group among midwives. In addition to that [17]who concluded that practicing simulation as a clinical education technique improves students learning satisfaction and promotes their self-confidence as simulation allows nursing students to participate actively in their learning. In addition, simulation training provides self-paced learning and allows nursing students to make mistakes and learn from them, which may be not allowed in the clinical setting. Furthermore, by allowing active participation, simulation training can provide standardized learning experiences for all nursing students.

Additionally, the study findings revealed that there was a significant positive correlation between the students' empathy scores and their attitude post intervention. These findings agreed with the study done in Korea among dental students and reported that supports the idea that education programs should focus on enhancing empathy, emphasizing positive attitudes among medical students[6].

Simulation is an effective method of teaching that can increasenursing student's experience of pregnant women physical difficulties, empathy and decrease their negative attitudes toward them.

Limitation of the study

There was lacking of the necessary national and international references in maternity field so, the researchers had difficulties in discussing the research topic.

Conclusion and Recommendations

Based on the present study results, the midwifery nursing students who participated in pregnancy simulation exhibited

positive empathy and a positive attitude towards pregnant women. Also, they feel physical difficulties among pregnant women compared to the students who received the traditional lecture. In addition,the midwifery students nurse were satisfied about pregnancy simulation teaching method.

Findings incite the following recommendations:

- Simulation-based teaching should be integrated into the practicetraining for students before their contact with the actual women in the antenatal unit.
- The simulation games should be used as an effective teaching method that improves the empathy and attitude of nursing students toward pregnant women.
- Further researches exploring the effect of simulation on different learning programs are required to confirm the importance of simulation games on student's development.

Conflicts of interest disclosur

The authors declare that there is no conflict of interest.

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Relation between Health Locus of Control and Foot Self-Care for Elderly with Type II Diabetes Mellitus

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Abstract

Background: Health locus of control emerged as a strong predictor of foot self-care in diabetic elderly as it plays a major role in educating elderly about foot self-care. The aim of the study: -was to assess the relation between health locus of control and foot self-care for elderly with type II diabetes mellitus. Subjects and Method: Study design: A descriptive study design was used. Study setting: This study was conducted at endocrinology and diabetic clinic at Al-Shamla clinics of Tanta University. Study subjects: A convenience sampling was utilized. The total number of the studied subjects was 230.Tools of data collection: Four tools were used. Tool (1): structured interview schedule which included three parts: - part (1): Socio- demographic characteristics of the elderly, part (2): Medical history, and part (3): Knowledge about foot care. Tool (2): The Simplified 60 Second Diabetic Foot Screening. Tool (3): Diabetic Foot Self-Care Behavior Scale. Tool (4): Multidimensional Health Locus Control. Results: More than three- quarters (75.2%) of the studied elderly had an unsatisfactory practice, 79.93% had an internal health locus of control, 76.00% had a powerful health locus of control, and 65.17% had a chance health locus of control. Conclusion: The study concluded that there was significant relation between health locus of control and foot care of the elderly. Recommendations: This study recommended that, nurses and counselors should focus on the locus of control in their interventional courses and programs to enhance internal locus of control to improve foot self-care practices.

***Key words*:** Health locus of control, Foot self-care, Elderly

Introduction

Type II diabetes mellitus (DM) is a lifelong metabolic disease, characterized by hyperglycemia, and occurs when the body is resistant to insulin or sufficient insulin level is not produced. Type II diabetes, has become one of the main threats to human health in the 21st century. This disease has become one of the global health problems and the main cause of death and disability as its vascular complications during lifetime lead to the huge increase of heart attacks and strokes, kidney failure, blindness, diabetic foot and amputation [(1)].

The International Diabetes Federation (IDF) and the World Health Organization (WHO) estimated the worldwide incidence of diabetes at more than 422 million people and predicted an increase to 642 million by 2040 and it would be the seventh leading cause of death in 2030 [(2,3)]. In Egypt, Central Agency for Public Mobilization and Statistics (CAPMAS) in (2019), reported the number of type II diabetics reached 39 million and about 8.6 million of them were elderly persons. Egypt ranks as the eighth globally for the prevalence of diabetes and is expected to reach sixth globally to double the number by 2045, if it is not well controlled [(4)].

Diabetic foot is a serious disabling complication of type II diabetes mellitus as it may lead to unhealed injuries in lower limb and impending amputation. Diabetic foot is defined as infection, ulceration, or destruction of tissues of the foot of a person with currently or previously diagnosed diabetes mellitus, usually accompanied by neuropathy and/or Peripheral Artery Disease (PAD) in the lower extremity. Diabetic foot has a tremendous economic and social impact on individuals, families and on health system as a whole in developing and developed countries [(5)]. The most important risk factors for foot ulceration are peripheral neuropathy, peripheral vascular disease, foot

deformity, previous foot ulceration, and amputation of the foot or leg. In addition, recurrent chronic abrasions, minor abrasions, bullae, various irritations, verrucas and calluses, improper cutting of toenails, fungal infection, poor foot hygiene, inappropriate footwear use, poor glycemic control and bad metabolic control are the most common causes of foot ulcer formation in diabetic elderly [(6)].Therefore, an effective management of diabetes requires self-care behaviors such as dietary control, regular exercise, and glycemic control, promoting diabetic foot self-care [(7)].

A previous study at Dubai (2019), has shown that 20.0% of diabetics never check their feet on the week, and about 15.0% of them reported never drying after washing their feet [(8)]**.** So, promotion of diabetic foot self-care is strongly recommended as part of preventive strategies for Diabetic Foot Ulcers (DFUs), and re-ulcerations in diabetes type II elderly with or without DFUs. Practices for promotion of diabetic foot self-care include daily foot inspection, toe and nail care, regularly inspect and feel the inside of shoes for any areas that could rub and cause tissue damage, regular washing of feet and careful drying particularly between the toes to reduce the risk of fungal infections, regular application of emollients to reduce dry skin, callus build up or fissuring (cracking) of the skin , cutting nails straight across and avoiding cutting into the corners of the nails, avoiding using anything abrasive on the feet, obtain appropriate foot wear, avoid sitting close to heaters or fires, and never walk barefoot inside or outdoors to prevent injury [(9)] .

All elderly with type II diabetes should do routine foot exams by the screening clinician annually to identify diabetic foot complications and to prevent DFU, or re-ulceration of a DFU, and promoting foot health [(10)]. Additionally, lifestyle behavior changes are required, including physical activity, optimizing metabolic

control, monitoring blood glucose levels, monitoring of blood pressure, eliminating smoking, and adherence to medication to prevent DFU in the long run [11].

People generally differ in their perceptions of the amount of control which they have over their lives. Locus of control as a psychological construct is based on Rotter s' social learning theory formed in1954, and then introduced by Wallston et al., as the health locus of control theory in the1970s. Rotter defines the concept of locus of control as a people's belief about location of forces which control their lives. It is the person's level of belief to the fact his or her health is controlled by internal or external factors [12].

Individuals with an internal health locus of control (IHLOC) believe that their direct actions and behaviors determine their health status. On the contrary, powerful others locus of control (POLOC) is characterized by individuals believing that powerful others such as doctors, nurses or family members exert power over their own health. Finally, chance health locus of control (CHLOC) is characterized by individuals believing that chance, luck or fate exerts power over their health [13].

Diabetic elderly having internal locus of control believes that their own efforts and dedication can bring changes around them and in their conditions thus implicating the future as one's own responsibility. Such belief makes them more confident, strong and motivates to get control over illness. On the contrary, elderly with external locus of control, possess a belief that the events are beyond their control and whatever is happening is just a matter of fate, destiny, luck, in the control of powerful others or unpredictable. Such elderly has been found to be very passive with a perceived sense of helplessness, does not try to change their conditions and believes that they can do nothing with the matters/events they are facing by. Hence, identifying diabetic patients with

internal, external, and chance attributiostyles can help identify their behaviors to better control the disease [3]

Community health nurse plays an essential role in empowering diabetic patients to better manage and preventing their disease through self-care and improving the quality of life through providing them and their families with the needed information. Nurses as care providers should consider client-centered care and effective communication with clients and their families through health education programs and instructing their diabetic elderly patients about increase risk of lower extremity complications and refer those patients to routine schedule of foot care. Promptly preventive foot care should be performed as early as possible in order to cut down number of lower limbs infections and future amputations [14].

Significance of the study

Diabetes is a fast-growing health problem in Egypt with a serious effect on morbidity, mortality, and health care resources. Diabetic foot complications are considered to be a serious consequence of this disease [15]. Most of these complications could be prevented or managed by proper foot care by the elderly or their care givers depending on their perceived health locus of control. So, the community health nurse should identify the perceived health locus of control in order to stimulate the development of a proactive attitude of diabetic patients in relation to their foot self-care [16]. Therefore, the aim of this study was to assess the relation between health locus of control and foot self-care for elderly with type II diabetes mellitus.

The aim of this study was to:

Assess the relation between health locus of control and foot self-care for elderly with type II diabetes mellitus.

Research question:

What is the relation between health locus of control and foot self-care for elderly with type II diabetes mellitus?

Subjects and Method

Study design:

A descriptive study design was used to conduct this study.

Study settings:

This study was conducted at endocrinology and diabetic outpatient clinic at Al-Shamla clinics of Tanta University Hospital.

Study subjects:

A convenience sampling was utilized in this study. The total number of the studied subjects of diabetic elderly was 230 (133 male and 97 female). 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.

Study tools:

Four tools were used in this study to collect the necessary data.

Tool I: Structured interview schedule:

It was included the following parts

Part (1):- Socio-demographic characteristics of the elderly with diabetes mellitus

This part included data about age, sex, marital status, level of education, previous occupation, residence area, family income and principal caregiver.

Part (2): **Medical history of the elderly with type II diabetes mellitus**

Medical history of the elderly included: number and causes of previous hospital admission, other chronic diseases, duration of DM, type of treatment and medications received, regularity of doing fasting blood test analysis, checking blood sugar level at home, as well as regularity of doing a cumulative glucose test. History also included compliance with ordered medication, adherence with diabetic diet regimen and exercise, problems for self-care capacity as suffering from impaired vision, ability to reach feet, previous or current problems with the feet, and assessment of current foot wear condition.

Part (3): Knowledge of the elderly with diabetes mellitus about foot care (KOFC)

Knowledge of foot care (KOFC) was developed by Eigenmann et al. (2011) [17], and it was adapted by the researcher in this study. It aimed to assess patient's knowledge about foot care, it consisted of 14 multiple choice questions (MCQ), and it included

A- Elderly knowledge regarding diabetic foot risk factors and its signs, it was about normal fasting blood glucose level, well-managed diabetes decreases its complications, causes of the occurrence of foot ulcers in diabetic elderly, and signs of diabetic foot problems among diabetic elderly. This part contained four questions.

B- Knowledge of the elderly about foot problems from diabetes and lack of foot care, it was one question about problems of diabetic foot in the elderly with type 2 DM.

C- Knowledge of the elderly about the behaviors followed for the prevention of diabetic foot and promoting foot care behaviors , it was about benefits of regular exercise, times per week of doing exercise, duration needed for medical check-up of feet nerves, importance of keeping blood glucose level at normal range, caring of diabetic foot, techniques of self-examination of the feet of the diabetic elderly, points to consider by diabetic elderly when wearing shoes and when wearing socks, and reasons for seeking medical checkup. It included nine questions.

Scoring system of knowledge

Questions that the elderly chose one answer only

- Correct answers scored as one point.
- Incorrect answers and didn't know scored as zero point

Questions that the elderly chose more than one answer

- Correct and complete answers scored as two points.

- Correct and incomplete answers scored as one point.
- Incorrect answers and didn't know scored as zero point.

The total score was obtained by summing the scores of all items. A higher score indicated a high level of knowledge about foot care. The total score ranged from 0–25.

The total score for knowledge was categorized as follows

- High knowledge: > 70% (18-25) of the total score.
- Moderate knowledge**:** 50-70 % (13-17) of the total score.
- Low knowledge: <50% (Less than 12) of the total score

Tool II: Screening for the high-risk diabetic foot: The Simplified 60 Second Tool [(18)]

The simplified 60 second tool was developed by In low's 60-second diabetic foot screen, and it was adopted by the researcher in this study. This tool was designed to facilitate early detection and appropriate treatment of diabetic foot ulcers. It consisted of

Medical history of foot ulcer

Elderly was asked, if they had any previous ulcers and/ or previous amputation in both feet.

Physical examination

Both feet were checked for the presence of any deformity, ingrown toenail, and palpate each foot for absence of pedal pulses (dorsalis pedis and/ or posterior tibial).

Foot lesions

Both feet were checked for active ulcers, blisters, calluses, and fissures

Neuropathy of feet

Monofilament test was used to assess loss of protective sensation (LOPS) in the feet of elderly with diabetes, Monofilament test has been widely used in clinical practice for diabetic peripheral neuropathy (DPN) screening owing to their availability and convenience, as well as, it was inexpensive assessment which was sensitive in identifying elderly at risk for developing foot ulcers [(19)].

The researcher tested 10 sites on each foot (Nine plantar sites which were distal great toe, third toe, and fifth toe, first, third, and fifth metatarsal heads, medial foot, lateral foot, and heel and one dorsal site by using Semmes –Weinstein 5.07 (10 gram) monofilament. The total score was 10/10[20].

- If all sites were tested and the elderly felt the monofilament in each of the areas, the score was 10/10.
- If the monofilament was not felt in an area on the foot, this indicated loss of protective sensation (LOPS) in that area and required referral to a physician.
- The researcher recorded the number of positive results out of the number of sites tested, e.g. 6 / 9 indicated that the elderly felt the monofilament in six areas and only nine areas were tested as the elderly's had an amputation in one of the places of examination, callus or ulcers [21].

Results of screening

a) Positive screen results when there were one or more "Yes" responses.
b) Negative screen results when there were all "No" responses.

Level of risk for diabetic foot

1. **High risk:** presence of any of the following: - previous ulcer, previous amputation, active ulcer, ingrown toenail.
2. **Moderate risk:** presence of any of the following: - deformity, peripheral vascular disease, absent pulse.
3. **Low risk:** presence of any of the following: -neuropathy 4/10 negatives on monofilaments, callus, blister.
4. **No risk:** no positive findings.

Tool III: Assessment of reported practices of diabetic elderly regarding their foot care by using diabetic foot self-care behavior scale (DFSBS)

Diabetic foot self-care behavior scale (DFSBS) was developed by Chin et al. (2013) [22], and it was be adapted by the researcher in this study. It contained eight items: checking the bottom of the feet and between toes, washing between toes, drying between toes after washing, applying lotion, inspecting the insides of shoes, breaking in new shoes, and checking shoes. Scoring system ranged between 0-8 .The score for each behavior was calculated as follows: done scored "one", not done scored "zero".

Scores for all practices were summed up. The total practice score was eight. A higher score indicated good foot self-care behavior. It was converted into a percent score and classified into:

- **Satisfactory practice:** >60% (> 4) of the total practice score.
- **Unsatisfactory practice:** ≤ 60% (≤ 4) of the total practice score.

Tool VI: - Multidimensional Health Locus Control (MHLC)

Multidimensional health locus control was developed by Wallston and Wallston (1978) [23, 24], it was adopted by the researcher in this study, and it contained three subscales: internal HLC (IHLC), powerful others HLC (PHLC), and chance HLC (CHLC). Each subscale measured an individual's tendency to believe that health outcomes were due mainly to one's own behavior (IHLC), or to powerful others such as medical professionals or family (PHLC), or to chance (CHLC). PHLC and /or CHLC were classified as (external) belief, and IHLC as (internal) belief. The MHLC contained eighteen questions. Each subscale contained six questions. For each question, elderly chosen one out of five answers ranged from 1 = strongly disagree, 2 = moderately disagree, 3 = do not know, 4 = moderately agree, and 5 = strongly agree.

Score was categorized as follows

The possible score range was 6to 30 on each subscale. Subjects were classified as Internal Health Locus of Control, Powerful Others or Chance Locus of Control, depending upon which locus of control score was the highest.

Method

1- Obtaining approval

Before conducting the study, official letter was directed from the Dean of Faculty of Nursing to the Director of Endocrinology and Diabetic Clinic in Al-Shamla Clinics of Tanta University Hospital to obtain his permission in order to facilitate the work of the researcher to collect the data from selected setting.

2- Ethical and legal considerations

a. Approval of ethical committee of Faculty of Nursing, Tanta University was obtained before conducting the study.
b. An informed consent was taken from all selected patients after providing appropriate explanation about the purpose of the study.
c. The researcher ensured that the nature of the study didn't cause any harm or pain for the entire subjects.
d. Every diabetic elderly was ensured about the privacy and confidentiality of all information collected.

3- Developing the tools of data collection

Study tool (I) was developed by the researcher based on literature review. Tools II and III of the study were adapted by the researcher. Tool IV was adopted by the researcher in this study, and then they were translated into Arabic languages.

4-The study tools were tested for face and content validity by a jury of five expertise in the field of Community

Health nursing before conducting the study.

5- A pilot study

A pilot study was carried out by the researcher on 10% of the sample (23 diabetic elderly) for testing the tools for its clarity, applicability and to identify obstacles that may be encountered with the researcher during data collection. Accordingly, the necessary modification was done. This sample was excluded from the study sample.

6- Reliability of the study tools was done by

Cronbach's Alpha which was 0.761 for a structured interview schedule, 0.951 for the simplified 60 second diabetic foot screening tool, 0.892 for reported practices for diabetic elderly regarding their foot care, 0.802 for multidimensional health locus of control, and 0.825 for all sheet items.

7- Actual study

- The data were collected by the researcher over a period of six months starting from October 2020 to the end of March 2021.
- Each diabetic elderly was interviewed individually at outpatient department of Endocrinology and Diabetic Clinic in Al-Shamla Clinics of Tanta University Hospital
- The researcher met the diabetic elderly only two days per week (Sunday and Wednesday) in the waiting areas of Endocrinology and Diabetic Clinic in Al-Shamla Clinics of Tanta University Hospital.
- Each diabetic elderly was informed about the purpose of the study.
- The questionnaire was filled by the researcher according to the answers of diabetic elderly.
- The average number of each diabetic elderly per day ranged from 3-5 cases.
- The average time spent for collecting data from each elderly ranged from 30-45 minutes.

8- Statistical analysis

The collected data were organized, tabulated and statistically analyzed

using SPSS software statistical computer package version 26. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). For comparison between means for two variables in a sample, paired samples T-test was used. For comparison between means for more than two variables, the F-value of analysis of variance (ANOVA) was calculated.

Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient r. A significance was adopted at P<0.05 for interpretation of results of tests of significance (*). Also, a highly significance was adopted at P<0.01 for interpretation of results of tests of significance (**).

Results

Table (I): Represents the distribution of the studied elderly patients with type II diabetes according to their socio-demographic characteristics. The table shows that, 41.3% of the studied diabetic elderly were in the age group 60-<65years and nearly one- third (33.0%) of them aged 65-<70 years, with a mean of age of 66.78±4.728 years. The table shows that, 57.8% of them were males and the rest (42.2%) were females. Nearly two- thirds (64.3%) of the studied diabetic elderly were married, 31.7% of them were widow and the rest (3.9%) of them were single and divorced. The table represents that, slightly more than two- thirds (69.1%) of the studied diabetic elderly were from rural area. More than half (59.6 %) of them were illiterates, 19.6 and 11.3% of them could read and write and had general / technical secondary education respectively. Concerning the occupation of the studied diabetic elderly, nearly one-third (33.0%) were not working and house wife, 22.6% ,19.1%, and12.2% respectively were governmental employees, farmers,

and had professional work. About 63.5% of the diabetic elderly had enough income per month, 30.9% of them had not enough income per month, and the rest (5.7%) of them had enough and saving income per month. Nearly three -quarters of the elderly (73.9%) live with spouse and children, only 12.6% of them live with spouse, and the rest (7.8% and 5.7%) live alone and with a relative respectively. Also, more than half (55.7%) of the elderly their children were responsible care giver, more than one- third (40.4%) of them their spouse was the care giver.

Table (II): Represents the distribution of the studied elderly patients with type II diabetes according to their total level of knowledge about foot care (KOFC)**.** The table represents that, (42.6% and 37.0% respectively) of the studied diabetic elderly had a high and moderate level of knowledge and the rest (20.4%) of them had a low level of knowledge.

Table (III): Represents the distribution of the studied elderly patients with type II diabetes according to their risk for diabetic foot using the simplified 60-second tool. The table shows that, 69.1% of the studied diabetic elderly had a high risk for diabetic foot, 13.5% and 10.9% of them had a low and moderate risk respectively, and the rest (6.5%) of them had no risk of diabetic foot.

Table (IV): Shows the percent distribution of the studied elderly patients with type II diabetes according to their total practice level towards foot care by using diabetic foot self-care behavior scale (DFSBS)**.** The table represents that, 75.2% of the studied elderly had an unsatisfactory practice level, and 24.8% of them had a satisfactory practice level. The total practice level of them regarding their foot care ranged from (0-8) with a mean of 3.98 ± 0.592.

Table (V): Represents the total mean scores of dimensions of health locus of control among the studied elderly patients with type II diabetes. The table shows that most (79.93%) of the studied elderly with type II diabetes had an internal health locus of control with a mean of (23.92±1.32), 76.00% of them had a powerful health locus of control with a mean of (22.80±2.04),while, 65.17% of them had a chance health locus of control with a mean of (19.55±2.56).

Table (VI): Represents the percent comparison and correlation between total level of knowledge of the studied elderly patients with type II diabetes and their severity level for diabetic foot, and their total practice level. The table illustrates that there was highly statistically significant negative correlation between severity levels for diabetic foot and levels of knowledge of the studied elderly with type II diabetes (r = - 0.239, P = 0.000).Moreover, the table shows that, there was highly statistically significant positive correlation between total practice level and levels of knowledge of the studied elderly with type II diabetes (r = 0.410, P = 0.000).

Table (VII): Represents the relation between the total scores of multi-dimensional health locus of control domains (MHLC) of the studied elderly patients with type 2 diabetes and their severity for diabetic foot and practice levels towards their foot care**.** The table shows that, there was statistically significant relationship between risk of foot problems and score gained for internal health locus of control, where, those with high score of internal health locus of control were at moderate risk for diabetic foot and those with high score for chance and powerful health locus of control were significantly at high risk for diabetic foot. Moreover, the table illustrates that, there was significant relation between internal health locus of control and foot care practice of the elderly, where, those with satisfactory practice gained high score of internal health locus of control. Furthermore, those with unsatisfactory practice gained high score at chance and powerful health locus of control

Table (I): Percent distribution of the studied elderly patients with type II diabetes according to their socio–demographic characteristics

Socio demographic characteristics of diabetic elderly	The studied patients (n=230)	
	No	%
Age (in years)		
▪ 60-<65	**95**	**41.3**
▪ 65-<70	76	33.0
▪ ≥70	59	25.7
Range	**(60-81)**	
Mean ± SD	**66.78±4.728**	
Sex		
▪ Male	133	57.8
▪ Female	97	42.2
Residence		
▪ Rural	159	69.1
▪ Urban	71	30.9
Marital status		
▪ Married	148	64.3
▪ Widow	73	31.7
▪ Single & Divorced	9	4
Educational level		
▪ Illiterates	137	59.6
▪ Read and write	45	19.6
▪ General/Technical secondary	26	11.3
▪ University/Post	14	6.1
▪ Elementary education	8	3.5
Occupation before retirement		
▪ Not work/Housewife	76	33.0
▪ Governmental employee	52	22.6
▪ Farmer	44	19.1
▪ Professional	28	12.2
▪ Private works	19	8.3
▪ Craftsman	11	4.8
Elderly income per month		
▪ enough	146	63.5
▪ Not enough	71	30.9
▪ Enough and saving	13	5.7

Whom the elderly lives with		
▪ Spouse and children	170	73.9
▪ Spouse	29	12.6
▪ Alone	18	7.8
▪ With a relative	13	5.7
Responsible care giver		
▪ Children	128	55.7
▪ Spouse	93	40.4
▪ Brother & Sister	9	3.9

Table (II): Percent distribution of the studied elderly patients with type II diabetes according to their total level of knowledge about foot care (KOFC)

Level of knowledge	The studied patients (n=230)	
	No	%
▪ Low	47	20.4
▪ Moderate	85	37.0
▪ High	98	42.6

Table (III): Distribution of the studied elderly patients with type II diabetes according to their risk for diabetic foot using the simplified 60-second tool

Risk for diabetic foot	The studied patients (n=230)	
	No	%
▪ No risk	15	6.5
▪ Low risk	31	13.5
▪ Moderate risk	25	10.9
▪ High risk	159	69.1

Table (IV): Percent distribution of the studied elderly patients with type II diabetes according to their total practice level towards their foot care by using diabetic foot self-care behavior scale (DFSBS)

Total practice level	The studied patients (n=230)	
	No	%
▪ Unsatisfactory ▪ Satisfactory	173 57	75.2 24.8
Range	**(0-8)**	
Mean ± SD	**3.98 ± 0.592**	

Table (V): Total mean scores of dimensions of health locus of control among the studied elderly patients with type II diabetes

MHLC dimensions	The studied patients (n=230)			
	No items	Mean ± SD	Mean Percentage %	Ranking
1. Internal health locus of control	6	23.92±1.32	79.73	**1**
2. Chance health locus of control	6	19.55±2.56	65.17	**3**
3. Powerful health locus of control	6	22.80±2.04	76.00	2
Total MHLC score	**18**	66.27±3.68		

Table (VI): Percent comparison and correlation between total level of knowledge of the studied elderly patients with type II diabetes and their severity level for diabetic foot, and their total practice level.

	The studied patients (n=230) Level of knowledge						χ^2 P
	Low (n=47)		Moderate (n=85)		High (n=98)		
	N	%	N	%	N	%	
Severity level for diabetic foot							
▪ No risk	2	4.2	4	4.7	9	9.2	
▪ Low risk	3	6.4	12	14.1	16	16.3	10.08
▪ Moderate risk	2	4.2	9	10.6	14	14.3	0.121
▪ High risk	40	85.2	60	70.6	59	60.2	
r , P	**-0.239 , 0.000****						
Total practice level							
▪ Unsatisfactory	45	95.7	67	78.8	61	62.2	**20.06**
▪ Satisfactory	2	4.3	18	21.2	37	37.8	**0.000***
r , P	**0.410 , 0.000****						

r: Pearson' correlation coefficient

* Significant at level P < 0.05.

** Highly significant at level P < 0.0

Table (VII): Relation between total scores of multi-dimensional health locus of control domains (MHLC) of the studied elderly patients with type 2 diabetes and their severity for diabetic foot and practice levels towards their foot care.

	The studied patients (n=230) Mean ± SD MHLC domains		
	Internal health locus of control	**Chance health locus of control**	**Powerful health locus of control**
Severity level			
▪ No risk	24.80±3.726	18.27±4.217	21.33±4.047
▪ Low risk	24.81±2.868	19.97±4.363	22.03±5.050
▪ Moderate risk	**25.44±3.267**	16.76±3.491	20.40±4.865
▪ High risk	23.43±3.283	**20.03±4.596**	**23.46±4.104**
F , P	**4.151 , 0.007***	**4.412 , 0.005***	**4.702 , 0.003***
r , P	**-0.228 , 0.000****	0.115 , 0.082	**0.210 , 0.001****
Total practice level			
▪ Unsatisfactory	23.28±3.335	**20.03±4.549**	**23.44±4.355**
▪ Satisfactory	**25.86±2.445**	18.07±4.195	20.84±4.087
t , P	**28.864 , 0.000***	**8.300 , 0.004***	**15.706 , 0.000***
r , P	**0.526 , 0.000****	**-0.280 , 0.000****	**-0.341 , 0.000****

t: Paired sample t-test F: ANOVA F-test

r: Pearson/Spearman' correlation coefficient

* Significant at level P < 0.05.

** Highly significant at level P < 0.01.

Discussion

Type II Diabetes mellitus (T2DM) is a highly prevalent metabolic disorder which has lifelong acute and chronic complications constituting a huge global public health burden [(25)]. Diabetic foot is a serious disabling complication of type II diabetes mellitus as it may lead to unhealed injuries in lower limbs and impending amputation. Complications from diabetic foot compromise patients' health and quality of life and contribute to excess mortality, increasing the physical, psychological, and financial burden of the disease on patients and the community [(9)]. Previous studies have shown that diabetic foot problems are principally associated with improper foot self-care. So, foot self-care behavior can help to reduce foot problems and diabetic foot complications among elderly [(26)].

In diabetic elderly, health locus of control emerged as a strong predictor of foot self-care as it plays a major role in promoting health and educating elderly about foot self-care. Identification of health-related locus of control may become an essential tool to guide health actions directed toward foot self-care. This provides important support for a better understanding of the psychosocial factors involved in the difficulties faced during the management of diabetic elderly and promoting their foot care practices [(3)].

Community health nurse should design interventions to promote foot self-care behaviors in elderly with type II diabetes focusing on addressing health locus of control and incorporate them in a plan of care that is consistent with the elderly's expectations for treatment as well as their ability to sustain healthy behaviors [(14)]. So, the aim of this study was to assess the relation between health locus of control and foot self-care among elderly with type II diabetes mellitus.

The result of the current study revealed that, less than half of the studied

diabetic elderly were in the age group 60-<65years, nearly one- third of them aged 65-<70 years, and about one-quarter of them aged ≥70 years **(Table I**). This study agreed with a study done in Assuit city by **Mahmoud et al. (2019) [14] ,** who showed that about three-quarters of their participants their age ranged from 60- 70 and the rest of them were 70 or more. On the other hand, the result of the present study disagreed with a study done by **Ewais et al. (2019) [27],** who showed that the majority of the elderly their ages ranged from 60 years to less than 65 years old. Also, the present study disagreed with a study done by **Shin et al. (2018) [28]**, who found that less than one- fifth of the studied elderly were in the age group 61-70 years old, more than half of them aged 71-80 years, and more than one quarter of them were in the age ≥81.These results can be attributed to the fact that type II diabetes is prevalent among over 45 years population.

Regarding the sex of the studied diabetic elderly, the result of the current study showed that, more than half of them were males and the rest were females **(Table I)**. That may be due to although the incidence of type 2 DM is more among females but male patients may be more concerned about treatment follow up. Also, it may be possible that diabetic female elderly may be in need for their husbands or their sons for treatment permission due to the physical disabilities and aging process. This study is in the same line with a study done by **Giandalia et al. (2019) [29]**, who revealed that more than half of them were males and the rest were females. While, the result of the present study disagreed with a study done by **Abredari et al. (2015)[30],** who revealed that the incidence of type 2 DM increased in female patients and increased with age and stated that more than half of them were females and the rest were males. Furthermore, the result of the present study disagreed with a study done by

Fardazar et al. (2017)[31]and another study done by **Kamaru Zaman et al. (2018)**[32] , who revealed that more than half of their participants were females.

Regarding elderly residence, the result of the current study showed that, slightly more than two- thirds of the studied diabetic elderly were from rural area **(Table I)**. This may be due to the study was conducted at endocrinology and diabetic outpatient clinic at Al-Shamla clinics of Tanta university hospital which serve many villages of Tanta city and other governorates such as Kafr El-Sheikh and its villages and the rural population had low medical services in their places so, they prefer to go to Tanta University Hospitals to receive medical services. The current study is in the same line with a study done by **Ewais et al. (2019)** [27], who revealed that about three - quarters of the studied elderly were from rural area. The results of the present study is in contrast with a study done by **Ebrahim et al. (2016)**[33] **,** who found that more than two- thirds of the studied diabetic elderly were from urban area. This variation may be attributed to the difference of the study setting.

Concerning to marital status, the finding of the present study showed that nearly two- thirds of the studied diabetic elderly were married, nearly one- third of them were widow **(Table I)**. This result may be due to that the subjects in the present study were community residents and live with their families, as nearly three-quarters of elderly in the present study live with their spouse and children and their responsible care giver was their children for more than half of them. This result could be due to that the subjects live in the community and their families were the main care giver. This finding of the study is in the same line with other studies done by **Ebrahim et al. (2016)** [33], **Kamaru Zaman et al. (2018)** [32], and **Serag (2017)** [34]**,** who stated that about three-

quarters of the studied elderly were married, one-fifth of them were widowed. Meanwhile, the result of the present study disagreed with a study by **Alqahtani et al. (2020) [35],** who found that more than two - thirds were single and divorced and the rest were married.

Regarding to educational level more than half of the studied elderly were illiterates (**Table I).** This result may be due to the study subjects in this study their age was above 60 years and older and their residence area was mainly from rural. This study agreed with four Egyptian studies. A study done in Assuit city by **Mahmoud et al. (2019)[14]** , who showed that about two thirds of the studied subjects were not educated , a study done by **Ewais et al. (2019)[27]** , who showed that about half of the studied elderly were illiterates , a study done by **Ebrahim et al. (2016)[33]** , who showed that more than one- third of the studied elderly were illiterates , and a study conducted in Menoufia University, Egypt by **Salama and Zorin (2018)[36]**, who found that more than one-third of the patients were illiterates.

Regarding to the diabetic elderly income per month, the results of the present study shows that nearly two-thirds of them had enough income per month, about one - third of them had not enough income per month **(Table I)**. This result is in the same line with Egyptian study done by **Alagamy et al. (2019) [37]**, who revealed that more than three quarters of the studied elderly had enough income, less than one-fifth of them had not enough income per month. The current study disagreed with a study done by **Ewais et al. (2019)[27]** , who revealed that about two-thirds of the studied elderly didn't have enough monthly income.

One of the most important aspects of the prevention of diabetic foot and the management of diabetic foot ulcer is proper care and prevention of injuries to the foot. This requires diabetic elderly to have proper education,

knowledge and awareness about the basis of proper foot care and management of foot ulcers through simple health education and information. Furthermore, understanding of the causes of foot diseases in diabetics will enable high-risk elderly to recognize it early. It has been estimated that up to 50% of the major amputations in diabetic patients can be prevented with effective education [38].

The result of the current study represented that, about three-quarters of the studied diabetic elderly had either a high or moderate level of knowledge about foot care and the rest of them had a low level of knowledge **(Table II).** This result may be due to long duration of diabetes which may expose them to message from media as television and internet as well as instructions from health professionals about their disease. The results of the current study agreed with other studies done by **Alhabshan et al. (2017)** [39], **Alsous et al .,2019)** [40], **Ali et al. (2019)** [41], **Alqahtani et al. (2020)** [35], and **Ahmed et al. (2020)** [42], who showed that the majority of their participants had high and moderate level of knowledge. However, the result of the present study disagreed with a study done in Cairo, Egypt by **Marzouk et al. (2017)** [43] and a study done by **Almuhanadi et al. (2017)** [44], who revealed that about half of the participants had poor knowledge, more than one-third of them had satisfactory, and the rest of them had good knowledge.

Assessment of foot regularly by a foot specialist as nurse is essential to prevent complications of diabetic foot which is more important once peripheral neuropathy diagnosis is done. Foot lesions can be the presenting feature of type II diabetes, so any patient with a foot ulcer of undetermined cause should be screened for diabetes. Assessment of biomechanical, neurological and vascular status of the foot by comprehensive examination is

important to identify patients at risk and to implement the interventions at the appropriate time [65]. The screening for foot complications should start at the time of diagnosis of diabetes and integrated with sustainable patient education at primary care level by training of health care providers at primary care level [44].

The results of the screening for diabetic foot in the present study show that, more than two- thirds of the studied diabetic elderly had high risk for diabetic foot and few percentages of them had low and moderate risk **(Table III).** This result may be due to low educational status of the subjects, prolonged disease duration, insulin treatment, presence of callus, fungal infections, and nails problems. Furthermore, most of the elderly were from rural area that is with poor sanitation in the countryside of Egypt with prevalent habit of wearing exposed slippers or walking bare foot. This result of the present study is in the same line with a study conducted in Elsharkia governorate in diabetic clinic at Zagazig University Hospitals by **Abo elezz et al. (2021)** [45], who showed that more than two-thirds of the studied participants with type II diabetes mellitus had high risk for diabetic foot and few percentages of them had a moderate risk and a low risk. The results of the present study disagreed with a study done in Kasturba Medical College (KMC), Manipal by **Vibha et al.(2018)** [46], who found that about half of the studied participant had no risk of diabetic foot, about one-third of them had low risk, and few percentages of them had moderate risk and high risk for diabetic foot.

The practice of foot care measures such as daily foot washing and drying, daily foot examination, proper nail care, and footwear are important in prevention and early detection of the expected complications. Patients with poor practices about diabetic foot care have a higher incidence of diabetic foot complications. Studies suggest

that increasing awareness about diabetic foot care practices may reduce diabetes related foot ulceration and amputations and facilitate healing of foot ulcers [47].

The current study represented that, more than three- quarters of the diabetic elderly had an unsatisfactory practice level of foot care, and nearly one- quarter of them had a satisfactory practice level **(Table IV)**. This result could be related to that most of the studied elderly reported suffering from problems that hinder them from practicing foot care as poor vision, inability to reach the feet as well as lack of psychological motivation**.** The results of the current study is in agreement with a study done in Malaysia by **Sharoni et al. (2017)** [48] and a study done by **Alagamy et al .(2019)** [37]**,** they revealed that about three-quarters had an unsatisfactory practice and the rest of them had a satisfactory foot care practice. The highest score was for item "I wash between my toes". This finding is similar to the current study. It is possible that elderly patients bathe every day and washed their feet during bath times and most of Egyptians are Muslims, they pray five times per day where the feet have to be washed prior praying. Meanwhile, the results of the current study disagreed with **Ahmed et al. (2020)** [42], who revealed that more than three- quarters had a satisfactory practice and the rest of them had an unsatisfactory practice.

The current study showed that the percentage of elderly with good practice was poorer than the percentage of those with good knowledge **(Table II and IV)**, where about one- quarter of elderly had a satisfactory practice level compared to about half of them had a high knowledge level. This result indicates poor elderly compliance with foot care. Diabetic elderly had some degree of foot care awareness but they didn't practice what they know. This could be due to lack of motivation and the suffering from poor vision, physical

disabilities, and negligence. This finding agreed with a study done by **Abu-Elenin et al. (2018) [49],** who studied knowledge, practice and barriers of foot self-care among diabetic patients at Tanta University Hospitals that reported half of them had good knowledge level, while, about two-thirds of them had inadequate foot self- care practice and lack of motivation, physical limitation, poor vision, low income, and lack of family support were the reported barriers of foot self-care. This agreement may be due to the two studies conducted in the same setting in Tanta University Hospital and the same educational level for the participants in two studies.

Perceptions and beliefs of elderly with T2DM, including health locus of control influence adherence to foot self-care activities. Diabetic elderly who perceives an internal health locus of control have better adherence to diabetes treatment than those who believe their health is controlled by external factors. Furthermore, elderly who feel responsible for managing their diabetes and put more value on their health are typically more actively engaged in performing the recommended diabetic foot self-care activities [50].

The results of the current study showed that, the majority of diabetic elderly had internal health locus of control. This means that the majority of them know that their health is a result of their behaviors and believe that they have control over their own health. More than three-quarters of them believed to powerful others health locus of control. This means that they seek their own health in the hands of health professionals, physicians and families and see themselves less responsible for their own health and disease. Furthermore, about two-thirds of them believed in chance health locus of control. This means that they see their health as a result of good luck and their disease as a result of bad luck and fate **(Table V**).

This could be due to the mean duration of suffering from diabetes was 17.45 years and they know by practice the extent of influence of self-care on the disease. The results of the present study are in agreement with a study done by **Klinovszky et al. (2019) [51],** who found that the majority of the studied participants had internal health locus of control, more than three-quarters of them had powerful health locus of control, and more than half of them had chance health locus of control. The result of the present study agreed with a study by **Williams et al. (2016) [52],** who revealed that the mean score of internal of control was 25.93±5.66, powerful health locus of control 23.71±5.65, and chance health locus of control 17.40±5.90.

The result of the current study illustrated that there was highly statistically significant negative correlation between risk for diabetic foot and levels of knowledge of the studied diabetic elderly **(Table VI)**. As understanding and gaining knowledge about the factors that affect the incidence of diabetic foot ulcer as foot traumas, mechanical pressures, obesity and overweight and longer diabetes duration and old age decrease the risk level for diabetic foot. The results of the present study is in disagreement with other studies done by **Bikramjit et al.(2015) [53], Jalilian et al.(2020) [54] ,** and **Ghobadi et al. (2020) [55]**, who found that there was no statistically significant correlation between the level of knowledge and severity level.

Moreover, the result of the current study shows that, there was highly statistically significant positive correlation between total practice and knowledge of the studied elderly with type II diabetes **(Table VI)**. This means that good knowledge will influence better practice and healthy lifestyle. The result of the present study is in the same line with a study in seoul, korea by **Kim and Han. (2020) [9],** who showed that there was

highly statistically significant positive correlation between total practice and knowledge. Furthermore, this study is in the same line with the studies which had been done by **Fatema et al. (2017)** [56] **and Al-Naggar et al. (2017)** [57]. This study is in contrast with a study done by **Ali et al. (2019)** [41], who showed that there was no significant correlation between total practice and knowledge. From the researcher point of view, it can be concluded that knowledge does not necessarily influence practices towards diabetes as there are other many influencing factors as physical disability, socio-economic factors as well as psychological condition. In addition, studies conducted by **El-Khawaga and Abdel-Wahab (2015)** [58], and **Serag (2017)** [34]**,** did not confirm the present finding and explained that there was a negative significant correlation between the knowledge and practice of foot care.

The result of the current study showed that, there was statistically significant relationship between severity risk of foot problems and score gained for internal health locus of control, where, those with high score of internal health locus of control were at moderate risk for diabetic foot and those with high score for chance and powerful health locus of control were significantly at high risk for diabetic foot **(Table VII)**. Moreover, the result of the present study illustrated that, there was significant relation between internal health locus of control and practice of the elderly regarding foot care, where, those with satisfactory practice gained high score of internal health locus of control. Furthermore, those with unsatisfactory practice gained high score at chance and powerful health locus of control **(Table VII)**. This means that elderly who believe to have role in their health, had a higher score in foot self- care practices, though, elderly who believe in chance role and

powerful role in their health, had a lower score in foot self-care practices.

This study is in agreement with a study done by **Abredari et al. (2015)**[30] and a study by **Albargawi et al.(2016)**[59], who found that an inverse and significant relationship was seen between self-care behaviors with chance health locus of control and powerful health locus of control and a direct relationship with internal health locus of control and participants who reported having a high internal health locus of control adhered well to their foot self-care regimen. Meanwhile, the result of the present study disagreed with a study done by **Pourhoseinzadeh et al. (2017)**[60], who revealed that there is no significant relation between internal , external health locus of control and health behaviors.

Diabetic elderly usually seeks treatment and support from doctors who can monitor their medical condition and suggest treatment type and frequency for better control of glucose. Therefore, despite the high scores they gained on the internal dimension, elderly cannot manage their living without the important guidance of their doctor. Therefore, the elderly in the current study acknowledged the importance of seeing their doctors regularly and following their recommendations in order to control their diabetes. However, this elderly also believed that chance health locus of control may be responsible for whether their diabetes got better or worse [61]. Egyptian culture is based on the Islamic beliefs; therefore, elderly may believe that they have some control over their lives and health, but fatalism controls all life circumstances. Furthermore, Muslim persons believe in predestination, that everything in their lives happens for a reason. However, the Islamic faith also encourages followers to take care of themselves and value their health which is consistent with an internal health locus of control. Islamic

teachings also encourage believers to be responsible and engage in preventive behaviors to promote their health [62].

Conclusion

Based on the findings of the present study, it can be concluded that there was significant relation between internal health locus of control and foot care practice of the elderly, where, those with satisfactory practice gained high score of internal health locus of control. Furthermore, those with unsatisfactory practice gained high score at chance and powerful health locus of control.

There was statistically significant relationship between severity risk of foot problems and score gained for internal health locus of control, where, those with high score of internal health locus of control were at moderate risk for diabetic foot and those with high score for chance and powerful health locus of control were significantly at high risk for diabetic foot.

Recommendations

Based on the results of the present study, it is recommended that:

1. Nurses and diabetic educators should be available at each diabetes outpatient clinic and in medical departments and act on increasing internal health locus of control in order to improve elderly's foot self-care behaviors and their involvement in treatment.
2. Nurses and counselors should focus on the locus of control in their interventional courses and programs to enhance internal locus of control to improve foot self-care practices.
3. Foot screening programs should be initiated at basic health units for all diabetic individuals for early risk recognition and intervention.
4. Educational campaigns in both urban and rural health units should be available for diabetic patients focusing on dietary and lifestyle modifications to enhance their internal health locus of control.

5. Instructional guidelines about diabetic foot self-care should be delivered in different forms to elderly ranging from face-to-face education to social media applications and media health campaigns.

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Communication Barriers with Parents regarding Reproductive Health Issues from the Adolescents' Perspectives in Alexandria

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Abstract

Background: Communication between parents and adolescents regarding sexual and reproductive health issues is difficult and facing challenges and barriers for both parents and adolescents. **Aim of the study:** was to identify communication barriers with parents regarding reproductive health issues from the adolescents' perspectives in Alexandria. **Subjects and method:Study design:** Descriptive research design was used in this study. **Setting:** This study was conducted in 8 youth centers in Alexandria. **Subjects:** A random sample of 450 adolescents were selected by proportional allocation method. **Tools of data collection:** Three tools were used for data collection. The first tool was used to identify socio-demographic characteristics related to the adolescents and their parents. The second tool was used to assess the adolescents' knowledge regarding reproductive health and puberty changes as well as the importance of communication with parents about reproductive health issues. While, the third tool was used to measure the barriers of adolescent-parent's communication about reproductive health issues and the effects of poor communication. **Results:** The vast majority of the studied adolescents had poor level of knowledge about reproductive health issue and less than two thirds of them did not communicate with their parents about reproductive health issues, while less than quarter of them had many barriers against the communication with their parents about reproductive health and less than one quarter of them had major physical effects of poor communication. **Conclusion:** Poor adolescent- parent communication about reproductive health issues is a major problem among adolescents which may have serious implications on them. **Recommendations :**It is essential to maintain open and comfortable communication with adolescents on regular basis about reproductive health issues.

***Keywords*:** Adolescent -Parent Communication, Reproductive Health, Barriers

Introduction

Adolescents constitute a large sector in the community, as they represent the positive force in society for the future. According to The United Nations Children's Emergency Fund (UNICEF) in the year 2021, adolescents constitute 1.2 billion in the world today, making up to 16 percent of the world's population. In Egypt, adolescents constitute 17 million, representing approximately 19 percent of the total population [(1)].

Adolescents face a great challenge in this period because they do not understand their physical, biological, and psychological changes which occur during their development to begin puberty. Many adolescents are not prepared enough to cope with these changes, which often put them under stress and make them vulnerable to health risk that significantly impact their future life course. Therefore, they should learn about changes during puberty, human reproductive system, reproductive organs, their functions and problems related to adolescence [(2)].

Reproductive health for adolescent is a fundamental feature of healthy human development and of general health. Promoting healthy practice during adolescence protects this age group from risks and ensures longer and productive lives [(3,4)].

Adolescents often lack reproductive and sexual health education because it is not received at school. The school health insurance system does not include reproductive health care for students. Furthermore, they lack basic reproductive and sexual health information, and access to affordable confidential reproductive health services [(5)].

Adolescents have very special needs and problems, which should not be over looked by parents and all related authorities including health care authority. The adolescents' needs could be classified into biological, developmental and sexual and reproductive health needs. These needs

should be met and the persons providing care to adolescents should develop an awareness of the health issues facing them [6].

To meet adolescent's needs for reproductive health in particular, information and services should be available for adolescents to help them understand their sexuality and protect them from unwanted pregnancies, sexually transmitted diseases and subsequent risk of infertility [7].

Among the sources of information about reproductive health is family. Many adolescents feel uncomfortable to discuss reproductive health issues with parents. Conversations between parents and adolescents about reproductive health issues are rarely occurred due to of many barriers including shame, gender difference, religious beliefs, traditional norms, customs, and strong belief of parents that reproductive health discussion with adolescents encourages sexual experimentation. In addition to, lack of knowledge, lake of communication skills, embarrassment of adolescents and parents when discussing about sexual topics, parents and adolescents misperceptions about discussion for sexual activities and reproductive health [8].

Communication between parents and adolescents regarding sexual and reproductive health issues is difficult and facing challenges and barriers for both parents and adolescents. These barriers can prevent communication between parents and their adolescents regarding sexual and reproductive health issues, which leads to exposure of the adolescents to high-risk behaviors such as unwanted pregnancies, early marriage, and sexual transmitted diseases [8, 9].

The community health nurse goes hand in hand to help people prevent communication barriers between parents and adolescents. They play an integral role in providing reproductive health care services, and information. The community health nurse must be prepared to look at the whole picture;

parents and adolescents. The nurse act can contribute in prevention and management of communication barriers between parents and adolescents regarding reproductive health by multifaceted role as a care provider, educator, counselor, manager, collaborator, leader and researcher [10].

Aim of the study

This study aimed to identify communication barriers with parents regarding reproductive health issues from the adolescents' perspectives in Alexandria.

Research question:

What are the communication barriers with parents regarding reproductive health issues from the adolescents' perspectives in Alexandria?

Subjects and Method

Study design:

A descriptive design was adopted to carry out the study.

Setting:

This study was conducted in 8 youth centers in Alexandria. By using the equal allocation method, one youth center from each zone was selected randomly to be included.

Subjects:

450 adolescents attending the previously mentioned youth centers has been selected to participate in the study, with inclusion criteria, age group 10-19 years for both sexes.

Sampling technique:

By using the proportional allocation method, the adolescents were selected randomly from each selected youth center

Zone	The randomly selected youth center	Total number of adolescents attendees	Selected sample of adolescents
East	Smoha	4500	$(4500 \times 450) \div 10301 =$ **197**
El-Montazah	El-Amrawi	200	$(200 \times 450) \div 10301 =$ **9**
Middle	El-shlalat	1611	$(1611 \times 450) \div 10301 =$ **70**
West	El-Qabari	108	$(108 \times 450) \div 10301 =$ **5**
El-Ajmi	El-dkhila	94	$(94 \times 450) \div$ **1**$0301 =$ **4**
EL-Ameriya	EL-Ameriya	210	$(210 \times 450) \div 10301 =$ **9**
Borg El Arab	Borg El Arab	1500	$(1500 \times 450) \div 10301 =$ **66**
Elgomrok	Anfushi	2068	$(2068 \times 450) \div 10301 =$ **90**
Total	**8**	**10301**	**450**

Sample size:

The sample size was estimate using Epi info 7 statistical program using the following parameters; total population (all adolescents attending in the previously mentioned youth centers in the academic year 2020-2021) 10301 adolescents, prevalence of problem 50%, confidence level 97%, and margin of error 5%. The sample size estimated to be 450 adolescents.

Tools of the study: In order to collect the necessary data for the study, three tools were used:

Tool I: Parents and Adolescents' Socio Demographic Characteristics Structured Interview Schedule.

It was developed by the researchers after reviewing the recent literatures to collect the required data. It included the following parts:

PartI: Socio-demographic characteristics of the parents. It contains the following parent's age, the level of parents' education, parents' occupation, marital status of parents and family income sufficiency.

PartII: Socio demographic characteristics of the adolescents. It includes age, sex, birth order, educational level, place of residence, number of rooms, number of family members, and scholastic achievement.

Tool II: Reproductive Health Knowledge of Adolescents and Communication with parents concerning Reproductive Health Issues Structured Interview Schedule.

It was developed by the researchers after reviewing the recent literature[9, 12-15] to collect the required data. It included the following parts:

Part I: This part was used to assess knowledge of adolescents regarding reproductive health. It included 34 questions about, reproductive health (7 questions), sexual transmitted diseases (3 questions), family planning and contraceptive methods (6 questions), violence against women (6 questions), and female genital cutting (4 questions), infertility (4 questions), and early marriage (4 questions).

Part II: This part was used to assess knowledge of adolescents regarding changes during puberty. It included 18 questions about, the anatomical and physiological characteristics of the reproductive system for both male and female (parts and functions of reproductive system), changes during puberty (physical, behavioral and reproductive changes), in addition to menstruation period (age, manifestation, duration and menstrual hygiene practices).

Part III: Communication experience with parents; this part was used to assess importance of communication

between adolescents and their parents. It included 6 questions about importance of communication with parents about reproductive health, adolescents' preference to discuss reproductive health issues, frequency of communication on the major elements of reproductive health issues, topics of communication with parents about reproductive health issues, reaction of parents when communicating about reproductive health issues.

The response for each item in part I and II was either "correct/complete", "correct/incomplete" and "incorrect or no response". A score of (2) was given to the correct/complete answer, a score of (1) was given to correct/incomplete answer and (0) given to incorrect or no response. The responses of the adolescents were scored then summed together and the total score was categorized into three levels. The score was interpreted into percentage as follows, good knowledge (score of ≥75 %), fair knowledge (score of 50 - <75 %) and poor knowledge (score of <50 %).

Tool (III): Communication barriers checklist

This tool was developed by the researchers after reviewing the recent and relevant literatures. It included the following parts:

Part (I): This part included **The Perceived Communication Barriers Checklist** which was developed by the researchers after reviewing the recent literature[18-20] to identify the communication barriers from adolescents' point of view. This part included 54 statements distributed into the following domains; Social barriers (14 items), Culture barriers (7 items), Economic barriers (1 item), Individual barriers (24 items) and Structural /Environmental barriers (8 items). The response for each statement was either disagree given a score of (0) or agree given a score of (1). The total score for each domain was generated by summing up the scores of its items, which converted into % score and was

classified into the following; many barriers (score of ≥75 %), some barriers (score of 50 - <75 %) and few barriers (score of <50 %).

Part (II): This part includes: **The Perceived Effects of Poor Communication Checklist**. It was developed by the researchers after reviewing the recent literature[18-20] to identify the effects of poor communication with parents regarding reproductive health. This part included 23 statements distributed into the following domains; Social effect (7 items), Psychological effect (9 items) and Physical effect (7 items). The response for each statement was either (disagree) or (agree). A score of zero was given to (disagree) or a score of one was given to (agree). The total score for each domain was generated by summing up the scores of its items, which converted into % score and was classified into the following; major effect (score of ≥75 %), moderate (score of 50 - <75 %) and minor effect (score of <50 %).

Methods

- The tool I, II and III were developed by the researchers after thorough reviewing of recent literatures.
- The study tools (Tool I, II and III) were revised by a jury composed of five experts in the field of community health nursing and obstetric and gynecological nursing for content validity. Recommended modifications were done accordingly.
- A pilot study was carried out on a sample of 45 adolescents who were selected from same youth center included in the original study settings namely Smouha youth center, but those adolescents were not included in the study subjects.
- Test the reliability was conducted for tool III parts I and II, Cronbach's alpha test was found as follows; Communication barriers checklist 0.882 and Effects of poor communication checklist 0.923.
- The adolescents were interviewed individually by the researchers in the

youth centers after brief explanation of the purpose of the study using the study tools I, II, and III. The interview took approximately 45-75 minutes for each adolescent.

- Data was collected during the academic year (2018-2019) over a period of 4 months; (September 2019 December 2019).

Statistical analysis:

After data were collected, they were coded and transferred into specially designed formats so as to be suitable for computer feeding. Following data entry, checking and verification processes were carried out to avoid any errors during data entry, frequency analysis, cross tabulation and manual revision were all used to detect any errors. The statistical package for social sciences (SPSS version 25) was utilized for both data presentation and statistical analysis of the results. The following statistical analysis measures were used; descriptive statistical measures,which included numbers, percentages, and averages. Statistical analysis tests,which included**:** Chi square, Fisher Exact Test, and student T test. The level of significance selected for this study was P equal to or less than 0.05.

Ethical considerations:

The adolescents were asked for an oral consent for participating in the study, they were informed that their participation is completely voluntary and assured them that the collected data will be used only for the purpose of the study. Confidentiality of data was maintained; anonymity of individual responses was guaranteed through using code numbers instead of names.

Results

Table (1)portrays the adolescents' socio-demographic data. It was found that the adolescents' age ranged from 10 to 19 years with a mean of 13.80±2.005 years and less than two thirds (61.1%) of them were males.

Furthermore, less than one quarter of them were enrolled in primary and secondary schools (21.1% and 24.9% respectively), while, more than half (54.0%) of them were in preparatory schools. Moreover, 0.7% of them had poor academic achievement and 2.7% of them were experienced previous academic failure.

Additionally, less than three quarters (74.4%) of them were living in urban areas and the majority (85.6%) of them were living with both parents.

Table (2) shows the parents' socio-demographic data. Concerning parents' marital status, the majority (85.6%) of them were married, while one tenth (10.4%) of them were divorced. On the other hand, 3.3% and 0.7% of them had either mother or father died respectively.

Furthermore, the mean age of the fathers and mothers were (48.78±5.969 years and 42.18±5.638 years respectively). Additionally, more than one quarter (29.2%) of the fathers and mothers had university education (29.2% and 26.4% respectively), while, 3.2% of the fathers compared to 75.8% of the mothers were not working. Moreover, more than one fifth (21.6%) of the adolescents reported income in sufficiency.

Table (3) shows the adolescents' knowledge about reproductive health. It was found that more than one quarter (28.0%) of the adolescents reported having knowledge about reproductive health, and their main source of knowledge were mothers (39.7%), followed by fathers (22.2%), friends (19.8%) and schools (6.3%).While, more than one third (34.1%) of the adolescents stated that internet is the main source of their knowledge about reproductive health .In spite of these different sources of knowledge, more than three quarters (79.4%) of the adolescents reported insufficiency of knowledge about reproductive health.

Table (4) shows the adolescents' level of knowledge about reproductive health. It was noticed

that less than three quarters (72%) of the adolescents had poor level of knowledge regarding the overview of reproductive health, while, more than half of them had poor level of knowledge about family planning and sexually transmitted diseases (59.8% and 56.2% respectively), and less than one third (31.3%) of them had poor level of knowledge about the violence against women. On the other hand, all of the adolescents (100%) had poor level of knowledge about female genital mutilation and infertility compared to 99.8% of the adolescents had poor level of knowledge pertaining to the early marriage.

The same table shows that, more than two thirds (67.1%) of the adolescents had poor level of knowledge concerning female reproduction, while less than two thirds of them had poor knowledge about female anatomy, puberty change and menstruation (64.4%, 56.9% and 63.8% respectively).

Additionally, more than half (56.2%) of the adolescents had poor level of knowledge regarding male reproduction, male anatomy and puberty changes.

Pertaining to the total reproductive knowledge, the vast majority (91.3%) of the adolescents had poor level of knowledge, while only 8.7% of them had fair level of knowledge about reproductive health.

Table (5) illustrates the adolescents' communication experience with their parents about reproductive health. Concerning the importance of communication about reproductive health, more than half (54.2%) of the adolescents stated that they don't know, while around 29.3% of them reported that it provides, adequate knowledge about reproduction, and more than one fifth (24.4%and 23.8%) of them stated that it reduces stress related to reproductive changes and protects against risky behaviors respectively.

Additionally, more than one quarter (29.3%) of the adolescents stated that they prefer to communicate with their mothers, followed by friends (16.4%), fathers (13.6%) and to lesser extent sisters, brothers and teachers (7.1%, 5.8% and 1.6% respectively).

Moreover, two fifths (40%) of the adolescents stated that they had communicated with their parents regarding reproductive health, either once (28.9%), twice (33.9), three times (21.7%) and only 15.6% of them declared that they communicated with their parents four times and more.

Regarding the topics discussed with the parents, more than two fifths (43.3%) of the adolescents reported family planning, followed by menstruation (39.4%), early marriage (35.6%), violence against women (34.4%) and finally sexually transmitted diseases (23.3%).

The same table shows that two fifths (40.0 %) of the adolescents reported parent's shyness, as a reaction to their communication about reproductive health, while 32.2% of the parents gave them limited or insufficient information. Moreover, 18.3% and 8.3% of the parents reacted with verbal or physical aggression respectively. On the other hand, 12.8% of the parents refer their adolescents into another person to communicate with.

Figure (1) reveals the adolescents' level of communication barriers about reproductive health.

Regarding the individual barriers, more than one third (38.9%) of the adolescents had few barriers, while, less than one quarter (23.3%) of them had many of individual barriers of communication about reproductive health.

Concerning the social barriers, less than one third (31.3%) of the adolescents had few and some barriers, while, more than one third (37.6%) of them had many social barriers of communication about reproductive health.

With respect to cultural barriers, more than one third (37.8%) of the

adolescent hadfew barriers and more than two fifths (43.8%) of them had many cultural barriers of communication about reproductive health.

The same figure shows that around two fifths (40.2%) of the adolescents had few economic barriers and the rest (59.8%) of them had many economic barriers.

In relation to environmental barriers, more than one third (37.8%) of the adolescents had few barriers, while, more than quarter (28.4%) of them had many environmental barriers.

Pertaining to the total barriers, more than one third (35.6%) of the adolescents had few barriers, and less than quarter (21.6%) of them had many barriers.

Figure (2) shows the levels of the effects of poor communication about reproductive health. It was found that less than half (45.3%) of them had major social and psychological effects, while 34.7% and 30.9% of them had minor social and psychological effects respectively. On the other hand, less than two thirds (64.2%) of the adolescents had minor physical effect, and 22.0% of them had major level of physical effects.

The same figure shows that more than one third (36.9%) of the adolescents had minor total effect of poor communication compared to 48.2% of them who had moderate effect. On the other hand, more than one tenth (14.9%) of the adolescents had major effects as a result of poor communication about reproductive health.

Table (6) shows the relation between the adolescents' basic characteristics and their knowledge. It was found that all the adolescents (100%) aged from 10 less than 12 years had poor level of knowledge compared to 62.5% adolescents aged from 18 to19 years, with a statistically significant relation between the age of adolescents and their level of knowledge (X^2=37.330, P = 0.000).

Additionally, the table shows that poor level of knowledge was higher among males (95.2%) than females (85, 1%) with a statistically significant relation between the sex of adolescents and their level of knowledge (X^2=13.864, P = 0.000).

It could be observed that all adolescents (100%) in primary education had poor level of knowledge compared to 93.0% of those in preparatory school and 80.4% of those in secondary school, with a statistically significant relation between level of education of adolescents and their level of knowledge (X^2=26.918, P = 0.000).

The table illustrates that there was statistically significant relation between birth order of adolescents and their level of knowledge (X^2=13.672, P = 0.008) as poor level of knowledge was higher among fourth child (90.9%) in comparison to the first child (60.0%).

Furthermore, poor level of knowledge was prevalent among adolescents who are resident in urban area (91.6%) than those from rural area (80.0%) or squatter (90.9%).

Additionally, all (100%) the adolescents who live with their fathers only had poor level of knowledge compared to the majority of those who live with their mothers only or with both parents (91.9% and 91.2% respectively)

It is evident from the table that all (100%) the adolescents who have poor academic achievement had poor level of knowledge compared to 91.7% of those with excellent academic performance.

Table (7) reveals relation between the adolescents' knowledge level and their families' characteristics. The table shows that all (100%) adolescents whose mothers were died and 75% of those whose fathers were died had poor knowledge level compared to 92.5% of adolescents whose parents were married.

Furthermore, poor knowledge level was more prevalent among adolescents

whose fathers aged less than 40 years (100%) compared to 92.9% of adolescents whose fathers aged 60 to 70 years old. Additionally, poor level of knowledge was more common among those adolescents whose fathers' education is university education (92.2%) compared to 75% of those adolescents with illiterate fathers.

Moreover, the father's occupation had significant impact on level of knowledge of adolescents (X^2=13.606, P= 0.000), as poor level of knowledge was higher among adolescents with working fathers (92.2%) than those with not working fathers (64.3%).

It was found that poor level of knowledge was less encountered among adolescents whose mothers aged 50 to 60 years compared to those adolescents whose mothers aged 30 to less than 40 years old. Furthermore, poor level of knowledge was lesser among adolescent whose mothers were illiterates (83.3%) compared to 91.5% of adolescents whose mother had university education. Moreover, poor level of knowledge was higher among adolescents whose mothers were house wives (92%).

The same table reveals that poor knowledge level was less encountered among those adolescents who declared having enough income (91.0%) with a statistically significant relation between sufficiency of income and their level knowledge of (X^2=4.136, P= 0.042).

Table (8) portrays relation between the adolescents' knowledge level and their perceived barriers to communication about reproductive health and effect of poor communication. There is a statistically significant relation between actual communication with parents about reproductive health and the adolescents' level of knowledge (X^2=31.462 P= 0.000) as poor level of knowledge was higher among adolescents who reported no actual communication with parents (97.4%)

than those who had communication with their parents (82.2%).

The table also shows that poor knowledge level was more encountered among adolescents with many perceived barriers (93.8%) compared to 88.1% of those who perceived few barriers.

Lastly, poor knowledge level was less present among adolescents who perceived minor effects of poor communication (88.6%) in comparison to the vast majority (97.0%) of those adolescents who perceived major effects.

Table (1): Distribution of the adolescents according to their socio demographic characteristics

Adolescents' characteristics	Total (n=450)	
	No.	%
Age (years)		
- 10-	64	14.2
- 12-	138	30.7
- 14-	158	35.1
- 16-	82	18.2
- 18-19	8	1.8
Min – Max 10- 19 Mean ± SD 13.80 ±2.005		
Sex		
- Males	275	61.1
- Females	175	38.9
Level of education		
- Primary	95	21.1
- Preparatory	243	54.0
- Secondary	112	24.9
Birth order		
- First	10	2.2
- Second	89	19.8
- Third	176	39.1
- Fourth and more	175	38.9
Place of residence		
- Urban	335	74.4
- Rural	5	1.1
- Squatter	110	24.4
With whom the student live		
- Both parents	385	85.6
- Mother only	62	13.8
- Father only	3	0.7
Academic achievement		
- Poor	3	0.7
- Fair	23	5.1
- Good	37	8.2
- Very good	109	24.2
- Excellent	278	61.8
- **Previous academic failure**		
- No	438	97.3
- Yes	12	2.7

Table (2): Distribution of the adolescents' according to their parents 'characteristics

Parents' characteristics	Total n=450	
	No.	%
Parents' marital status		
- Married (living together)	385	85.6
- Divorced	47	10.4
- Father died	15	3.3
- Mother died	3	0.7
Fathers' age (years)	**N= 435**	
- 30-	7	1.6
- 40-	189	43.4
- 50-	225	51.7
- 60-70	14	3.2
Min – Max 30-68 Mean ± SD 48.78 ±5.969		
Fathers' education	**N= 435**	
- Illiterate	15	3.4
- Read and write	37	8.5
- Basic education	51	11.7
- Secondary / technical education	205	47.1
- University education	127	29.2
Fathers' occupation	**N= 435**	
- Working	421	96.8
- Not working / on retirement	14	3.2
Mothers' age (years)	**N=447**	
- 30-	149	33.3
- 40-	271	60.6
- 50-60	27	6.0
Min – Max 30-60 Mean ± SD 42.18 ±5.638		
Mothers' education	**N=447**	
- Illiterate	30	6.7
- Read and write	57	12.8
- Basic education	53	11.9
- Secondary / technical education	189	42.3
- University education	118	26.4
Mothers' occupation		
- Working	108	24.2
- Housewife / on retirement	339	75.8
Sufficiency of income		
- Not enough	97	21.6
- Enough	345	76.7
- Don't know	8	1.8

Table (3): Distribution of the adolescents according to their knowledge about reproductive health

Items	Total (n=450)	
	No.	%
Have knowledge about reproductive health		
- No	324	72.0
- Yes	126	28.0
Source of knowledge about reproductive health#	**N= 126**	
- Mother	50	39.7
- Internet	43	34.1
- Father	28	22.2
- Friends	25	19.8
- Sisters/brothers	17	13.5
- Schools	8	6.3
- Relatives	5	4.0
- Neighbors	3	2.4
Sufficiency of knowledge about reproductive health	**N= 126**	
- No	100	79.4
- Yes	26	20.6

Multiple answers were allowed

Table (4): Distribution of the studied adolescents according to their levels of knowledge about reproductive health

Items	Levels of Reproductive Knowledge					
	Poor		Fair		Good	
	No.	%	No.	%	No.	%
▪ Overview about reproductive health	324	72.0	111	24.7	15	3.3
▪ Family planning	269	59.8	158	35.1	23	5.1
▪ Violence against women	141	31.3	207	46.0	102	22.7
▪ Sexually transmitted diseases	253	56.2	0	0.0	197	43.8
▪ Female genital mutilation	450	100.0	0	0.0	0	0.0
▪ Infertility	450	100.0	0	0.0	0	0.0
▪ Early marriage	449	99.8	1	0.2	0	0.0
▪ Female reproduction	302	67.1	99	22.0	49	10.9
▪ Female anatomy	290	64.4	141	31.3	19	4.2
▪ Female puberty changes	256	56.9	7	1.6	187	41.6
▪ Female menstruation	287	63.8	6	1.3	157	34.9
▪ Male reproduction	253	56.2	134	29.8	63	14.0
▪ Male anatomy	253	56.2	155	34.4	42	9.3
▪ Male puberty changes	253	56.2	1	0.2	196	43.6
▪ **Total Reproductive Knowledge**	411	91.3	39	8.7	0	0.0

Table (5): Distribution of the adolescents according to their communication experiences with their parents about reproductive health

Items	Total n=450	
	No.	%
Importance of communication about reproductive health#		
- Don't know	224	54.2
- Provide adequate knowledge about reproduction	132	29.3
- Reduce stress related to reproductive changes	110	24.4
- Protect against risky behaviors	107	23.8
With whom do you prefer to communicate#		
- Don't know	227	50.4
- Mother	132	29.3
- Friend	74	16.4
- Father	61	13.6
- Sister	32	7.1
- Brother	26	5.8
- Teacher	7	1.6
Have you ever communicated with your parents regarding reproductive health		
- No	270	60.0
- Yes	180	40.0
Numbers of communication session with parents	**N= 180**	
- Once	52	28.9
- Twice	61	33.9
- Three times	39	21.7
- Four times and more	28	15.6
Topics discussed with the parents#		
- Family planning	78	43.3
- Menstruation	71	39.4
- Early marriage	64	35.6
- Violence against women	62	34.4
- Sexually transmitted diseases	43	23.3
Parents' reaction to communication about reproductive health#		
- Shyness	72	40.0
- Give limited /insufficient information	58	32.2
- Aggressive (verbal)	33	18.3
- Refer me to another person	23	12.8
- Aggressive (physically)	15	8.3

Multiple answers were allowed

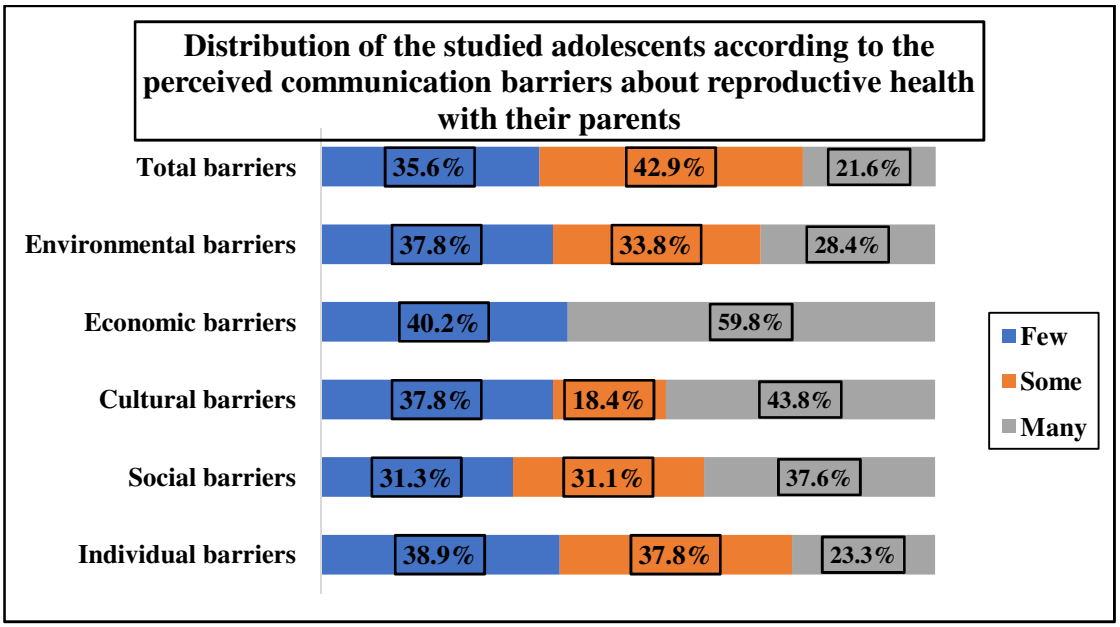

Figure (1): Distribution of the studied adolescents according to the perceived communication barriers about reproductive health with their parents

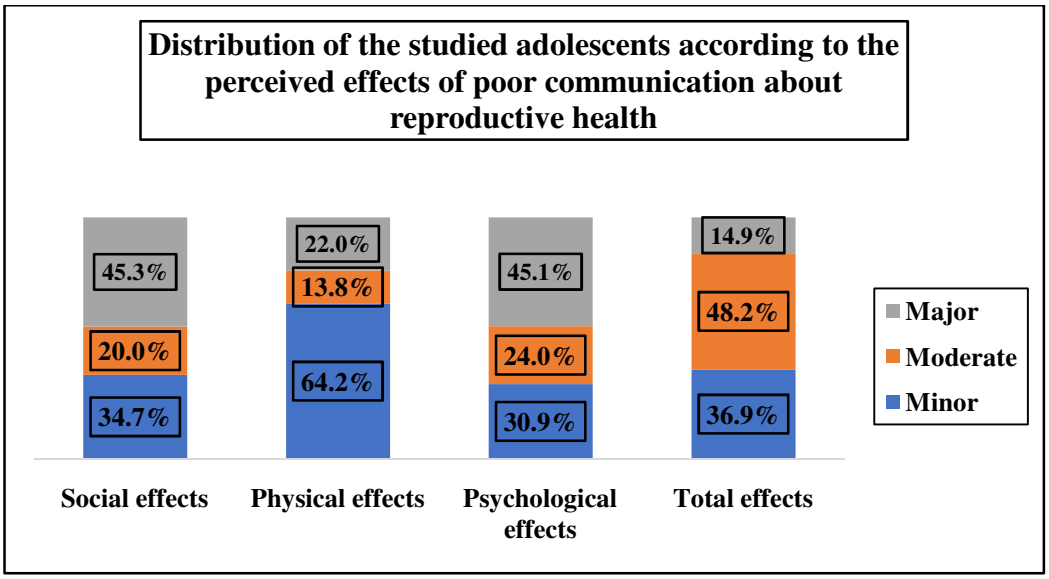

Figure (2): Distribution of the studied adolescents according to the perceived effects of poor communication about reproductive health

Table (6): Relation between the adolescents' basic characteristics and their knowledge level:

Characteristics	Knowledge level				Total n=450		Test of significance
	Poor (n=411)		Fair (n=39)				
	No.	%	No.	%	No.	%	
Students' age							
- 10-	64	100.0	0	0.0	64	14.2	X^2= 37.330
- 12-	135	97.8	3	2.2	138	30.7	P=0.000*
- 14-	142	89.9	16	10.1	158	35.1	
- 16-	65	79.3	17	20.7	82	18.2	
- 18-19	5	62.5	3	37.5	8	1.8	
Students' sex							
- Male	262	95.2	13	4.7	275	61.1	X^2= 13.864
- Female	149	85.1	26	14.9	175	38.9	P=0.000*
Level of education							
- Primary	95	100.0	0	0.0	95	21.1	X^2= 26.918
- Preparatory	226	93.0	17	7.0	243	54.0	P=0.000*
- Secondary	90	80.4	22	19.6	112	24.9	
Birth order							
- First	6	60.0	4	40.0	10	2.2	X^2= 13.672
- Second	82	92.1	7	7.9	89	19.8	P=0.008*
- Third	164	93.2	12	6.8	176	39.1	
- Fourth and more	159	90.9	16	9.1	175	38.9	
Place of residence							
- Urban	307	91.6	28	8.4	335	74.4	X^2= 0.877
- Rural	4	80.0	1	20.0	5	1.1	P=0.645
- Squatter	100	90.9	10	9.1	110	24.4	
With whom the student live							
- Both parents	351	91.2	34	8.8	385	85.6	X^2= 0.326
- Mother only	57	91.9	5	8.1	62	13.8	P=0.849
- Father only	3	100.0	0	0.0	3	0.7	
Academic achievement							
- Poor	3	100.0	0	0.0	3	0.7	X^2= 4.947
- Fair	22	95.7	1	4.3	23	5.1	P=0.293
- Good	36	97.3	1	2.7	37	8.2	
- Very good	95	87.2	14	12.8	109	24.2	
- Excellent	255	91.7	23	8.3	278	61.8	

X^2 Chi Square Test *Statistically significant at $p \leq 0.05$

Table (7): Relation between the adolescents' knowledge level and their families' characteristics:

Characteristics	Knowledge level				Total n=450		Test of significance
	Poor (n=411)		Fair (n=39)				
	No.	%	No.	%	No.	%	
Parents' marital status							
- Married	356	92.5	29	7.5	385	85.6	X^2= 5.647
- Divorced	40	85.1	7	14.9	47	10.4	P=0.130
- Father died	12	75.0	3	25.0	15	3.3	
- Mother died	3	100.0	0	0.0	3	0.7	
Fathers' age	**n= 397**		**n= 38**		**n= 435**		
- 30-	7	100.0	0	0.0	7	1.6	X^2= 0.833
- 40-	173	91.5	16	8.5	189	43.4	P=0.842
- 50-	204	90.7	21	9.3	225	51.7	
- 60-70	13	92.9	1	7.1	14	3.2	
Fathers' education							
- Illiterate	12	75.0	3	25.0	15	3.4	X^2= 2.575
- Read and write	34	91.9	3	8.1	37	8.5	P=0.631
- Basic education	47	92.2	4	7.8	51	11.7	
- Secondary education	187	91.2	18	8.8	205	47.1	
- University education	117	92.2	10	7.9	127	29.2	
Fathers' occupation							
- Working	388	92.2	33	7.8	421	96.8	X^2= 13.206
- Not working	9	64.3	5	35.7	14	3.2	P=0.000*
Mothers' age	**n= 408**		**n=39**		**n= 447**		
- 30-	136	91.3	13	8.7	149	33.3	X^2= 1.383
- 40-	249	91.9	22	8.1	271	60.6	P=0.501
- 50- 60	23	85.2	4	14.8	27	6.0	
Mothers' education							
- Illiterate	25	83.3	5	16.7	30	6.7	X^2= 4.741
- Read and write	53	93.0	4	7.0	57	12.8	P=0.315
- Basic education	46	86.8	7	13.2	53	11.9	
- Secondary education	176	93.1	13	6.9	189	42.3	
- University education	108	91.5	10	8.5	118	26.4	
Mothers' occupation							
- Working	96	88.9	12	11.1	108	24.2	X^2= 1.018
- Not working	312	92.0	27	8.0	339	75.8	P=0.313
Sufficiency of income	**n= 411**		**n=39**		**n= 450**		
- Not enough	89	91.8	8	8.2	97	21.6	X^2= 4.136
- Enough	314	91.0	31	9.0	345	76.7	P=0.042*
- Don't know	8	100.0	0	0.0	8	1.8	

X^2 Chi Square Test *Statistically significant at $p \leq 0.05$

Table (8): Relation between the adolescents' knowledge level and their perceived barriers to communication about reproductive health and effect of poor communication

Characteristics	Knowledge level				Total n=450		Test of significance
	Poor (n=411)		Fair (n=39)				
	No.	%	No.	%	No.	%	
Actual communication with parents about reproductive health							
- No	263	97.4	7	2.6	270	60.0	X^2= 31.462
- Yes	148	82.2	32	17.8	180	40.0	P=0.000*
Perceived barriers to communication with parents							
- Few	141	88.1	19	11.9	160	35.6	X^2= 3.322
- Some	179	92.7	14	7.3	193	42.9	P=0.190
- Many	91	93.8	6	6.2	97	21.6	
Perceived effects of poor communication with parents							
- Minor	147	88.6	19	11.4	166	36.9	X^2= 4.389
- Moderate	199	91.7	18	8.3	217	48.2	P=0.111
- Major	65	97.0	2	3.0	67	14.9	

X^2 Chi Square Test *Statistically significant at $p \leq 0.05$

Discussion

The adolescence is a period of preparation for adulthood. During this time several key developmental tasks are undertaken including physical, psychological and sexual maturation. Behavior patterns established during this process, including practicing risky behaviors especially those related to reproductive health and sexuality; that can have a long-lasting negative impact on future health and wellbeing. As a result, it is a must to help adolescents to establish healthy behaviors [(11)].

Adolescents are inherently different from adults and therefore have different needs especially those related to their growth and development, which requires counseling and teaching approaches and takes more time; they tend to be less well informed and therefore require more information. Conflicts between culture, parental or care providers expectations and the adolescents' emerging values

present serious challenges for them; and they are in a transitional state and are not sure where they fit in [11]. These could explain the results of the present study, where the vast majority of the studied adolescents had poor level of knowledge regarding reproductive health. In the same line the findings reported by Kyilleh et al. (2018) [7] in the study about reproductive health knowledge among adolescents.

Debates are still going on about who should and to what extent educates adolescents about sexual and reproductive matters. In the current study, it was found that parents, internet, friends and school personnel including teachers and school health nurses are the main sources of knowledge about reproductive health. Similar findings were reported by Othman et al. (2020) [12] and Deshmukh et al. (2020) [13] who found that teachers, mass media, and friends were found to be the most common sources of information regarding these matters, in addition to parents and siblings. This finding highlights the important role played by parents, teachers, mass media, friends and all related parties in imparting information regarding reproductive health matters.

Parents often have the power to inform, teach, educate, orient, and guide their children towards health and healthy behaviors. In the same context, the current study found that less than half of the studied adolescents declared the importance of communication with their parents about reproductive health as it helps to reduce stress associated with reproductive changes and reduce engagement in risk taking behaviors. These results are consistent with the findings of Bhatta et al. (2021) [14], in a study of the parents and adolescents' communication about sexual and reproductive health, who found that around two thirds of adolescents perceived the importance of parents-adolescents communication on sexual and reproductive issues and viewed it as a mean by which parents teach and

transfer their personal values, belief and expectation to their children.

Despite the importance of parents – adolescents communication about reproductive health stated by the studied adolescents in the current study, it was found that only two fifths of them have already communicated with their parents about reproductive health issues and this communication was once or twice. Similar findings were reported by Febriana et al. (2020) [15] who conducted a study about the parents- adolescents communication about sexual and reproductive health and the study showed that more than half of the adolescents were exposed to sex education from parents. These findings could be explained as many of the typical changes that occur during adolescence tend to interfere with the effectiveness and amount of interaction between parents and adolescents. Although adults have much more experience in life than the adolescent, the adolescents are usually not aware of this fact or do not believe it; therefore, the advice, wisdom, and directions of parents are often not valued.

In reproductive education, it is now more crucial for parents to open the door for discussion of all aspects of human sexuality and reproductive health issues as well as to have complete and accurate information for their children and adolescents. The current study indicated that family planning, menstruation, early marriage, violence against women and sexually transmitted diseases were the topics that discussed with parents. This data is quite similar to the findings of Manu et al. (2015) [16] which depicted that sexual abstinence, changes during puberty and HIV/AIDS were the most commonly discussed sexual topics between parents and adolescents. The inadequate topics and low frequency of parents- adolescents communication about reproductive health in the current study could attributed to communication discomfort and feeling of shyness experienced by parents in

talking about reproductive health that can prevent effective communication from occurring, which was mentioned by less than half of the studied adolescents in the current study. This finding is in the same line with a study done by Ayalew et al. (2014) [17] about parents - adolescents communication about sexual and reproductive health issues among high school students, who stated that the reason for not discussing sexual and reproductive health with parent was shyness and embarrassment of parents besides limited information of them.

Adolescence is a critical stage for risk-taking behaviors because they are moving toward independence and tend to experiment and test limits, including practicing risky behaviors. They are easily influenced by others especially if they do not have answers of their inquiries about different health issues Habte et al.(2019) [3]. Parents and other family members usually play a central role in shaping youth's knowledge, values and attitudes, including those related to sexual and reproductive health. The current study found that more than one tenth of the studied adolescents viewed that poor communication with parents regarding reproductive health had major effects whether social, psychological or physical effects and around half of them found it had moderate effects. This is true as humans rely heavily on learning for development. Because humans are not born knowing how to think and behave, they have to learn from the environment they are growing up; this learning starts with the family at home. In the same line, the results of Kusheta et al. (2019) [4] in a study of the parents and adolescents' communication about sexual and reproductive health, who found that around one quarter of adolescents declared the importance of parents-adolescents communication on sexual and reproductive issues and mentioned that it is paramount to reduce sexual health problems and other risky behaviors.

Parents-adolescents communication is an appealing source for influencing adolescents' knowledge, attitudes and behavior, because parents are an accessible and often willing source of information for them. Conversations between parents and adolescents about their sexuality in particular are often difficult for both parents and adolescents Yohannes (2015) [18].

In the current study, more than half of the adolescents mentioned that the economic barriers prevent communication between parents and adolescents about reproductive health. The possible explanation is that the parents are involved at work; this makes them fail or sometimes have less time to communicate with their adolescents as they are too busy with their daily activities. It is important that parents accept the responsibility to guide their adolescents as they confront the challenges of growing up, and to find ways of doing so, including providing reading material they approve, and checking with them to make sure they understand what they read. This finding is similar to a study conducted by Abdalah et al. (2017) [19] about barriers to parents-adolescents communication on sexual and reproductive health issues who found that among the main barriers of parents-adolescents communication is that the parents of the studied subjects were employed and busy with tight working schedule and had a little time to communicate with their adolescents.

It is worth noting the role of traditional norms, customs and beliefs in shaping the behaviors, attitude of the people. In this study, more than two fifths of adolescents mentioned that cultural barriers prevent communication between adolescents and their parents about reproductive health. This finding could be attributed to the traditional norms and cultural taboos that prevent talking about sexuality and reproductive health with children and adolescents, it is viewed inappropriate for their age, which depends on parental perceptions of their child's

readiness or maturity. The assumption that their adolescents would have heard about these issues elsewhere, that discussions of reproductive health should be restricted to married people. Moreover, it is not only prohibited by the parents' culture taboos, society also finds it to be an abomination for parents to talk about these issues with their adolescents as the discussion will be about sexuality. In the same line, the results of Mullis et al. (2020) [20] in a study about barriers to parents-adolescents communication on sexual and reproductive health issues. The results revealed that traditional norms prohibit parents and other health professionals to talk about the issues of sexuality to youths.

Social barriers are among the greatest barriers to parents- adolescents communication regarding reproductive health. The current study found that more than half of the adolescents stated that social barriers prevent communication between them and their parents about reproductive health. Moreover, when communication takes place, it tends to be gender based as parents prefer to talk or discuss with children of the same gender as themselves. Mothers prefer to talk with daughters and fathers prefer to talk with their sons. This result was agreed with the study conducted by Masood et al. (2017) [11] about young adult knowledge about sexual and reproductive health which found that adolescent girls found it difficult to talk with their fathers about reproductive health and they feel ashamed during communication with their fathers.

With respect to the individual barriers of parents-adolescents communication regarding reproductive health, the current study found that two fifths of the studied adolescents mentioned that feeling embarrassed of parents during actual discussion of reproductive health issues with them. In the Arabic countries, where cultural taboos are covering any conversation concerning sexuality or reproductive issues, makes

adolescents embarrassed to ask or to discuss such topics. In addition to, lack of communication skills of adolescents makes them not able to discuss openly with their parent about sexual and reproductive health issues. Another explanation may be the fear of adolescents to engage in such communication with their parents which may bring them in troubles, blame and punishment which was portrayed in the current study findings where more than one quarter of the parents reacted in an aggressive way either physical or verbally against their adolescents upon starting a conversation regarding reproductive health. These results are consistent with those of Othman et al. (2020)[12]who conducted a study about parents-adolescent communication on sexuality and reproductive health and showed that the majority of adolescents were shy, embarrassed and lacked confidence during communication with parents about reproductive health issue.

Environmental barriers have a great impact on the communication between parents and their adolescents about reproductive health issues. Among them, the home environment including the physical and social environment. In this study, more than half of the adolescents mentioned that environmental barriers prevent communication between them and their parents. The influence of the family environment on adolescent's health is acknowledged. It has been documented the influential role of home environment, family stability, love, security and support given to the adolescents and their health status Bhatta et al. (2021) [14]. For instance, closer parent-adolescent relationships and greater parental support and monitoring have been shown across multiple contexts to reduce adolescents' engagement in risk behaviors. In the same context, the current study found that all adolescents with dead mothers had poor knowledge, moreover, the majority of

adolescents with divorced parents had poor knowledge regarding different reproductive health issues. This finding comes in line with those of Mmari et al. (2016)[21] in a study done on adolescents' sexual experiences within families who found that the major factor identified by participants was environmental factor including overcrowded families and unstable family lead to difficulty in talking freely about sexuality issues.

Over the years, researchers have identified several factors that affect the children and adolescents' knowledge regarding reproductive health. Results of the present study shed light on set of factors including adolescents' age, sex, level of education, birth order, and income sufficiency. In addition to the communication with their parents regarding reproductive health issues and perceived barriers towards it.

Regarding the adolescents' age, the current study found that poor knowledge level was more encountered among those aged from ten to less than twelve years old. This could be explained as those younger adolescents may have less access to information, feel shy to ask about such sensitive topic. In addition, the school curriculum provides some basic information about the anatomy of the reproductive system which is not enough for them. This explanation was approved in the current study findings where poor knowledge level was more encountered among adolescents in the primary level in comparison to those in preparatory and secondary schools. These results are consistent with Yohannes(2015) [18] who found that adolescents who enrolled in primary schools had poor level of knowledge because schools did not orient them about reproductive health issues.

In the current study, it was found that the adolescents' sex has a great effect on their knowledge level about reproductive health, where females had better knowledge level than males regarding reproductive health issues. This could be attributed to the nature

of the girls as they stay more times at home with their mothers who are the primary educators for them regarding reproductive health issues preparing them for their future motherhood roles. Furthermore, the male adolescents spend more times outdoor with their peers and on internet which may expose them to wrong and distorted information. This finding is supported by the results of Kyilleh et al. (2018) [7] in their study about adolescents' reproductive health knowledge, choices and factors affecting reproductive health choices. They found that males had poorer knowledge about reproductive health as their main source of information was peer groups that provide them with inaccurate information.

Concerning the adolescents' birth order, the results of the current study showed that the first-born child had better knowledge regarding reproductive health. This could be attributed to those parents may give greater attention, care and time to the first-born child than the later born child. The parents try their best to equip him/her with the needed knowledge and skills in order to be good man/woman in the future including reproductive health issues. Another explanation is that with the growing number of children within the family, the parents may work extra time in order to fulfill the needs of their children, give them extra money and little time, which may be portrayed in poor communication pattern with them regarding sensitive topic like reproductive health. This later explanation was proved in the current study findings, where poor knowledge level was more encountered among adolescents with working fathers, those who reported income insufficiency and those who declared that they did not communicate with their parents about reproductive health. These findings are consistent by the results of a study conducted by Habte et al. (2019) [3] about parents-adolescents communication on sexual

and reproductive health matters and associated factors among secondary and preparatory school students, which found that the first child had good knowledge about certain topics related to reproductive health than other children.

Conclusion

Based on the results of the current study, it can be concluded that the vast majority of the studied adolescents had poor level of knowledge about reproductive health issue. In addition, less than two thirds of the studied adolescents did not communicate with their parents about reproductive health issues.Moreover, more than two fifths of them had perceived some barriers, and less than quarter of them had perceived many barriers with the communication with their parents about reproductive and sexual health. It is apparent from the study that, less than half of the studied adolescents had major social and psychological effects and less than one quarter of them had major physical effects of poor communication.

Recommendations

In the light of the findings of the present study, the following recommendations are proposed:

- Incorporate reproductive health and sexuality education into school curriculums, to in order to provide reliable, valid information matched with the students' age and grade level.
- Strengthen the role of the school health nurses with respect to teaching and counseling the students regarding reproductive health issues.
- Develop awareness raising campaigns through primary health care services targeting adolescents and their parents to enhance their knowledge about different reproductive health and sexuality issues.
- Promote the services provided to adolescents through youth friendly clinics to address the

adolescents' reproductive needs.

- Reach out to a larger number of adolescents particularly in places which young people used to attend frequently such as youth centers, sporting clubs, churches and mosques.
- Maintain positive parenting controlling practices, responsive parenting style and mutual communication between parents and their adolescents.

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Effect of Isometric Handgrip Strengthening Exercise on Blood Pressure among Hypertensive Patients

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Abstract

Hypertension (HTN) is a major risk factor contributing to cardiovascular disease, which is the main cause of death world wide. Isometric handgrip strength(HGS) exercise, a non-pharmacological lifestyle modification, has been recommended as a first-line treatment for hypertension. This study **aimed** to examine the effect of isometric handgrip strengthening exercise on blood pressure among hypertensive patients. **Subjects**: a quasi-experimental research design was conducted on sixty medicated hypertensive patients and divided attentively into two equal groups. Control group which, exposed to routine hospital care only. While study group was followed the isometric handgrip strength exercise program. Two tools were used for collecting data **Tool I** Patients' Assessment Interview Schedule and **Tool II** International Physical Activity Questionnaire-Long Form (IPAQ-LF).**Results:** there was a statistically significant reduction in systolic blood pressure between the study group with Mean ± SD (111.50±7.23 mmHg) and control group (126.16±7.32 mmHg) after 10 weeks of an exercise program with statistical significance between both groups at PV = ٠.00٠. There was a significant reduction in diastolic blood pressure between the study group with Mean ± SD (71.33±5.58mmHg) and control group (79.50±7.37 mmHg) with statistically significant between both groups after 10 weeks of exercise programPV = ٠.00٠. **Conclusion:** isometric handgrip exercise significantly reduced the SBP and DBP within 10 weeks of the study duration &therefore, the prescription of isometric handgrip exercise in addition to other lifestyle modifications should be encouraged for the hypertensive patient

Keywords:Isometric Exercise, Handgrip Strength, Hypertension

Introduction

Hypertension is considered a significant public health problem worldwide because of its high frequency and concomitant risk for morbidities[1]**.** It is a major risk factor for cardiovascular disease that affects 1·3 billion people and accounts for 17·9 million deaths worldwide annually. Most deaths from hypertension (around 75%) were in low-income and middle-income countries [2]. Hypertension is defined as having a systolic blood pressure (SBP) of 140 mmHg or more, and diastolic blood pressure (DBP) of 90 mmHg or more [3].

Hypertension is closely related to behavioral risk factors such as unbalanced diet, excess weight, alcohol use, tobacco consumption, physical inactivity, persistent exposure to tension or stress, as well as the presence of diabetes mellitus and high cholesterol levels. The prevention and management of hypertension include early detection and pharmacological Management and minimizing behavioral risk factors[4,5].

According to the American Heart Association,regular exercise is significant modifiable management of hypertensionand is recognized as a cornerstone therapy for the primary prevention, treatment, and control of high blood pressure. Regular aerobic exercise lowers resting systolic blood pressure by 5-7 mmHg on average, while resistance training exercise lowers resting systolic blood pressure by 2-3 mmHg in those with hypertension[6]. Exercise can be broadly categorized in two ways: dynamic (isotonic) or static (isometric) and within each of these categories, dependent on either aerobic or anaerobic metabolism. The dynamic exercise involves repetition of low-resistance motion and performance of external work, examples include running, walking, swimming, cycling and aerobic dancing. While static exercise involves sustained contraction

of skeletal muscles against fixed resistance and does not involve movement of the joints no external work is performed,examples include handgrip exercise[7].

Recently, adherence to recommended exercise criteria is generally poor worldwide, so isometric handgrip training has gained attention as there is some evidence about its BP-lowering effect [5].Handgrip training is simple to use (i.e., it can be done at any time and in any location), inexpensive, and thus accessible to the global population. It may be preferred by people who dislike physical activity, and it could be a valuable new therapeutic adjunct in the overall approach to treating hypertension. [8,9].

Isometric handgrip training improves endothelial dysfunction by shear-stress mediated improved bioavailability of nitric oxide and increased antioxidant activity, additionally exercise training has been shown that there is a decrease in muscle sympathetic nerve activity, increases cardiovascular capacity and decreases myocardial oxygen demand. [10,11].

Nurses play a vital role in isometric handgrip training programs. through the following preparation. 1.) Tell the patient to refrain from any strenuous physical activity and caffeine for two hours before the session. 2.) Maintain a well-ventilated environment. 3.) Before each testing session, tell the patient to empty their bladder to help them relax. 3.) Teach them how to use a handgrip dynamometer and how many sessions they should do every week. 4.) Before and after each session, take your blood pressure and heart rate. 5.) Learn how to take your blood pressure at home using the proper technique. Today the roles of nurses and nurse practitioners (NPs) in hypertension management involve all aspects of care, including detection, referral, and follow-up[12,13].

Significant of the study

The study was designed to help hypertension patients by lowering resting systolic blood pressure (SBP)

and diastolic blood pressure(DBP) after 10 weeks of isometric handgrip training (IHT). As a result, isometric handgrip training could serve as a prophylactic strategy for people at risk of hypertension and a non-pharmacologicaltherapeutic alternative for those who already have it.

Aim of the Study

Examine the effect of isometric handgrip strengthening exercise on blood pressure among hypertensive patients.

Research Hypothesis

Post implementation of isometric handgrip strengthening exercise program the hypertensive patients exhibited improve in the arterial blood pressure.

Subjects and Method

Research Design:

A quasi-experimental research design was utilized to achieve the study.

Setting:

The present study was conducted at the medical outpatient clinics of the Main Alexandria University Hospital at Alexandria.

Subjects:

A convenience sampling of 60 medicated hypertensive patients admitted to the above-mentioned setting. The study sample was randomly assigned and divided attentively into twoequal groups. The control group comprised of30 patients and was exposed to routine hospital care only. The study group comprised of 30 patients and they were followed the isometric handgrip strength exercise program.

The study sample was estimated based on the Epi-info -7 program using the following parameters

1- Population size: 150 patients
2- Expected frequency: 50%
3- Acceptable error: 10%
4- Confidence coefficient: 95%
5- Minimum sample size: 60

Inclusion criteria

Patients were considered eligible to participate in the study if they met the following criteria

1. Age group from 18 ≥ 60 years old.
2. The patient confirmed a diagnosis of hypertension.
3. Able to communicate verbally, and able to follow the instructions.

Exclusion criteria

- Class II, III, or IV heart failure;
- Recent cardiovascular event (last 3 months);
- Upper limp orthopedic limitations
- Physical or mental limitation that impedes the performance of physical exercises
- Carpal tunnel syndrome.

Tools:

Two tools were used by the researchers to collect the necessary data based on the review of relevant literature [8,9].

Tool I Patients' Assessment Interview Schedule:

This tool was developed by the researchers after reviewing related literature[4,5] to evaluate patient's health status. It consisted of two parts as the following:

Part I:Patients'Socio-demographic Characteristics: This part of the tool included age,gender, educational level, marital status, area of residence, and occupation.

Part II:Patients' Clinical Data: it wasincluded anthropometric measurements, body mass index. history of smoking, type of used medicationseither the prescribed and over-the-counter drugs (OTC), history of chronic diseases, family history of cardiovascular diseases and hypertension, how the disease was discovered, and disease duration.

Tool II International Physical Activity Questionnaire-long Form (IPAQ-LF). This tool was adopted by the researchersfromSebastiao et al.(2012)[14]. It consisted of three domains include job-related physical activity, transportation physical activity, housework, house maintenance, and caring for family, recreation, sport, and leisure-time

physical activity and time spent sitting. The total score of physical activity level was categorized as low, moderate, or high as follow:

Scoring System:

Category I.

(Lowphysical activity PA)

- Individuals who do not meet the criteria for category II and III.

Category II.

(Moderate physical activity PA)

- Three or more days of vigorous-intensity activity of at least 20 minutes per day.
- Five or more days of moderate-intensity activity or walking of at least 30 minutes per day.
- Five or more days of any combination of walking, moderate or vigorous-intensity activities achieving a minimum total PA of at least 10 hours/week.

Category III.

(High physical activity PA)

- Vigorous-intensity activity on at least 3 days achieving a minimum total physical activity (PA) of at least 25 hours/week, 7 or more than days of any combination of walking, moderate; or vigorous-intensity activities achieving a minimum total PA of at least 50 hours/week.

Method

The study was accomplished as follows:

Ethical and legal Considerations

- Written informed consent was obtained from every patient to participate in the study
- Confidentiality of patients' data was assured.
- The anonymity and privacy of the study participants were respected.
- The patients were informed that their participation was voluntary and they have the right to withdraw from the study at any time.

Written approvals:

- Written approval to carry out the study was obtained from the Ethical

Research Committee of the Faculty of Nursing, Alexandria University. Also, an official letter was submitted from the Faculty of Nursing, Alexandria University, to the director of the Medical Outpatient Clinic of the Main Alexandria University Hospital at Alexandria and to the director of nursing to obtain their approval for conducting the study, after explanation of the aim of the study.

Development of the study tools

- **Tool I** Patients' Assessment Interview Schedule was developed by the researchers based on the review of the recent relevant literature[8,9]. In addition, **Tool II**: International Physical Activity Questionnaire-long Form (IPAQ-LF) was adopted by the researchers from Sebastiao et al. (2012)[13].

Content validity

All tools were revised for content validity by panel of five experts in the field of Medical-Surgical Nursing, to test its contents validity, completeness, clarity of its items, and appropriateness of translations. Every jury member was informed about the aim and method of the study. Comments and suggestions of the jury were considered and the tool was modified accordingly

Reliability

The reliability of developed tool Iwas tested by using the Cronbach's Alpha Statistical Test. The tool proved to be internally reliable, with a Cronbach's Alpha Test at 0.913. The adopted tool II was tested by using the Cronbach's Alpha Statistical Test. The tool proved to be internally reliable, with a Cronbach's Alpha Test at 0.942.

Pilot study

A pilot study was carried out on 10% of the total studied subjects with hypertension to ascertain the clarity, feasibility, and applicability of the developed tools, then the necessary modifications were done. Patients included in the pilot study were excluded from the total number of study subjects.

Data collection

- Data collection was started after securing the administrative approval.
- The data were collected during patients' follow-up by researchers from each patient using the individualized interview.
- After explaining the purpose of the study by the researchers, the interview session for each subject was required approximately 30 to 45 minutes on an individual session.
- The data were collected throughout a period of 6 months from the beginning of August 2020 tothe beginning of January 2021. The purpose of the study was explained by the researchers to each patient.

The study was carried out in fourphases.

Phase I: Preparation Phase

- The researcher started by introducing herself to the patients and built therapeutic communication with patients to get cooperation after explaining the purpose of the study
- Instruct the patient to avoid vigorous physical activity and caffeine for 2 hours before the session
- Participants voided their bladder before each testing session for relaxation
- Patient weight and height were measured to calculate body mass index
- Pre-exercise blood pressure was monitored through the ambulatory blood pressure monitoring (ABPM) method.

Phase II:planning phase

- The final drafts of the developed tools were used to collect data to achieve the objective of this study
- After signing the informed consent, the patient was answered a questionnaire about the habitual level of physical activity & socio-

demographic and clinical data

- The isometric exercise sessions were performed on five consecutive days of the week for 10 weeks (session duration 15 minutes/session). The patient had their seated resting heart rate (HR) and BP measured after five minutes of rest. They were then required to perform an isometric handgrip contraction with one hand for 45 seconds at 30% of maximal voluntary contraction. A period of one minute followed this to act as a rest period. An isometric contraction using the other hand was then performed (at 30% maximal voluntary contraction) for 45-seconds. A one-minute rest period followed, and this procedure was repeated, resulting in four isometric contractions held for 45-seconds (two contractions per hand). This made the total duration of exercise 180-seconds (three minutes) per session. Five sessions made the total exercise duration of the treatment group for the entire study 15-minutes.

Phase III: Implementation

First session

- Patient interview occurred in a quiet, ventilated, temperature room
- The patient had their seated resting heart rate (HR) and BP measured after five minutes of rest. They were then required to perform an isometric handgrip contraction with one hand for 45 seconds at 30% of maximal voluntary contraction. A period of one minute followed this to act as a rest period. An isometric contraction using the other hand was then performed (at 30% maximal voluntary contraction) for 45-seconds. A one-minute rest period followed, and this procedure was repeated, resulting in four isometric contractions held for 45-seconds (two contractions per hand). This made the total duration

of exercise 180-seconds (three minutes) per session.

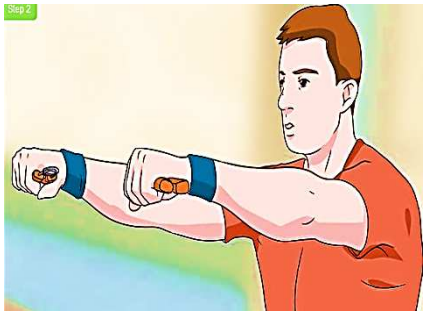
- The dynamometer was adjusted to participants' hands' size until the second joint of the index finger was at a 90-degree angle to the handle. The placements of the handle were marked for each hand at the same time. Participants stood straight with the feet hip apart and arms fully extended alongside the thigh with palms facing the thigh. The hand, which was in line with the wrist and forearm, performed a quick, maximally hard squeeze of the handle.

Figure (1) Illustrates the DigitalDynamometer; Handgrip Strength[15]

- **Second, Third, Fourth, and Fifth** sessions per week are the same procedure as the first session & made the total exercise duration of the treatment group for the entire study 15-minutes.
- Digital and manual dynamometer used in the study

Manual Handgrip Exercise Technique

1- Start with a lower amount of resistance first, then, work way up to more resistance.



Hold the grip in the right hand, then squeeze

2- Squeeze the hand exerciser fully with the arm straight.

- Do not twist the arm or body when squeeze the exerciser. Keep the arm straight, with the arm raised at the side.
- Do this exercise by standing with the legs slightly apart or sitting down with the feet on the floor.
- May find doing this exercise in front of a mirror can be helpful to ensure that the form is correct.

Hold for at least five seconds, then release.

3. Repeat for at least 2 minutes, then rest for 1 minute.

4. Shift to the left hand and repeat the squeeze-and-hold pattern.
5. Do this for at least two minutes.
6. Continue with the process, until four complete sets are performed for each hand for a total of 15 minutes of squeezing.
7. As the exercise becomes much easier, try holding the contractions for at least a few seconds more on each hand until strength is build up.

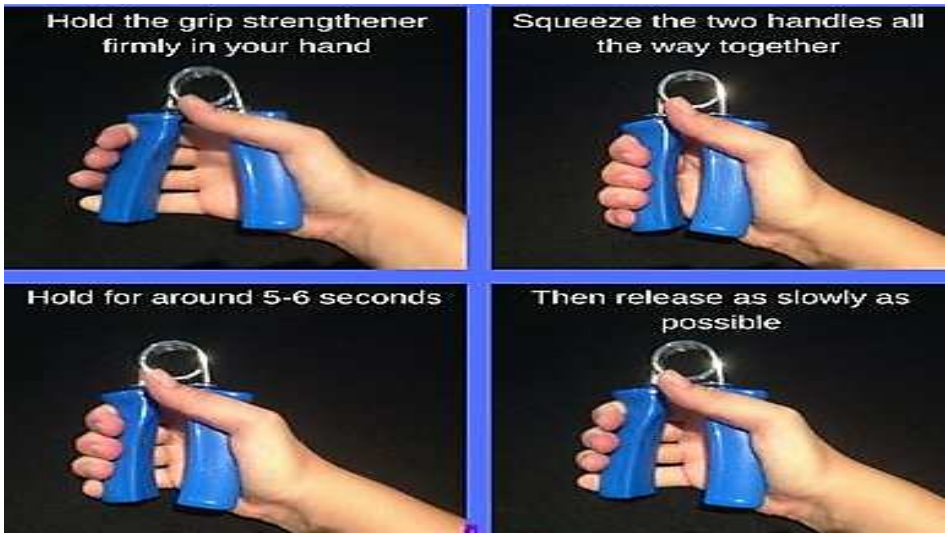


Figure (2) illustrates the Handgrip Exercise Technique.[16]

Phase IV: Evaluation phase

- Blood pressure BP measurements were recorded immediately before the first 45 seconds contraction, and immediately after the fourth 45 seconds contraction. This indicated the acute response to the treatment. After sitting for three minutes, HR and BP were measured again.

Statistical Analysis

Data were computerized and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using numbers and percent. Quantitative data were described using range (minimum and maximum), mean, and standard deviation. The significance of the obtained results was accepted at the 5% level.

The tests used were

Chi-square testfor categorical variables, to compare between different groups

Fisher's exactcorrection for chi-square when more than 20% of the cells have expected count less than 5

Student t-testfor normally distributed quantitative variables, to compare between two studied groups

ANOVA with repeated measures: For normally distributed quantitative variables, to compare between more than two periods or stages.

Results

Table (1) Illustrate the frequency distribution of the study and control groups according to their socio-demographic characteristics.

Regarding **gender**, it was noticed that the majority of both study and control groups (73.3%- 60.0%) respectively were female. In relation to age around half (50%) of the study group and (40%) of the control group were between age (40<50years old). Regarding education, it was observed that around half (53.3%) of the study group and the majority of the control group (73.3%) had a secondary degree of education. Concerning their marital

status, the majority of both the study and control group (83.3%-80.0%) respectively were married, regarding occupation it was noticed that (43.3%) of the study group and (33.3%) of the control group had officer work. Concerning the area of residence, the majority of both the study and control group (86.7%-93.3%)were from the urban areas.

Table (2) Illustrate the frequency distribution of the study and control groups according to their clinical data.

Regarding medical history,it was noticed that around two-fifth of the study group (40.0%) and (43.3%) of the control group had diabetes mellitus. Concerning the duration of disease (40.0%) of the study group diagnosed with hypertension from 3<5 years while about half of the control group diagnosed with hypertension from1<3 years, the majority of both study and control group (90.0%-93.3%)respectively discovered hypertension by suffering from symptoms, the majority of both study and control group (80.0%-83.3%) do not have a family history of hypertension and don't smoke. Regarding BMI more than two-thirds of both the study and control group were overweight.

Table (3) Illustrate the frequency distribution of the study and control groups according to their level of physical activity.

Regarding Job-related physical activity, it was noticed that more than two-thirds of both the study and control group (60.0%,66.7%) respectively had a moderate level of job-related physical activity, around half of the study group (50.0%)had a moderate level of housework, house maintenance, and caring for family-related physical activity while (63.3%) of the control group had a low level, also about (60.0%) of the study group had a moderate level of time spent related physical activity while half (50.0%) of the control group had a low level. Concerning Transportation

physical activity (63.3%) of the study group had a low level, while (76.7%) of the control group had a moderate level. Regarding recreation, sport, and leisure-time physical activity (60.0%, 63.3%) of both the study and control group had a moderate level. regarding the total physical activity, there's no statistically significance between study and control group P (1.000).

Table (4) Illustrates a comparison between study and control groups regarding systolic blood pressure pre and post isometric exercise it was noticed that the difference in systolic blood pressure reduction between the studygroup with Mean ± SD (111.50±7.23 mmHg) and control group (126.16±7.32 mmHg) after 10 weeks of an exercise program with statistically significant between both groups P (0.000*). This table also, showed that highly statistically significant within the study group pre and post-exercise program P (0.000*). It is noteworthy to report that the study group had a greater reduction in blood pressure reading.

Table (5) Illustrated a Comparison between study and control groups regarding Diastolic blood pressure pre and post-isometric exercise.

It was noticed that the difference in diastolic blood pressure reduction between the studygroup with Mean ± SD (71.33±5.58 mmHg) and control group (79.50±7.37 mmHg) with statistically significant between both groups after 10 weeks of exercise program P (0.000*). This table also showed that highly statistically significant within the study group pre and post-exercise program P (0.000*). It is noteworthy to report that the study group had a greater reduction in diastolic blood pressure reading.

Table (1)Frequencydistribution of the study and control groups according to their Socio-demographic characteristics.

Socio-demographic Characteristics	Study group		Control group	
	No.	%	No.	%
Age in years:				
• 20<30	2	6.7		
• 30<40	5	16.7	6	20.0
• 40<50	15	50.0	12	40.0
• 50≤60	8	26.7	12	40.0
Mean ± SD	2.96±.850		3.20±.761	
(P-value)t=-1.286 (P=٠.267)				
Gender:				
• Female	22	73.3	18	60.0
• Male	8	26.7	12	40.0
Level of education:				
• Illiterate	4	13.3	2	6.7
• Read & write	4	13.3		
• preparatory	2	6.7	4	13.3
• Secondary	16	53.4	22	73.3
• University Education	4	13.3	2	6.7
Marital status				
• Married	25	83.3	24	80.0
• Divorced	1	3.3		
• Widowed	3	10.0	4	13.3
• Single	1	3.3	2	6.7
Occupation				
• Officer	13	43.3	10	33.3
• Manual work	5	16.7	9	30.0
• Housewife	7	23.3	8	26.7
• Technical work	5	16.7	3	10.0
Residence area				
• Rural	4	13.3	2	6.7
• Urban	26	86.7	28	93.3

n = number of studied patients

Table (2) Frequency distribution of the study and control groups according to their clinical data.

Clinical Data	Study group		Control group	
	No.	%	No.	%
Medical History for chronic disease				
• Cardiovascular diseases	5	16.7	12	40.0
• Kidney diseases	8	26.6	2	6.7
• Diabetes mellitus	12	40.0	13	43.3
• Others - **Hepatitis C**	5	16.7	3	10.0
Disease duration				
• From 6 months to <1 year			3	10.0
• 1<3 years	8	26.7	15	50.0
• From 3<5 years	12	40.0	5	16.7
• >5 years	10	33.3	7	23.3
Disease discovery				
• Discovered by periodic check-up			1	3.3
• Discovered by suffering from symptoms	27	90.0	28	93.3
• Accidental discovered	3	10.0	1	3.3
Smoking:				
• Yes	6	20.0%	4	13.3
• No	24	80.0	26	86.7
Family history of hypertension				
• Yes	6	20.0	5	16.7
• No	24	80.0	25	83.3
Body Mass Index kg/m^2				
• Normal weight	9	30.0	7	23.3
• Over weight	19	63.3	19	63.3
• Obese	2	6.7	4	13.3
Handgrip strength in k/g	28.76 ±6.18		28.80±7.05	
Mean ± SD				

n = number of studied nursing students

Table (3) Frequency distribution of the study and control groups according to their level of physical activity

Physical Activity	Study group		Control group	
	No.	%	No.	%
Job-related physical activity				
• Low	8	26.7	7	23.3
• Moderate	18	60.0	20	66.7
• High	4	13.3	3	10.0
Housework, house maintenance, and caring for family				
• Low	6	20.0	7	23.3
• Moderate	15	50.0	19	63.3
• High	9	30.0	4	13.3
Time spent sitting				
• Low	7	23.3	15	50.0
• Moderate	18	60.0	9	30.0
• High	5	16.7	6	20.0
Transportation physical activity				
• Low	19	63.3	5	16.7
• Moderate	9	30.0	23	76.7
• High	2	6.7	2	6.7
Recreation, sport, and leisure-time physical activity				
• Low	5	16.7	5	16.7
• Moderate	18	60.0	19	63.3
• High	7	23.3	6	20.0
Total physical activity	9.40 ±1.56		9.40± 1.24	
(P-value) t (55.244) P(1.000)				

n = number of studied nursing students

t: Independent sample T-test

Table (4) Comparison between study and control groups regarding systolic blood pressure pre and post isometric exercise.

Blood pressure parameter	Study group (n=30)		Control group (n=30)		Test of sig.	
	Pre	post	pre	post	p_1	p_2
	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.		
Systolic blood pressure (SBP)	125.80±6.39 mmHg	111.50±7.23 mmHg	122.86±8.32 mmHg	126.16±7.32 mmHg	0.131	٠.00٠*
Significance test Within group P_3	t(7.982) P (0.000*)		t (-2.159) P (0.039)			

n = number of studied patients

*: Statistically significant at p ⩽ 0.05

p_1: p-value comparing between study and control group pre (Independent Samples T-test)

p_2: p-value comparing between study and control group post. (Independent Samples T-test)

p_3: p-value comparing within-group pre and post (paired sample test)

Table (5) Comparison between the study and control groups regarding diastolic blood pressure pre and post-isometricexercise.

Blood Pressure Parameter	Study group (n=30)		Control group (n=30)		Test of sig.	
	pre	post	pre	post	p_1	p_2
	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.		
Diastolic blood pressure	79.83±7.69	71.33±5.58	78.16±7.66	79.50±7.37	0.4٠4	0.000*
Significance test Within group P_3	t (5.498) P (0.000*)		t (-1.356) p (0.185)			

n = number of studied patients

* Statistically significant at p ⩽ 0.05

P_1- p-value comparing between study and control group pre (Independent Samples t-test)

P_2- p-value comparing between study and control group post. (Independent Samples t-test)

P_3- p-value comparing within-group pre and post (paired sample test)

Discussion

Every year, millions of people die from cardiovascular disease around the world. Heart attack, heart failure, and stroke are all consequences of cardiovascular disease(CVD). High cholesterol, a sedentary lifestyle, elevated blood pressure (BP), and high triglyceride levels are all known risk factors for CVD. Hypertension has a significant impact on public health[17].

Aerobic exercise is recommended as a non-pharmacological intervention to lower BP. However, aerobic exercise may not be medically appropriate for

all patients who are with elevated BP, and many individuals do not engage in the recommended amounts of regular aerobic exercise. Handgrip exercise has also been shown to lower BP, suggesting this could be an alternative option to aerobic exercise. In the limited amount of research on handgrip exercise and BP with individuals who have hypertension, researchers have found that reductions in BP were comparable to more intense aerobic activity. However, more studies need to be conducted with individuals with prehypertension and hypertension[7,10].

In this study, there was a statistical significant decrease in the mean value of SBP & DBP in both groupsin response to five consecutive days of the isometric training program for 10 weeks. There were no significant associations between total physical activity and blood pressure in both groups.

The result of the present study noticed a positive and significant reduction in systolic blood pressure between the studygroup with Mean ± SD (111.50±7.23 mmHg) and control group (126.16±7.32 mmHg) with statistically significant between both group pre and post after 10 weeks of an exercise program P (0.000*). In my opinion, this might be due to that the handgrip exercise program can be performed anywhere, at home, at the work during free time or even whilst reading or studying. Hence IHT is a very convenient type of exercise for busy patients who very often fail to show compliance to dynamic aerobic or resistance exercises.

This result comes in line with **Hanfy et al.(2019)**[18] who conduct the effect of isometric handgrip on blood pressure in post-menopausal hypertension, and who found that a simple program of isometric exercise, in bouts of 20minutes undertaken four times a week, with a weekly exercise time of 1hour, can reduce systolic blood pressure by about 10mmHg and diastolic blood pressure by about

7mmHg. These are very substantial reductions, comparable with those achieved with a single pharmacological agent and substantially more than the 3mmHg or reduction resulting from regular handgrip exercise. The greater reductions in resting blood pressure for isometric exercise compared with other modes of exercise suggest that there might be a more powerful effect on resting blood pressure **Dong et al.(2019)** and**Manimala et al.(2015)**[19,20].

However, this result agreed with those of **Devereux et al.(2015)**[21]who found that 4 weeks of isometric exercise training induced changes in immediate post-exercise blood pressure and index of baroreflex sensitivity responses. Furthermore, these altered immediate responses were associated with training-induced reductions in resting blood pressure. This is the first suggestion that very short term (immediate) cardiovascular responses following isometric exercise may be important in defining chronic reductions in resting SBP following a period of isometric exercise, on the other hand,this result contradicted with **Pagonas et al.(2017)**[22]whoconduct a study about Aerobic versus isometric handgrip exercise in hypertension: A randomized controlled trial.Their results indicated that isometric handgrip training, performed according to a typical protocol, did not reduce BP in hypertensive patients.

Regarding DBP, the result of the present study noticed a positiveand significant reduction in diastolic blood pressure between the studygroup with Mean ± SD (71.33±5.58 mmHg) and the control group (79.50±7.37 mmHg) with statistically significant between both groups after 10 weeks of exercise program P (0.000*). Possible mechanisms for these effects include improvements in conduit and resistance due to vessel endothelium-dependent dilation, oxidative stress, and autonomic regulation of heart rate

and BP as a result of regular isometric handgrip training **Garg et al.(2014)**[23]. This result agreed with those **Jørgensen et al.(2018)**[24]who found that isometric handgrip training has been considered a promising intervention to reduce cardiovascular risk in adults, given the positive effects on cardiovascular variables. The meta-analytical study showed a reduction in systolic blood pressure of 5mmHg in hypertensive. Another advantage of the handgrip exercise is the easy implementation that allows it to be carried anywhere, including at home**Farah et al.(2018)**[25].

Finally, isometric handgrip training exercise has emerged as an alternative exercise modality to reduce BP and serve as a prophylactic intervention for those at risk of developing hypertension. Its use has been supported by different meta-analyses and was recently included in important scientific statements as a promising useful tool in the management of BP**Cornelissen (2013)** and**Cahu Rodrigues et al. (2020)**[26,27].

Conclusion

Based on the result of the current study it can be concluded thatisometric handgrip exercise significantly reduced the SBP and DBP within 10 weeks of the study duration andtherefore, the prescription of isometric handgrip exercise inaddition to other lifestyle modifications should be encouraged for the hypertensive patient.

Recommendations

Based on the findings of the present study were as the following

- Replication of the same study on a larger sample of patients with hypertension at different geographical areas for evidence of the results and generalization
- Develop and implement health teaching programs to improve patients' knowledge regarding hypertension disease and its treatment.

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Effect of Management Program on Nurse Interns' Awareness and Use of Professional Nursing Values Dimensions at Intensive Care Units

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Abstract

Background: Professional values are the primary standards that any profession must have.It is compulsory for the NIs to have knowledge and awareness concerning professional values as standards to provide safe and high-quality ethical care. Lack of knowledge regarding the importance of professional values makes it harder for the nurses to take decisions in case of any ethical issue.**Aim:**The aim of the study was to identify effect of management program on NIs awareness and use of professional nursing value dimension at intensive care units. **Subjects and Method:** All (n=160) NIs making their internship at chest, cardiology, neonatal and neurology ICU. They (40) were from each ICU under study.**Setting:** The study was conducted in four ICUs of Tanta University Main Hospitals at neonates, cardiology, chest and neurology. **Tool:** Three tools were used; (1) NIsawareness about professional nursing value scale (2) NIs knowledge questionnaire (3) NIs use of professional nursing values dimensions (practice). **Result:**Preprogram range (72.5%-63.13%) of NIs showed high level of caring, justice, activism, professionalisms and trust dimensions of professional value, changed post program to rang (95.63%-91.25%) were at high level for all dimensions of professional value awareness. only (15%) of NIs had good level of total knowledge, while 28.1% had fair levels and 56.9% had poor levelPreprogram. But the majority (82.5%) of NIs got good level of total knowledge about professional nursing value post program. NIs 55% had unsatisfactory use of professional nursing value preprogram, changed to be the majority (91.25%) of them had satisfactory use of professional value post program. **Conclusion:** The NIs of ICUs at Tanta University Main Hospitals demanding for management program to develop their awareness, knowledge, practice and use of professional nursing value dimensions. **Recommendation:** Conducting pre-employment educational training workshops for NIs pre internship year.

***Key words*:** Awareness, Intensive care units, NIs, Professional nursing value.

Introduction

The NIs required utilizing the necessary clinical practical experience to consolidate professional nursing knowledge and skills in providing quality nursing care to patients with a variety of health problems. Nursing internship period act as guide for the NIs during their training, in different clinical area rotation. They became more oriented about objectives for each unit, policies, rules, clinical forms and care procedures of each specific unit. That clinical training provides opportunity for the nursing interns in their last year to reinforce and integrate skills and theoretical knowledge. [(1)]They practice what have been learned in the classroom, guide experience with gradual increase in the responsibility to make the newly graduate to be a self-assured practitioner. Beside the unique opportunity for professional and personal development, gain a greater understanding of the organization requirements, test career choices, and develop important hands-on workplace skills.[(2)]

During the internship period, newly graduated nurses encounter many distressing events, including extra loads of work and responsibility, the fear of doing mistakes, clinical skills deficits, inconsistent preceptors, having to cope with patient's deaths and working in ICUs.[(3,4)] Stressors within an ICU environment produce pressure for the NIs to perform tasks and skills within a certain period of time. These pressures can promote negative feelings alter NIs abilities to perform adequately and can result in negative perceptions of patient care. To overcome the difficulty that faces NIs at ICUs and be more self-confident, they must have values. [(5)]

Value is the motive power behind purposeful action, it have personal and professional types. Personal values are values internalized from the society or culture in which one lives. While professional are values acquired during socialization into nursing from codes of ethics, nursing experiences, teachers, and peers. [(6)]

Professionalnurses values provide the framework for commitment to patient welfare, fundamental to professional nursing practice and critical decision making processes. Professional code of ethics is largely designed to protect patient and provide a framework for helping nurse interns and others evaluate ethical issues.The Code makes it clear that inherent in nursing is respect for human rights, including the right to life, to dignity

and to be treated with respect. The International Council of Nurses (ICN) Code of Ethics guides nurses in everyday choices and it supports their refusal to participate in activities that conflict with caring and healing. (7)

The common professional nursing values dimensions include caring, activism, trust, professionalism and justice. Caring is a fundamental function of nurse in which concern for the growth and well-being of patients is expressed. Activism is the efforts to promote, and direct social, political, economic, environmental change, or stasis. Trust is confidence in a person integrity and ability, appreciations of the other, and independent existence. Professionalism means behaving in an ethical manner and fulfilling one's responsibilities in all situations with appropriate behavior, attitudes and communication. Justice consider individuals' dignity and respect in addition to equal access to health services and the right of being fairly treated and cared regardless economic, social, and cultural status.(8)

The acquirement of these values help NIs to adhere to nursing's standards in today's complex healthcare environment. NIs awareness of professional values and the influence of these values on their behavior are considered essential part of nursing care. The use of professional values in nursing practice helps to increase the quality of patients care, as well as increase nursing satisfaction, retention and commitment to the organization. (9)

Aim of study

Identify effect of management program on NIs awareness and use of professional nursing value dimensions at ICUs.

Research hypothesis

Levels of NIs awareness and use of professional nursing values dimensions in ICU training area are expected to beimproving post management program.

Subjects and Method

Study design:

Quasi-experimental research design was used to achieve the aim of present research for estimating the effect of management program by pre-posttest to assume the actual change of nurse intern awarenessand use of professional nursing values dimensions at ICU. A quasi-experiment design used to estimate the causal impact of an intervention without random assignment (10).

Setting:

The study was conducted in four ICUs of Tanta University Main Hospitals at Neonates, Cardiology, Chest and Neurology. The capacity of Tanta

University Main Hospitals contain (103) beds. Neurology (17) beds, cardiology (22), chest (8) beds, and neonates (20) incubators.

Subject:

The study subjects consisted of all (160) NIs making their internship at Chest, Cardiology, Neonatal and Neurology ICU. They (40) were from each ICU under study

Tool:

To achieve the aim of the study three tools used.

Tool INIs awareness about Professional nursing Value scale.

This tool developed by researcher guided by Mohamed, and Mohamed (2018)[11] and Abou Ramadan and EL-demerdash (2017)[9] and related literature [12-19] to assess level of NIs awareness about professional nursing values. It was consist of three parts

Part (1) Socio-demographic characteristics e.g. age, gender, grade, marital status and department

Part (2)Professional Nursing Value Scale- Revised.

This part used to assess NIs awareness of professional nursing values consisted of 64 items divided into five dimensions as follows

- **Caring** dimension consist of 32 sub items related to
  - Maintain confidentiality of patient (1-8)
  - Safeguard patient's right to privacy (9-16)
  - Protect moral and legal rights of patient's (17-24)
  - Protect health and patient safety (25-32)
- **Activism** dimension consisted of 8 sub items n (33-40)
- **Professionalism** dimension consisted of 8 sub items n (41-48)
- **Trust** dimension consisted of 8 sub items (49- 56)
- **Justice** dimension consisted of 8 sub items (57-64)

Scoring system

NIs responses measured on five points LikertScale(Strongly agree – strongly disagree)

Level of NIs**awareness**

- High awareness >75%
- Moderate awareness 75-50%
- Low awareness <50

Part (3) Professional nursing values importance.

This part used to assess importance of professional nursing values among NIs. Importance of professional nursing value assessed for the five dimensions listed before in part (2) including caring, activism, professionalism, trust and justice.

Scoring system

Responses measured on five point likert scale (most important – least important)

Level of NIs importance

- High important75%
- Moderate important75-60%
- Low important<60%

Tool (II)NIs knowledge questionnaire

This tool designed by researcher according to NIs level of awareness and guided by Al-Banna, (2017)[6], Fomani and Golpira, (2016)[20] and relevant literature to test NIs knowledge about professional nursing value, and include questions on the following items

- Aspect about professional nursing values and factor affecting NIs clinical practice at ICU consists of 10 questions
- Code of ethics and dimensions of professional nursing value consists of 10 questions
- Dimensions of caring, trust and justice consists of 10 questions
- Dimensions of professionalism and activism consists of 10 questions

Scoring system

Knowledge measured as (1) for correct answer and (zero) for incorrect answer.

Level of NIs knowledge

- Good level of knowledge >75%
- Fair level of knowledge =75-60%
- Poor level of knowledge <60%

Tool (III)NIs use of professional nursing values dimensions (practice)

This tool developed by researcher and include 10 situations demonstrate the use of the five dimensions of professional nursing values for dealing with difficult situations at ICU

- Caring dimension questions
- Activism dimension questions
- Professionalism dimension questions
- Trust dimension questions
- Justice dimension questions

Levels of NIs use of nursing value dimensions

- Satisfactory use>75%
- Un satisfactory use < 75%

Method

Official permission was obtained from the faculty of nursing Tanta university to manager of each unite under study to obtain their cooperation to explain the purpose and conduct the study. Ethical considerationLegal consent of NIs was obtained to participate in the study after explanation of the study purpose, also NIs were informed about the privacy of information, confidentiality of data and their right to withdraw is reserved.

Tool (I) was submitted to jury of five experts to check content validity and clarity of its items. The five experts were from Tanta University Faculty of nursing,

one professor, and two assist professors from administration department and two assist professors from psychiatric department.

The expert relevancies were represented in four points rating score range from (4-1). Necessary modifications were done, included clarification, and translated tool into Arabic. The content validity was 97% for NIs awareness about professional nursing value scale.

A pilot study was carried out on a sample of 16 NIs randomly selected to test the tool clarity and applicability from each ICU under study. They were from outside the sample.

- Reliability of tool one was tested using Cronbach Alpha coefficient test. Its value (0.95).

Data collection phase: The researcher distributed awareness and important sheet regards professional nursing values to NIs, then sheet collected personally by the researcher after completion.

NIs knowledge assessed by tool (II).This tool was used pre and post implementation of the program.

NIs use of professional nursing values assessed by tool (III).

Professional nursing values program was designed and implemented by the researcher in duration 6 months (start from October until end of March at their ICU doctor rooms or conference room of Tanta Main University Hospital.

Preparation phase:

At the end of the program the NIs should be aware about professional nursing values and use of its dimensions for dealing with issue of ICU practice area.

Specific objectives

At the end the program the NIs should understand and use the following:

- Professional nursing value an difficulties affecting inter clinical practice
- Nursing code of ethics
- Dimensions of nursing values
- Use of professional nursing values
- Importance of NIs using of nursing value dimension in clinical ears

Content

Program content was designed to improve NIs awareness, important and knowledge about professional nursing value and use of professional nursing values dimensions through six sessions as follows

- Session (1) information about aspect of professional nursing values and difficulties affecting intern's clinical practice at ICU.
- Session(2) nursing code of ethics.
- Session (3) importance of using caring, trust and justice dimensions.

- Session (4) importance of using professionalism and activism dimensions
- Session(5) and (6) situation from practical area to train NIs about use of professional nursing value dimensions

Learning strategies

Appropriate learning strategies were used as power point, group discussion, lecture, hand out and example from clinical practice area.

Teaching aides

Include data show, flow sheet, hand out, pen and papers

Implementation of the program:

The study was carried on (160 NIs) divided into ten groups. The educational program time was six hours for six sessions for each group. Every session (1 hour) the theoretical and practical parts of the program were conducted for NIs at their ICU work place. They prefer to start at 11 am 1pm after finishing first necessary work. The NIs informed about objectives of program.

Statistical analysis:

Statistical presentation and analysis of the present study was conducted, using the mean, standard Deviation, unpaired student t-test, chi-square and Linear Correlation Coefficient [r].

Results

Table (1) revealed socio –demographic characteristics data of NIs include age, gender, grade, department and marital status. NIs 51.25% aged 20-< 24 years and 40% aged 24-<28 years with mean 22.38±1.28. Majority 71.2% of NIs was female and 70% of them were single and 30% were married.

Figure (1) Shows NIs levels of total levels of professional nursing value awareness pre and post program. Preprogram two third of NIs had high level of awareness about professional nursing values which improved post program to majority of them had high level of professional nursing value awareness.

Table (2) Represent levels of NIs total awareness of professional nursing values dimensions. The table illustrates statistical significant improvement of NIs awareness post than preprogram for all professional value dimensions ($p<0.001$). Preprogram range (72.5%-63.13%) of NIs showed high level of caring, justice, activism, professionalisms and trust dimensions of professional value respectively. While also rang (22.5%-17.5%) of NIs were at moderate level respectively for trust, activism, professionalism, justice and caring dimension of professional value. But post program rang (95.63%-91.25%)

were at high level for all dimension of professional value awareness. Only few (3.75%-1.25%) still at low level of professional value awareness.

Figure (2) Shows level of nurse intern's NIs total importance of professional nursing value pre and post program. Preprogram more than half of NIs had high level of importance of professional nursing value, changed to be the majority of them had to high level of importance post program.

Table (3) Levels of NIs total importance of professional nursing dimensions. The table illustrates highly statistical significant improvement of NIs total importance of professional nursing dimensions for all dimension post program ($p<0.001$). Caring dimension showed that 62.5 of NIs had high importance of professional nursing value preprogram, changed to majority 93.8% at high level post program. Also activism dimension showed that 64.4% of NIs have high importance of professional nursing value preprogram changed that 91.1% were at high level post program. Professionalism, trust and justice dimension showed 66.9 %-64.4%-62.5% respectively of NIs have high importance of professional nursing value preprogram improved to be 95%-92.5%-91.3% were at high level post program.

Table (4) Difference between mean scores ranking of awareness and importance pre and post program.Preprogram the first rank of awareness and importance of professional values identified by NIs was justice pre and post program. While the least awareness and importance values reported were professionalism preprogram. Also the least awareness and importance value reported were activism.

Figure (3) Shows level of NIs total knowledge about professional nurse value pre and post program. Preprogram more than half of NIs showed poor level of total knowledge, changed to the majority of them had good level of total knowledge about professional nursing value post program.

Figure (4) Shows level of NIs total practice of professional nursing value pre and post program. Preprogram more than half of NIs total practice of professional nursing value was unsatisfactory. Post program the majority improved to satisfactory practice.

Table (5) levels of NIs total practice of professional nursingvalue pre and post program. This table showed highly statistical significant improvements of NIs total practice for professional nursing

value post than preprogram (p<0.001). Preprogram NIs 55% had unsatisfactory use of professional nursing value, changed to be the majority (91.25%) of them had satisfactory use of professional value post program.

Figure (5) Shows correlation between NIs total knowledge with total practice of professional nursing value pre and post. There was statistical significant positive correlation between NIs total knowledge and total practice of professional nursing value both preprogram and post program at (p<0.001).

Table (1) Socio -demographic characteristics data (n=160)

Variables	The studied nurse interns	
	No	%
Age(years)		
-20-< 24	82	51.25
-24-< 28	64	40
-28-	14	8.75
Range	20-28	
Mean±SD	22.38±1.28	
Gender		
Female	114	71.2
Male	46	28.8
achievement (bachelor degree)		
Department		
Chest	40	25
Cardiology	40	25
Neurology	40	25
Neonatal	40	25
Marital status		
Single	112	70
Married	48	30

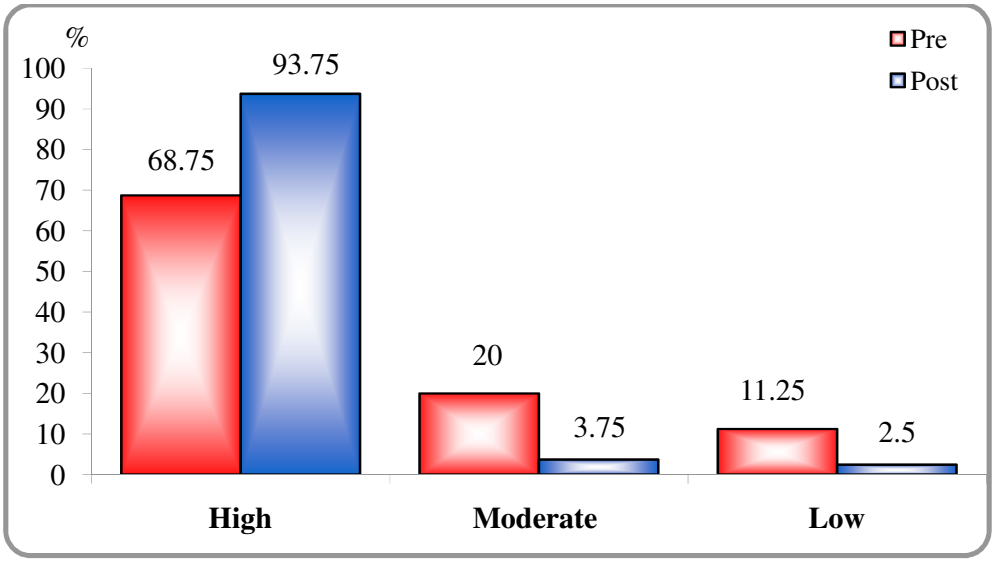

Figure (1) NIs levels of total professional nursing value awareness pre and post program n=160

Table (2) Levels of NIs total awareness of professional nursing values dimensions (n=160)

Professional value dimension		High (≥75%)		Moderate (60-75%)		Low (<60%)		Chi-square	
		N	%	N	%	N	%	X^2	P-value
Caring	**Pre**	116	72.5	28	17.5	16	10	31.984	<0.001*
	Post	153	95.63	4	2.5	3	1.87		
Activism	**Pre**	108	67.5	34	21.25	18	11.25	27.568	<0.001*
	Post	146	91.25	9	5.62	5	3.13		
Professionalism	**Pre**	107	66.88	32	20	21	13.12	32.715	<0.001*
	Post	148	92.5	6	3.75	6	3.75		
Trust	**Pre**	101	63.13	36	22.5	23	14.37	49.104	<0.001*
	Post	152	95	5	3.13	3	1.87		
Justice	**Pre**	114	71.25	31	19.38	15	9.37	30.265	<0.001*
	Post	151	94.38	7	4.37	2	1.25		
Total	**Pre**	110	68.75	32	20	18	11.25	32.852	<0.001*
	Post	150	93.75	6	3.75	4	2.5		

***High significant at P < 0.001**

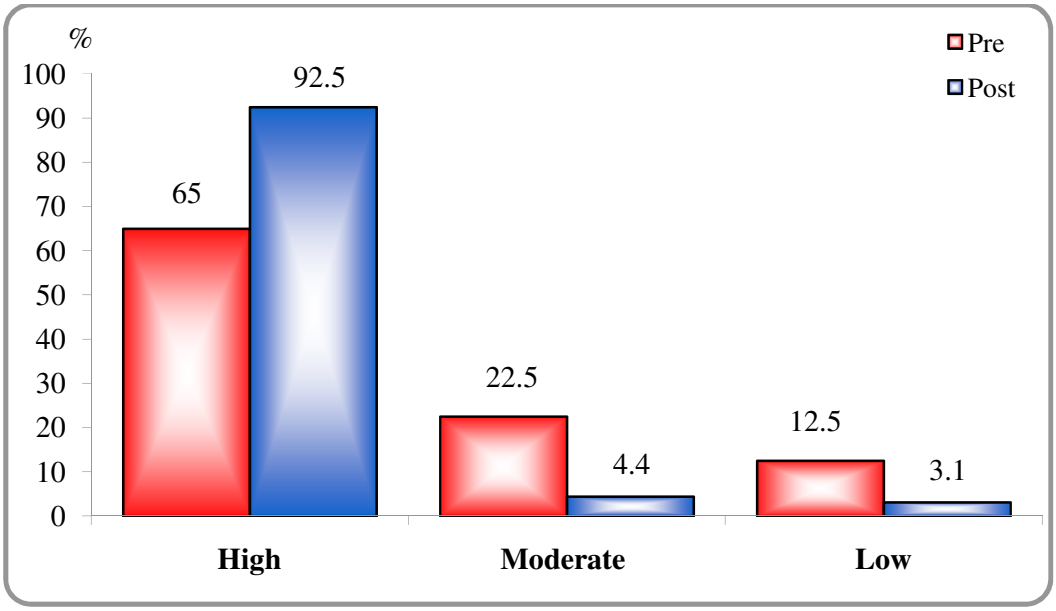

Figure (2) Level of NIs total importance of professional nursing value pre and post program n=160

Table (3) Levels of NIs total importance of professional nursing dimensions

Professional value dimension		High (≥75%)		Moderate (60-75%)		Low (<60%)		Chi-square	
		N	%	N	%	N	%	X^2	P-value
Caring	Pre	100	62.5	40	25.0	20	12.5	46.222	<0.001*
	Post	150	93.8	5	3.1	5	3.1		
Activism	Pre	103	64.4	38	23.8	19	11.9	36.555	<0.001*
	Post	147	91.9	6	3.8	7	4.4		
Professionalism	Pre	107	66.9	35	21.9	18	11.3	28.723	<0.001*
	Post	146	91.3	9	5.6	5	3.1		
Trust	Pre	103	64.4	36	22.5	21	13.1	37.446	<0.001*
	Post	148	92.5	8	5.0	4	2.5		
Justice	Pre	100	62.5	37	23.1	23	14.4	50.496	<0.001*
	Post	152	95.0	5	3.1	3	1.9		

***High significant at P < 0.001**

Table (4) Difference between mean scores ranking of awareness and importance pre and post program

Dimension		Awareness		Difference		Importance		Difference		T-test	
		Mean	Ranking	Mean	SE	Mean	Ranking	Mean	SE	t	P-value
Caring	Pre	21.48	3	-2.21	0.14	21.21	3	-2.54	0.13	0.273	0.174
	Post	23.69	3			23.75	3			0.061	0.080
Activism	Pre	21.34	4	-2.06	0.20	21.01	4	-2.41	0.19	0.331	0.231
	Post	23.37	5			23.42	5			0.019	0.148
Professionalism	Pre	20.95	5	-2.74	0.21	20.53	5	-3.19	0.20	0.413	0.261
	Post	23.68	4			23.73	4			0.044	0.114
Trust	Pre	21.75	2	-1.98	0.17	21.43	2	-2.33	0.16	0.323	0.212
	Post	23.72	2			23.76	2			0.025	0.099
Justice	Pre	21.86	1	-1.96	0.16	21.53	1	-2.34	0.14	0.338	0.203
	Post	23.80	1			23.87	1			0.050	0.071

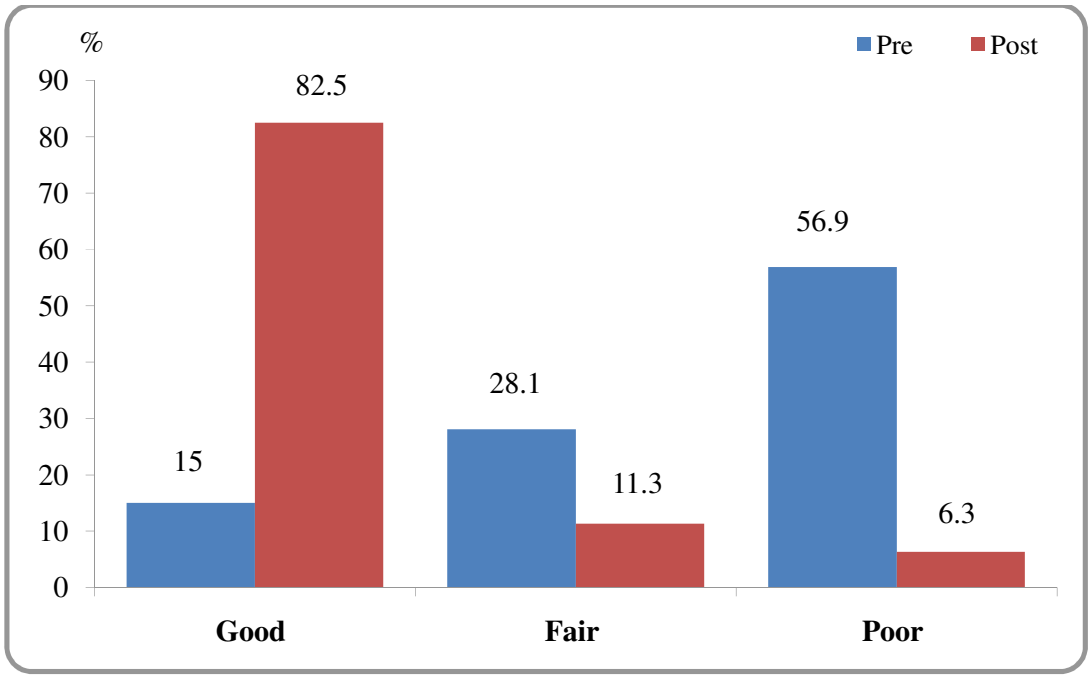

Figure (3) Level of NIs total knowledge about professional nurse value pre and postprogram n=160

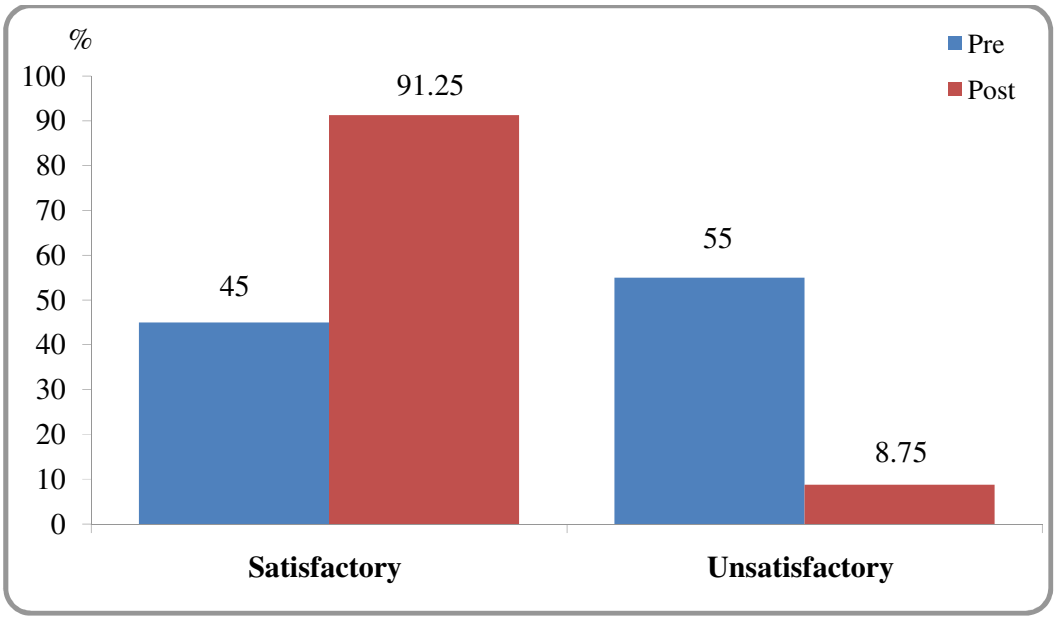

Figure (4) Level of nurse interns total practice of professional nursing value pre and post program n=160

Table (5) Levels of nurse interns' total practice of professional nursing value pre and post program (n=160)

Level of total practice	nurse intern use of professional nursing value at ICU				Chi-square	
	Pre		Post			
	n	%	n	%	X^2	P-value
Satisfactory use≥75%(15 or more)	72	45	146	91.25	78.806	<0.001*
Unsatisfactory use < 75%(<15)	88	55	14	8.75		
Total	160	100.0	160	100.0		

***High significant at P < 0.001**

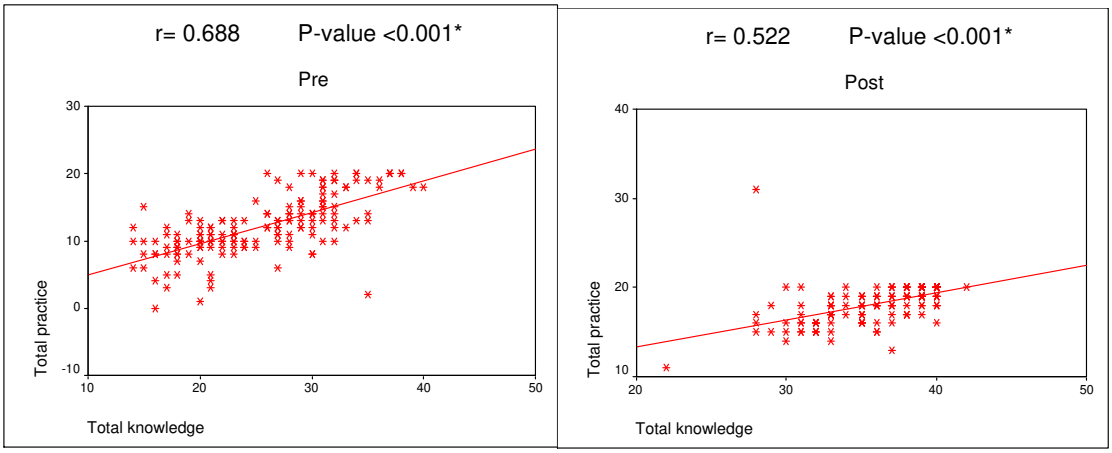

Figure (5) Pre and post program correlation between NIs total knowledge with total practice of professional values

Discussion

Professional values are considered very important principles of human dignity, serving as a framework for standards professional nursing practice and evaluation. Dimensions of nursing professional value include caring, activism, professionalism, trust and justice. They are guidelines for NIs interaction with patient, colleague, other professions and public. So implementation of educational program about use of professional nursing values may provide NIs with sufficient knowledge and information helps them to be clearly aware, support their practice and to shape their action in different relations.

Present study revealed that more than two third of NIs showed high level of total awareness of professional nursing values preprogram. The fact is that most of those NIs are youngunmarried female can work long, night and weakened shifts without feeling isolation from family members relationship. Most probably they have positive outlook towards starting occupational life and self-image. Actually they showed high level awareness about caring, activism, professionalism, trust and justices dimension of professional value. Basically they were graduated from faculty of nursing and studied the code of nursing ethics, to rely on for making decision, but may get difficulty in making decision for complicated ethical situations.

Abd El-mawgood et al., (2018)[21]study aboutawareness and compliance about professional ethics as perceived by nursing personnel and patients, revealed that nursing personnel had a moderate awareness level in relation to professional ethics. As nurses and physician respect each other, nurses provided suitable required health education for patients since hospitalization until before discharge. Also patients reported that they were treated fairly and nurse provided more time to them when they needed more health care, and nurses received them upon their entry to the section. While the minority of patients reported that nurses immediately implemented their desire to leave the hospital even before completing treatment.

Pre-program three quarter of NIs showed high level of awareness about caring as patient basic right. Caring considered the essence and unifying intellectual and practice dimension of professional nursing. It hasbiophysical, psychological, cultural, social and environmental dimensions which can be studied and practiced to provide holistic care to people. Caring requires nurses who focus on the relationship with the human being by

seeing, understanding and taking responsibility. In professional nursing practice, a common understanding of nursing, caring and an awareness of ethical inner values are necessary. Therefore it is important to highlight ideas of caring for NIs that can strengthen their self-reflection on ethical inner values and promote a deeper understanding of caring in their nursing practice.

Karlsson et al.,(2020)[22] study about ideas of caring in nursing practice, reported that awareness of ethical inner values and a common understanding of nursing and caring are needed. By being attentive, open, respectful and treating the patient as a person, nurses can enhance both their own and the patient's sense of personal meaning in the caring relationship. Nurses can use self-reflection to create an awareness of nursing, caring and ethical inner values in caring. Due to the increased complex care for patients and lack of time, there is a risk that nursing practice will become more technical without a caring substance.

Actually these NIs introduce them as NIs, to gain patient trust. Really they aware for keeping the knowledge and skills up to date and engaging in on-going self-evaluation. Also they aware for working in partnership with others for the benefits of patient and fully understand nurses various roles. Beside they aware for initiating action to improve the performance such as joint committees and look into future. As well as they appreciate the value of evidence based practice, ongoing self-evaluation and peer review. Currently nursing activism is being present at the place where the difficult, most intimate work occurs. It is more than awareness, engagement, or advocacy; it is action. The concept of activism was embedded in what nursing is and what it can be. The guiding documents of the discipline, and those of coalitions seeking to achieve social justice through the elimination of health disparities, call for nurses to not just engage in policies or advocate for individual patients. They call for nurses to take action.

Melissa et al., (2020)[23]study aboutconcept analysis of nursing activism, reported that nursing activism is a concept that extends from within the discipline's ethical responsibilities and social contract with humanity. Activism requires the expenditure of energy including personal, social, and/or political capital. It is a necessary response to health inequities, social accountability, and advancement of the nursing profession. Also nursing practice is grounded in the activism of

historical nursing leaders and the guiding documents of professional nursing organizations.Activism include"the policy or action of using vigorous campaigning to bring about political or social change and practice that emphasizes direct vigorous action especially in support of or opposition to one side of a controversial issue.

Finding of study revealed that preprogram NIs were at good level of awareness about trust. They agree on the importance of providing good advice reassurance and encouragement to patient and accepting their responsibility and inform them about the health care and communicate to provide the best care. They have to understand patient suffering and unvoiced need and accepting patient's culture, lifestyle and decisions. Always being honest and keep their own words clear.

However Trust is an essential component in the development of the patient it provides relationship and a critical element in the forming of a caring relationship between nurses and patients.

Ahmadpour et al., (2020)[24]study about trust towards nurses who care for hemodialysis patientsa cross-sectional study, revealed that although the patient trust towards nurses was acceptable, there were some deficiencies in certain items especially in the provision of information and education to the patients. Education of specialized courses for nurses and empowering them to provide a high quality care to the patients on dialysis could help to increase the patents' trust.

Preprogram NIs had high level of awareness about justice. They agree that it is very important providing the highest level of care for all patients, treating all patients equally and advocating for patient's rights. Also agree that promoting equity of health care for all kind of diagnosis, evaluating outcomes of interventions to promote ethical practice and promoting equitable access to nursing services is a must. Beside agree that practicing in a manner consistent with code of ethics and respecting people's diverse social identities. As well as providing the highest level of care for all patient are very important action.

Fritz et al., (2020)[25]study about Integrating philosophy, policy and practice to create a just and fair health service, assumed that to practice 'fairly and justly' a clinician must balance the needs of both the many and the fewthe individual patient in front of them, and the many unseen patients in the waiting room, and in the county. They must consider the immediate clinical needs of those in the present, and

how their actions will impact on future patients. The good medical practice guidance makes the care of your patient your first concern. At an organizational level, financial obligations must be balanced with clinical ones; the system must support those who work within it in a variety of roles.Finally, in order for a healthcare service to be sustainable, the demands of current and future generations must be balanced.

Preprogram the first rank of important of professional values identified by NIs was justice followed by trust. Most probably because NIs help for protect health and safety of the public and promote equitable access to nursing care. As well as they assume responsibility for meeting health needs of culturally diverse population. While the least important values reported was professionalism as nurse interns not participate in peer review have no specific hospital standards to guide for nursing practice, and cannot take actions to improve environments of practice.

Poorchangizi et al., (2019)[26]study about the importance of professional values from nursing students' perspective, revealed that student' professional values was at acceptable level of importance due tothe assessment of the students' perspectives on professional values was limited only in the school affiliated in southern Iran. Cultural and language differences have affected the meaning of the terms and in the context of nursing education in Iran. Professional values of nursing students may be changed considerably by curricula. This highlights the importance of the integration of professional values into nursing students' curricula. Nursing educators can primarily facilitate professional values by urging students to participate both in research studies on the topic and in nursing education.

Preprogram more than half of NIs showed poor level of total knowledge. Actually they showed poor, fair and good levels of knowledge about each of the five dimensions of professional values, all the factors affecting NIs clinical practice at ICU and the nursing code of ethics. Most probably they gave incorrect answer because they were unsure about their knowledge. Yet they were aware about them but they have doubt about the right way to behave. Really they do not have in depth understanding of science and art of nursing, law, control and how to promote their nursing practice.

Hassan et al., (2019)[27]study about effect of an educational program on enhancing nurses' knowledge and their compliance with ethics in maternity health services,

revealed that the majority had a highly significant improvement post-intervention compared to pre-intervention regarding nurse's knowledge and their compliance with nursing ethics at the maternity health services. Pre intervention nurses had the lowest percentage of knowledge regarding professional ethics. So the implementation of an educational program was expected to enhance nurse's knowledge and their compliance at maternity health service.

Actually present study program sessions contain information about aspect of professional nursing values. It explained difficulties affecting nurse interns at ICU clinical practice. Also explained nursing code of ethics and dimensions of professional nursing values. Beside it illustrate importance of using caring, trust and justice as well as using professionalism and activism dimensions. The educational management program include also practice session to explain situations on various ethical issue facing nurse interns in their work environment and train them in how to cope with ICU problems by use of professional nursing dimensions. This in turn improved their level of knowledge. As well as, resulting in an increased level of using professional ethics in the practice. Furthermore, make them sure from their knowledge and help them be confident in using professional ethics and made more difficult decisions based on deciding the right and the wrong actions for difficult situation.

Bleda et al., (2020)[28]study about the perceptions of professional values among students at a Spanish nursing school, revealedthat the ethics dimensions was considered the most important for student nurses throughout all four academic years. Students highlighted the relevance of basic values such as caring, professionalism, trust and justice, which serve as a foundation for professional nursing ethics. This is consonant with the idea that these values are often learned during the course of students' academic training. Similarly, cultivating a caring attitude is critical as this is the essence of their profession.

Professional values are the basis of nursing practice. Therefore, in order to promote the professional development and transformation of today's NIs into future capable nurses who, in addition to the direct care responsibilities of the patient, are able to perform a wide range of nursing activities and roles, it is imperative to develop planning and teaching methods tailored to the existing conditions and facilities, as well as to consider areas of strength and weakness in the area of professional values.One of the important

factors that influence the values of nursing is culture and vocational education. Education has the greatest impact on the ethical and spiritual development of nurse interns and nursing educators have a key role in shaping their ethical framework. Creating this framework can help them to make ethical decisions and ultimately make the NIs have enough power to make decisions.

Conclusion

Half of NIs working in four ICUs at Tanta University Main Hospital were at good level of awareness, poor level of knowledge and unsatisfactory level of practice for use of professional nursing value dimensions pre-program. They were lacking and demand for educational management program to explain use of professional value principles and train them to implement professional nursing value dimensions.The well-designed present study program enforced their talent and significantly improving their knowledge and trainsthem to practice and maintaining use of professional nursing value dimensions. Still apparently NIs need specific follow up and periodical orientation program to always develop their awareness, knowledge and practice for dealing with different complex ethical situations.

Recommendations

1. During the internship year the Faculty of Nursing should give greets attention to conduct an orientation program that focus on professional nursing value and important of its dimensions.
2. Attention to Faculty of nursing to employ preceptors to help ICU head nurses and nurse educator for support, train, direct and facilitate student NIs role transition to professional practice nurses.
3. Provision of job description for student NIs which clearly identified their role and responsibility during internship year through booklet for every NIs.
4. All effort should be taken to maintain the standards of nursing care and to improve patient awareness.

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Efficacy of Leadership Program for Head Nurses' Empowering and Supportive Role on Nurses' Work Engagement at Tanta Cancer Center

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Abstract

Background: Oncology nursing services are performed in stressful work environments which affect their work engagement. Head nurses' empowerment and support are confirmed strategies for creating a positive workplace environment which in turn improve oncology nurses work engagement. **The study aimed** to determine the efficacy of leadership program for head nurses' empowering and supportive role on nurses' work engagement at Tanta Cancer Center (TCC). **Research design:** A quasi experimental design was utilized to meet the aim of this study. **Setting**: Study was conducted at TCC affiliated to Ministry of Health. Subjects: All (230) nursing staff include head nurse (n=30) and nurses (n=200) were participated in the study **Tools:** Three tools were used; (1) Head nurses' empowering and supportive role practice self-report (2) Nursing staff knowledge questionnaire (3) Nurses' work engagement scale. **Results**: Range (80.9% -76.1%) of nursing staff preprogram had poor knowledge level about empowering and supportive roles of head nurses which highly statistically significantly at ($p<0.001$) improved post program to be range (84.8% - 79.1%) have good level of total knowledge. Head nurses range (60% - 50%) had unsatisfactory level of total empowering and supportive role practice preprogram, changed significantly at ($p<0.01$) post program to be range (83.3% - 73.3%) had satisfactory practice level. Preprogram nurses range (65.5% - 64%) showed low engagement level for vigor, dedication and absorption respectively changed post program to be 66%, 63.5%,and 67% respectively had high level of work engagement. **Conclusion**: The designed and implemented leadership program significantly improves head nurses' empowering and supportive role and oncology nurses' work environment. **Recommendation**: Head nurses periodical attend leadership program to update their empowering and supportive knowledge and practice.

Keywords: Oncology nurses, Oncology environment, Empowerment, Support, Work engagement.

Introduction

Tanta cancer center provide specialized care for cancer patients through inpatient and outpatient services. It receives daily 500 patients from all delta governorates seeking different medical, nursing, laboratory, and radiological services. Oncology nursing services are performed in stressful work environments to meet the special needs of patients with cancer and their families. Stressful factors in the oncology specialty commonly include increased patient acuity, providing end-of-life care to patients with cancer and managing the treatment having serious side effects [(1)]. Beside patients' issues of anger and noncompliance with treatment as well as monitoring patients having pain and suffering [(2)].Also poor working conditions such as work over load, shortage in professional nursing staff, insufficient materials, supplies and workplace training. All of these circumstances place a high emotional demand on oncology nursing staff which in turn, affects their work engagement [(3)]. Work engagement is a positive, satisfying, emotional state at work. It is characterized by vigor, dedication, and absorption.

Work-related vigor is exemplified by high energy levels, mental resilience, motivation, and perseverance. Dedication is characterized by a sense of meaning, passion, inspiration, pride, and challenge relating to one's work. Absorption involves full concentration and being deeply engrossed in work and it is characterized by the quick passage of time and a reluctance to detach oneself from work [(4,5)]. Engagement is a predictor of nurses' proactive behaviors, loyalty and performance, and financial returns. Further, engagement contributes to a variety of benefits for nurses and the organizations [(6)].To ensure nurses work engagement it is necessary for health care organization to ensure working conditions that enhance work engagement. Head nurses with excellent empowering and supportive leadership skills are able to influence nurses to achieve certain objectives and goals, they can motivate them through their knowledge and skills to provide high quality care for cancer patients. Head nurses empowerment is a facilitative process where nurses perceive their head nurses to allow self-control, self-regulation, self-management and self-leadership of nurses [(7)]. Empowering head nurse delegate

responsibility, encourage accountability, enable participative decision-making, share information, develop skills and coach for innovative performance[8]. Head nurses' empowering activities leads to various outcomes, such as nurses' empowerment, engagement, commitment, job satisfaction, role clarity, job insecurity, extra-role behaviors/ organizational citizenship and decrease turnover intentions [9].Head nurses support refers to how nurses perceived that their head nurses value their work contributions and care about their comfort, well-being, and work related interests. Head nurses' support includes emotional support, informational support, and instrumental support. Emotional support pertains to how much a head nurse cares about nurses' feelings and listens to them.[10] . Informational support includes head nurse provides help, information and constructive feedback; giving guidance or advice about knowledge and skills for work and nurses believe that he/ she facilitates their further development [11]. Instrumental support is providing aids, assistance, time, materials, and resources, services needed and financial aids to help nurses achieve their work goals [12]. These forms of support are interrelated, for example a head nurse gives informational support such as verbal feedback in terms of recognition when nurse accomplishes a job. When receiving this recognition, the nurse feel that he or she is valued, esteemed and being cared by head nurse. When nurses perceive their head nurses as supportive will feel obliged to reciprocate by showing a favorable attitude in the form of work engagement [13].

Aim of study:

Evaluate efficacy of leadership program for head nurses' empowering and supportive role on nurses' work engagement at Tanta Cancer Center

Research hypothesis:

The leadership program is expected to develop head nurses' empowering and supportive role and enhance nurses' work engagement.

Subjects and Method

Study design:

Quasi experimental research design was used to achieve the aim of the present research. Such design fits the nature of the problem under investigation.

Setting:

The present study was conducted at Tanta cancer center (TCC) affiliated to Ministry of Health. TCC beds capacity was (140). TCC included departments of medical,

surgical, pediatric, in addition to operation room (OR), medical, surgical, and pediatric intensive care units (ICUs). TCC also included outpatient clinics, chemotherapy and early detection units.

Subject:

The study subjects consisted of all (230) nursing staff include head nurse (n=30) and nurses (n=200) working in the previous mentioned setting.

Tools:

The data of the study collected using three tools:-

Tool I: Head nurses' empowering and supportive roles practice self-report.

This tool developed by the researcher based on Nasurdin (2018)[10], Ramos (2017) [14] and Al Hasnawi (2016) [15] and review of recent related literatures. It translated into Arabic language. It consisted of three parts

Part 1: **Characteristics data of head nurses**: as age, sex, marital status, department, level of education, years of experience, and previous attendance of leadership programs.

Part 2: Head nurses' empowering role: to assesses head nurses' empowerment behavior. It consisted of (59) items divided into 6 subscale:

- Delegation of authority
- Accountability include
- Participative decision making
- Information sharing
- Skill development Coaching for innovative performance

Part 3: **Head nurses' supportive role** to assess head nurses' support for nurses to accomplish their work. It consisted of (28) items divided into 3 subscales:

- Emotional support
- Informational support

-Instrumental support

- **Scoring system:** Responses of head nurses for part 2 and part 3 were measured on a three points likert scale ranging from always done (3), sometimes done (2), and not done (1)Level of head nurses' each of empowering and supportive roles were determined as follow: Satisfactory level >75%Unsatisfactory level $\leq 75\%$

Tool II: Nursing staff knowledge questionnaire: This tool developed by the researcher guided by Nasurdin (2018) [10] , Bogaert (2018)[16] , kim (2017) [17] and review of literature to assess aspects of empowering and supportive role and work engagement. It consisted of (5o) questions in the form of multiple choice (25 questions) and true or false (25

questions).These questions were classified into 5 categories as follows:

- Oncology work environment.
- Head nurses' empowering role and behaviors.
- Head nurses' supportive behaviors Oncologynurses' work engagement.
- Importance and dimensions of work engagement.

Scoring system: Nursing staff answers were measured according to their correct answer take (1) score and wrong answer take (0) score.

Levels of their knowledge determined as follows:-

- Good knowledge >75%
- Faire knowledge 60-75
- Poor knowledge <60%

Tool III: Nurses' work engagement scale: It was consisted of two parts.

Part I: **characteristics data of nurses**: as age, sex, marital status, department, level of education, years of experience.

Part II: Utrecht Work Engagement Scale (UWES): It was developed by Schaufeli (2006) [18]and reused by Wang (2019) [19] to assess nurses' work engagement level. It consisted of (20) items under 3 subscales:

-Work vigor include seven items.

-Work dedication include seven items.

-Absorption include seven items.

Scoring system: Responses of nurses were measured on a five points Likert scale ranging from always (5) to never (1) .

Levels of nurses' work engagement was determined as follows:-

High engagement level >75%

Moderate engagement level 60-75%

Low engagement level <75%

Method:

Official permission to conduct the study from the director of TCC was obtained and submitted to the responsible authorities of the selected setting

Ethical consideration:

- Approval of the ethical committee at Faculty of Nursing was obtained.
- All participant were informed about the purpose of the study.
- An informed consent was taken from each participant in the study including the right to withdraw at anytime.
- Confidentiality and privacy was taken into consideration regarding data collection.

-The three tools (I, II and III) presented to a jury of five experts in the area of specialty to check content validity of the tools. The five experts were lecturers from

Faculty of Nursing, Tanta University, Nursing Services Administration department.

-The expert's relevancy responses were represented in a four points rating score ranging from (4-1); 4 =strongly relevant, 3 = relevant, 2= little relevant, and 1= not relevant. Necessary modifications were done including; clarification, omission of certain questions and adding others and simplifying work related words. **The face validity** was 94% for head nurses' empowering and supportive role practice self- assessment. For nursing staff knowledge questionnaire was 95% and was 94%for nurses' work engagement scale**.**

-Reliability of tools was tested using Cronbach's Alpha and coefficient test and take mean average of scores , which must not be less than 3 score. Its value 0.79 for head nurses' empowering and supportive role practice self- assessment, 0.84 for nursing staff knowledge questionnaire, and 0.82 for nurses' work engagement scale**.**

-A pilot study was conducted on (3) head nurses and (20) nurses randomly selected to test the tools for clarity and applicability, not from study subjects. It was conducted two times to the same head nurses and nurses after two weeks later (test - retest) to assess reliability of tools. The first time was implemented after the development of the tools and the second time was implemented before starting the actual data collection to test the clarity, applicability, and relevance of the questions.

Data collection:

-Head nurses' empowering and supportive role practice self-report, tool (I) was used before and after implementation of program.

-Knowledge questionnaire about head nurses empowering and supportive role and nurses work engagement, tool (II) was used before and after implementation of program.

-Nurses' work engagement scale tool (III) was used before, implementation of program.

-The researcher collected data and gave direction of program for duration of 3 months (start from March month to May 2020.

Construction of leadership program

Putting of statement of instructional objectives, which derived from the assessed need of the sample and literature review.

Instructional objectives general

The main objective of the program is to develop head nurses' empowering and supportive role and enhance nurses' work engagement.

Specific objectives

At the end of the program nursing staff should be able to:

-Discuss nature of oncology work environment.

-Demonstrate head nurses' empowering role and behavior.

-Use of supportive behaviors.

-Recognize oncology nurses' work engagement.

-Illustrate importance and dimensions of work engagement.

Program contents:

The content was designed to provide knowledge related to empowering and supportive role of head nurse and nurses; work engagement through 5 sessions as follows:-

-Oncology work environment.

-Head nurses' empowering role and behavior.

-Head nurses' use of supportive role.

-Oncology nurses' work engagement.

-Importance and dimensions of work engagement.

Selection of teaching methods

The methods used were lecture, group discussion, and presentation.

Teaching aids used for attainment of program objectives were data show, and clinical examples.

Implementation of program

The study was carried on 30 head nurse and 200 nurses. The nursing staff was divided into ten groups. The program time was 5 hours for each group. Every session 1 hour. The program was conducted for nursing staff at conference hall of TCC or inside nurses' office at their departments as available. They preferred to start session at 11 am –12 pm as it was the most suitable time for them after finishing first necessary work. The nursing staff was informed about objectives of program. The researcher built good relationship and motivated them to participate and share in program activities.

Results

Table (1) shows nursing staff characteristics, the age, sex, marital status, department name, level of education, years of experience as well as attended previous leadership program. 40% of head nurses aged 30- 40 years old and 60% aged > 40 years old with mean 41.07±5.99. All head

nurses were female, 80% married, 93% had bachelor degree. 7% had master degree, 53% had < 20 years of experience with mean experience 17.23±4.42years, and 80% attended leadership program. While 51% of nurses aged 30-40 years, and 38 % aged <30, with mean 31.65±6.02. They were female married, 78.5% had associated degree of nursing and 58.5% had <10 years of experience with mean experience10.98±7.73.

Table (2) Levels of nursing staff total knowledge about dimensions of head nurses' empowering and supportive roles pre and post program. The table shows that there was highly statistically significant improvement of nursing staff level of total knowledge about dimensions of head nurses' empowering and supportive roles post than pre at (p<0.001). Preprogram range (80.9% - 76.1%) of nursing staff had poor level of knowledge for total of all dimensions of empowering and supportive roles which improved to be range (84.8%-79.1%) had good level of knowledge post program.

Table (3) Levels of head nurses empowering and supportive role practice pre and post program. The table shows that there was statistical significant improvement of head nurses of all items of practicing empowering and supportive role post than preprogram (p= 0.007). Preprogram head nurses' range (60% - 50%) showed unsatisfactory empowering role practice. But post program range (83.3% - 76.7%) showed satisfactory empowering role practice level. Preprogram equal head nurses range (60% - 53.3%) showed unsatisfactory supportive role practice for all items changed post program to be range (83.3% - 73.3%) showed satisfactory supportive role practice level.

Table (4) Nurses' levels of work engagement dimensions pre and post program. The table shows that there was highly statistical significant change of nurses work engagement level for each dimension of work engagement post than preprogram at (p= <0.001). Preprogram range (65.5%- 64%) of nurses showed low level of vigor, dedication, and absorption dimensions of work engagement. They changed post program to be 66%, 63.5%, 67% had high level of work engagement respectively for that dimensions.

Figure (1) Levels of nursing staff total knowledge about head nurses' empowering and supportive roles pre and post program

showed that most of nursing staff preprogram had poor knowledge level about empowering and supportive roles of head nurses. They improved post program to be majority have good level of knowledge.

Figure (2) Head nurses levels of total empowering and supportive role practice pre and post program. More than half of head nurses had unsatisfactory level of total empowering and supportive role practice preprogram, changed post program to be majority had satisfactory level.

Figure (3) Nurses levels of vigor dimension of engagement pre and post program. Preprogram more than two third of nurses showed low level of vigor dimension, changed to be more than two third had high level post program.

Figure (4) Nurses' levels of dedication dimension of engagement pre and post program. Preprogram more than two third of nurses showed low level of engagement dedication dimension, changed to be more than two third of them had high level post program

Figure (5) Nurses' levels of absorption dimension of engagement pre and post program. Preprogram more than two third of nurses showed low level of absorption dimension, changed to be more than two third of them had high level post program

Figure (6) There was statistical significant positive correlation between nursing staff total knowledge and head nurses empowering and supportive roles preprogram at ($P < 0.001$) and post program at($p=0.002$)

Table (1): Nursing staff characteristics (N=230)

	Head nurses (N=30)		Nurses (N=200)	
	N	%	N	%
Age (years)				
<30	0	0.0	76	38
30-40	12	40.0	102	51
40 or more	18	60.0	22	11
Mean±SD	41.07±5.99		31.65±6.02	
Sex				
Males	0	0.0	40	20
Females	30	100.0	160	80
Marital status				
Single	0	0.0	31	15.5
Married	24	80.0	164	82
Divorced	5	16.7	3	1.5
Widow	1	3.3	2	1
Department name				
Surgical ICU	3	10.0	20	10
Medical ICU	3	10.0	20	10
Surgical department	4	13.3	30	15
Medical department	4	13.3	30	15
Leukemia department	3	10.0	15	7.5
Pediatric department	3	10.0	15	7.5
Chemotherapy unit	4	13.3	30	15
Outpatient clinics	2	6.7	10	5
Operation	4	13.3	30	15
Level of education				
Associate degree	0	0.0	157	78.5
Bachelor degree	28	93	40	20
Master degree	2	7	3	1.5
Years of experience				
<10	4	13.3	117	58.5
10- 20	10	33.3	27	13.5
20 or more	16	53.3	56	28
Mean±SD	17.23±4.42		10.98±7.73	
Previous attendance of leadership programs				
Not attended	6	20.0		
Attended	24	80.0		

Table (2): Levels of nursing staff total knowledge about dimensions of head nurses' empowering and supportive roles pre and post program (N=230)

Dimensions	Pre			Post			Chi-square	
	Good	Fair	Poor	Good	Fair	Poor		
	N%	N%	N%	N%	N%	N%	X^2	P-value
Oncology environment	9.6	13.9	76.5	81.3	10.9	7.8	259.803	<0.001**
Empowering role of head nurses	7.8	13.5	78.7	79.1	11.7	9.1	261.489	<0.001**
Supportive role of head nurses	10.9	13.0	76.1	84.8	10.0	5.2	274.368	<0.001**
Nurses' work engagement	10.4	12.6	77.0	81.7	11.3	7.0	261.337	<0.001**
Importance of work engagement	7.4	11.7	80.9	84.3	10.4	5.2	301.564	<0.001**

****Highly significant at P < 0.001**

Table (3):Levels of head nurses empowering and supportive role practice pre and post program (N=30)

Empowering and supportive role items	Pre				Post				Chi-square	
	Satisfactory		Un satisfactory		satisfactory		Un satisfactory			
	N	%	N	%	N	%	N	%	X^2	P-value
1-Empowering role	13	43.3	17	56.7	24	80.0	6	20.0	8.531	0.003*
Delegation of authority	15	50	15	50	24	80	6	20	5.934	0.015*
Accountability	14	46.7	16	53.3	25	83.3	5	16.7	8.864	0.003*
Participative decision making	12	40.0	18	60.0	24	80.0	6	20.0	10.000	0.002*
Information sharing	12	40.0	18	60.0	25	83.3	5	16.7	11.915	<0.001**
Skill development	13	43.3	17	56.7	25	83.3	5	16.7	10.335	<0.001**
Coaching for innovative performance	12	40.0	18	60.0	23	76.7	7	23.3	8.297	0.004*
2- Supportive role	14	46.7	16	53.3	24	80.0	6	20.0	7.177	0.007*
Emotional support	13	43.3	17	56.7	22	73.3	8	26.7	5.554	0.018*
Informational support	14	46.7	16	53.3	24	80.0	6	20.0	7.177	0.007*
Instrumental support	12	40.0	18	60.0	25	83.3	5	16.7	11.915	<0.001**
Total	14	46.7	16	53.3	24	80.0	6	20.0	7.177	0.007*

*** Significant at P < 0.01**

Table (4): Nurses' levels of work engagement dimensions pre and post program (N=200)

Work engagement dimensions	Pre			Post			Chi-square	
	High	Mild	Low	High	Mild	Low		
	N%	N%	N%	N%	N%	N%	X^2	P-value
Vigor	11.0	23.5	65.5	66.0	20.5	13.5	147.436	<0.001**
Dedication	10.0	26.0	64.0	63.5	19.0	17.5	133.123	<0.001**
Absorption	9.5	26.5	64.0	67.0	22.5	10.5	163.930	<0.001**

****Highly significant at P < 0.001**

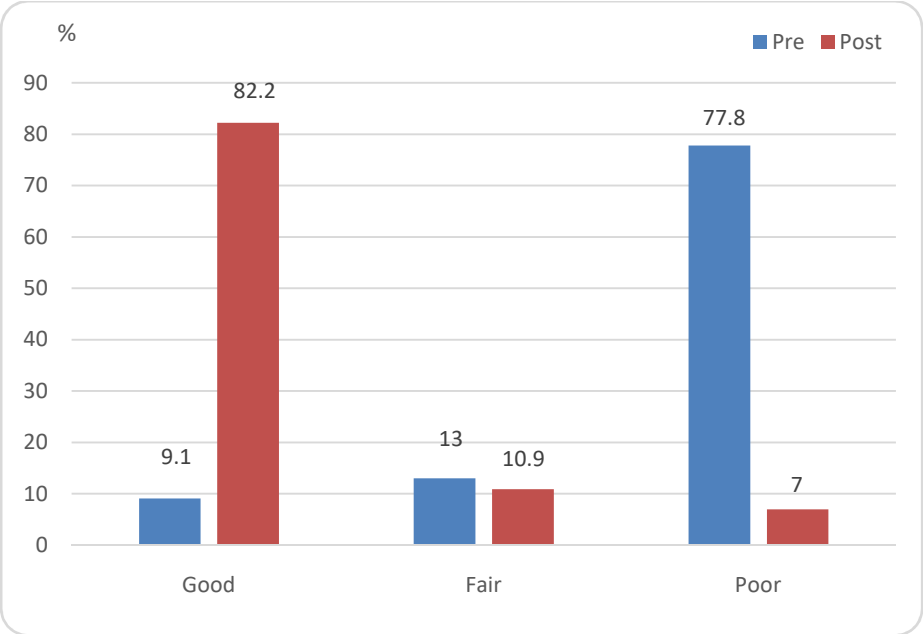

Figure (1): Levels of nursing staff total knowledge about head nurses' empowering and supportive roles pre and post program

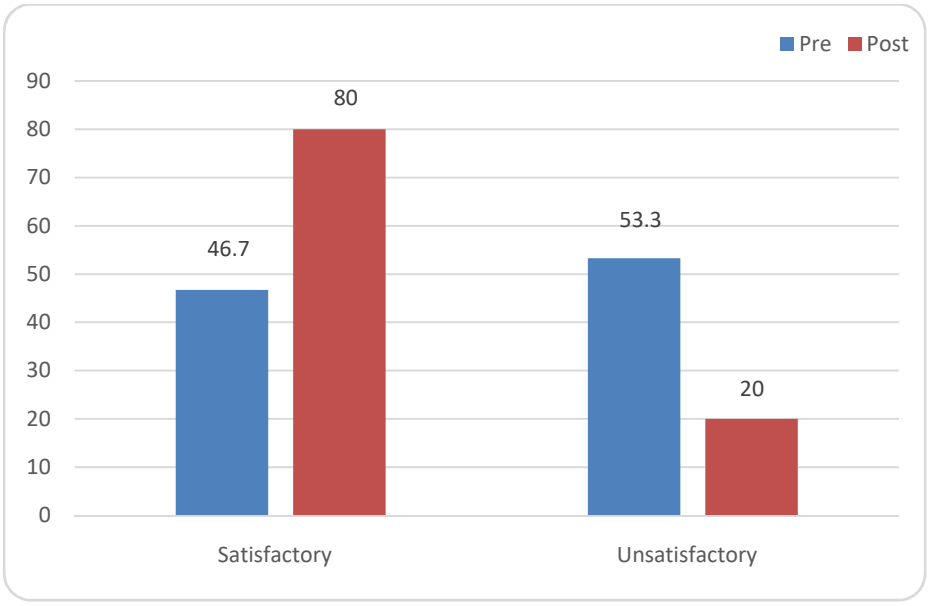

Figure (2): Head nurses levels of total empowering and supportive role practice pre and post program

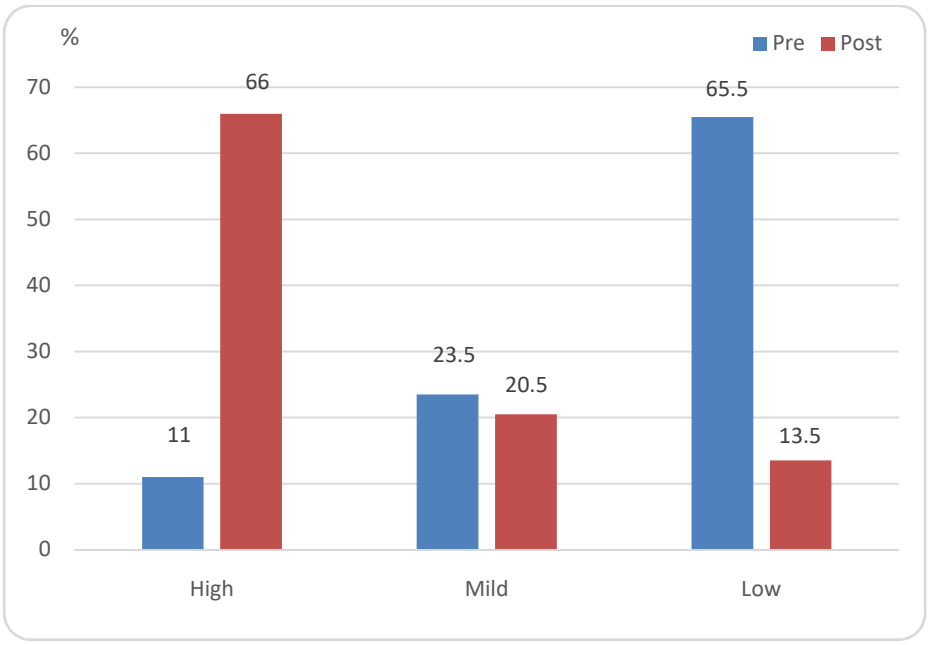

Figure (3): Nurses levels of vigor dimension of engagement pre and post program

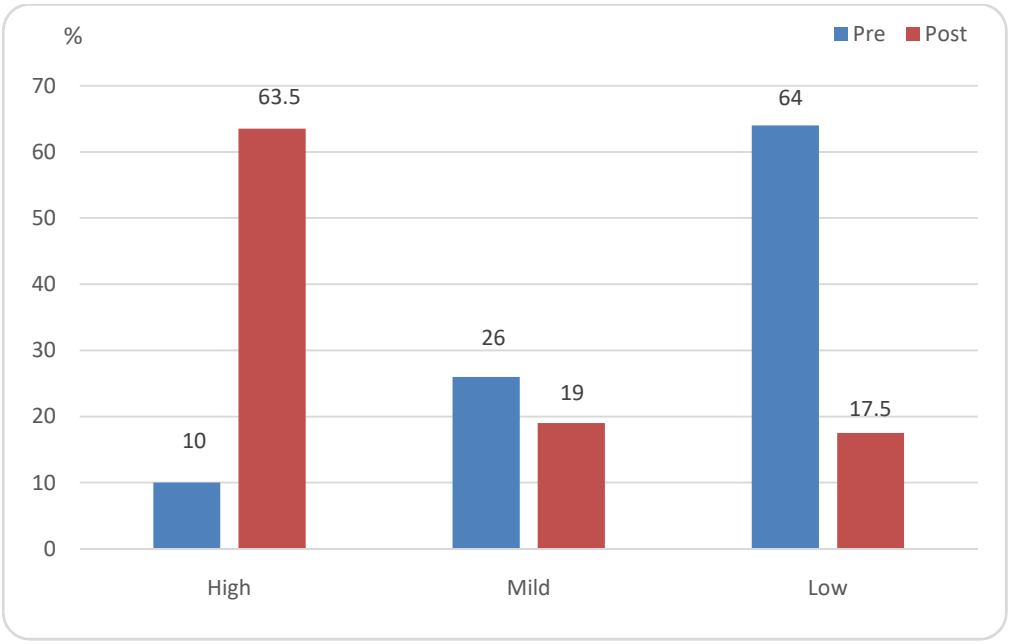

Figure (4):Nurses'levels of dedication dimension of engagement pre and post program

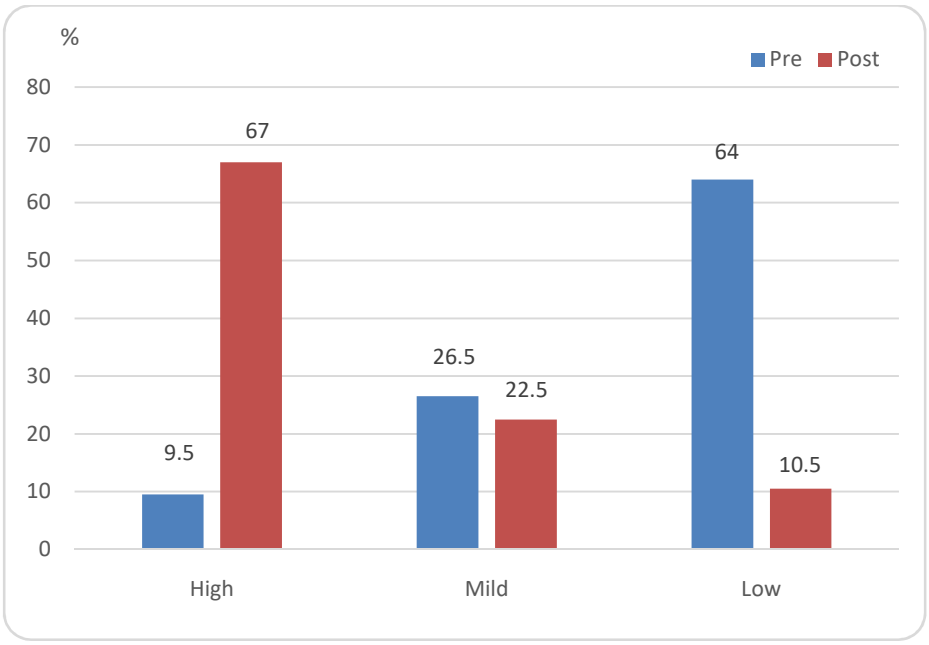

Figure (5):Nurses'levels of absorption dimension of engagement pre and post program

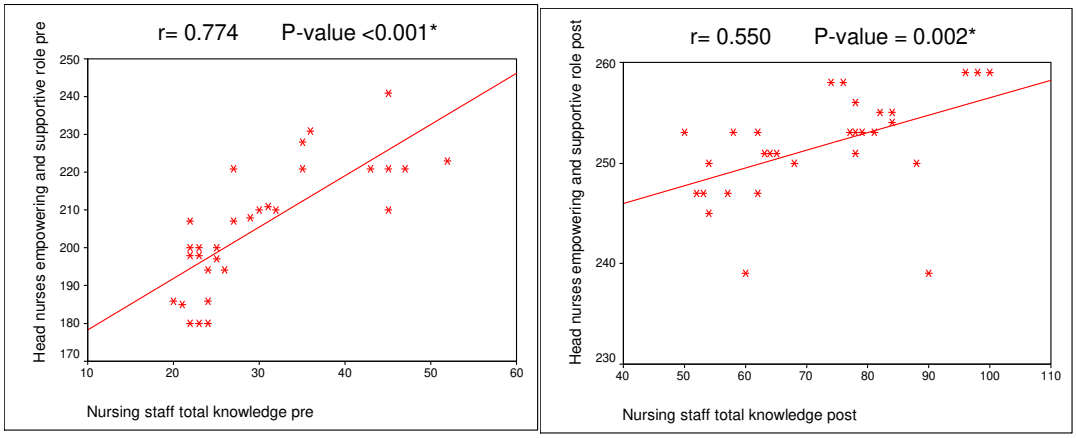

Figure (6): Correlation between nursing stafftotal knowledge and head nurses empowering and supportive rolepre and post program

Discussion

Head nurses' empowerment and support are confirmed strategies for creating a positive workplace environment in any health care organization, which in turn improve the quality of services to the client. Also empowerment and support strategies are vital for improving nurses' involvement, reducing the fatigue of nurses and reduce the risk of burnout [(20)]. Oncology nurses confronting stressful working conditions as critical decision-making, managing the treatment having serious side effects, patients' issues of anger and noncompliance with treatment, monitoring patients having pain and suffering [(1)].So the aim of this study was to examine the effect of head nurses' empowerment and support program on oncology nurses' engagement.

Result analysis indicated that most of present study nursing staff at preprogram showed poor level of knowledge about head nurses empowering and supportive role and nurses work engagement. Actually they were unequipped with enough knowledge about head nurses empowering and supportive role and nurses work engagement because they not recently attend any related orientation or training programs. But those nursing staff significantly improved immediately post attendance of present program sessions. The program gave them information about oncology environment, head nurses empowering role and behavior, head nurses supportive behavior, nurses' work engagement, and importance of work engagement .

Really the well-designed program attracted head nurses to develop their empowering and supportive role to enhance nurses' work engagement. Actually the program clarified to head nurses empowering role and behaviors, so that they start to delegate authority, enhance accountability, participate decisions and share information with nurses, develop nurses' skills, and coach nurse for innovative performance. Those head nurses understand their supportive role so that they start to provide emotional, informational, and instrumental support for nurses. Consequently nurses' work engagement was automatically enhanced.

Apparently the present study leadership program proved to be very important not only to improve head nurses empowering and supportive role but also to enhance oncology nurses' work engagement.**Cziraki and Laschinger (2015)**[(8)] study about leader empowering behaviors and work Engagement: The mediating role of structural

empowerment, stated that leadership strategies that create empowering working conditions are likely to retain nurses who are eligible to retire and attract future nurses to the profession. The leaders empowering behaviors influence nurses' work engagement by creating structurally empowering work environments. Adding that **Zaki (2017)**[21] study about perceived nursing supervisor support and its relation to work engagement and turnover intention among staff nurses, found negative significant relationship between perceived nursing supervisor support and nurses' turnover intention at critical and non-critical units due to supervisor constructive feedback to nurses.

Nasurdin (2018)[10] study about linking social support, work engagement and job performance in nursing, revealed that all three types (organizational, supervisor, and peer) of social support were found to have positive effects on work engagement. Also **Hammig (2017)**[22] study about health and well-being at work: the key role of supervisor support, reported that supervisor support is of major importance with regard to nursing staff health and well-being at work.

Current study result revealed that pre-program more than half of head nurses had unsatisfactory level of performing total empowering and supportive role, although most of head nurses are in middle age 30-40 years which is full of energy and enthusiasm. Apparently their insufficient knowledge about delegation of authority, accountability, participative decision making, information sharing, skill development, and coaching for innovative performance negatively affected their practice. Most probably those head nurses are in need for either self -learning or leadership program to help them act as guides, facilitators and mentors to enhance staff's openness to changes in healthcare delivery approaches, productivity, and empowerment. Because those head nurses are responsible to provide emotional, informational and instrumental support to enhance nurses' work engagement.

Present study leadership program significantly improved head nurses understanding principles of self-control, self-regulation, self-management and improved their -leadership capabilities that contributed to **strong influence on their practice for empowering and supportive roles to improve nurses' work engagement.** In this context **Farmawy&Hassona (2018)**[7] study about the effect of head nurses' empowerment educational program on staff nurses' burnout, found that there was a positive effect of the educational

program regarding empowerment for head nurses on the burnout of staff nurses. Also **Burns (2016)**[23] study about perceived organizational support and perceived supervisor support as antecedents of work engagement, found that perceived organizational and supervisor support were found to be predictive of work engagement.Contory to **Jinmei and Sirakamon (2020)**[24]study about job satisfaction, leader empowering behaviors and work engagement among nurses in tertiary hospitals, kunming, the People's Republic of China, not support present study results but found that the overall head nurses' leader empowering behaviors and its six dimensions as perceived by nurses were at a high level and there was a moderate positive relationship between leader empowering behaviors and work engagement.

Results of present study revealed that more than two third of oncology nursesshowed low level of work engagement pre-program. Most probably those oncology nurses confronting conditions as critical decision-making, managing the treatment having serious side effects and patients' issues of anger and noncompliance with treatment. As well as monitoring patients having pain and suffering. Beside negative working conditions such as inadequate supplies and equipment, nursing shortage and growing number of patients and workload. These circumstances lead to an increase in nurses' job stress, job dissatisfaction, burnout, and decrease work engagement. Conservative estimates suggest that each disengaged nurse costs an organization $22,200 in lost revenue as a result of lack of productivity. Nurse engagement is critical to the patient experience, clinical quality, and patient outcomes [25].**Siju, and Johansen (2019)**[26] study about oncology nurse engagement: the impact of a management education program, support the present study findings and reported that fifteen percent of nurses disengaged because the role of providing end-of-life care to patients with cancer places a high emotional demand on them. But **Mousa and Elewa (2020)** [4] study about relationship between nurse manager leadership style and staff nurses' work engagement, found that most staff nurses had high level of work engagement due to the supportive work environment which includes good communication and collaboration between staff nurses, justice, and skillful leaders that affect and reflect on staff.

Post program oncology nurses showed high level of work engagement due to head nurses start empowering and supporting them in their responsibility.

Really the program promoted nurses' vigor, dedication, and absorption due to their enhanced relationship with their head nurses. **Qatrunnada and Parahyanti (2018)**[27]study about empowering leadership and work engagement: the role of psychological empowerment as a mediator, stated that leadership empowerment behavior influences employees' perceptions and experiences in the work environment to agreat extent. When leaders empower their employees they feel more competent and they experience meaning in their work.

Pattnaik and Panda (2020)[28] study about supervisor support, work engagement and turnover intentions: evidence from Indian call centers, stated that supervisor support enhances work engagement of employees. As a result, employees are likely to show organizationally prescribed emotional dispositions.

Conclusion

Tanta Cancer Centerhead nurses were lacking empowering and supportive skills and practice while oncology nurses have low level of work engagement which reflected on their demand for leadership program to explain necessary information and train head nurses for practicing effective empowering and supportive role. The present study well designed program improved their knowledge and empowering and supportive role practice, as well as oncology nurses became absorbed, dedicated and energetic in their work.

Recommendations

In the light of the current study finding these recommendations are suggested:

Hospital administration

-Create strategies that promote supportive work environment such as rewards, flexible work schedules, fair pay and benefits, safe working conditions, and training.

-Perform regular assessment of head nurses skills, knowledge, and behavior before and after enrollment in their position.

Head nurses

-Periodical attend leadership program to update their empowering and supportive knowledge and practice.

-Develop and implement empowering strategies to engage their staff in work

Oncology nurses

-Seek to attendeducational programs about work engagement.

-Should focus on improving their knowledge and skills about vigor, dedication and absorption dimensions of work engagement.

Recommended research

-Further research is done on the possible methods available for evaluation and measurement of the empowerment and support efforts. It is important that hospital can know decisively if their empowerment and support efforts are delivering the results they believe.

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Design Program about Accreditation Standard to Enhance Staff Nurses' Documentation Performance in Intensive Care Units at Tanta International Teaching Hospital

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Abstracta

Background: Nursing documentation, as legal and professional documents, are valuable tools for accrediting hospitals; and all hospitals seek to identify factors that contribute to the improvement of these records by considering accreditation standards. **Aim:** This study aimed to design program about accreditation standard to enhance nurses' documentation performance at Tanta International Teaching Hospital. **Subjects and Method: Study design**: Quasi experimental research design. **Setting:** The study conducted in three Intensive Care Units (ICUs) at Tanta International Teaching Hospital. **Subjects:** All (n=90) nurses, and sample of 300 patient charts randomly selected. **Tool:** Two tools were used to collect data (I) Staff nurses' knowledge about accreditation standards for patient care documentation questionnaire, (II) Audit nursing documentation in patient chart checklist. **Results:** preprogram more than half (54.4%) of staff nurses' showed fair level of total knowledge about accreditation standards for patient care documentation and the rest were at poor level, post program levels of staff nurses' knowledge about all domains of accreditation standards for patient care documentation were significantly improved at (p= 0.001). Preprogram none of staff nurses' were at good level of total performance documentation against accreditation standards for patient care significantly improved to be all were at good level post-program. Preprogram none of staff nurses were at good level of documentation against manual for JCAHO's accreditations significantly improved to be all have good level post-program. **Conclusion:** Staff nurses' documentation knowledge and performance were statistically significantly improved after implementation of the designed program about accreditation standard for documentation. **Recommendations:** Maintain periodical in-service program to staff nurses about accreditation standards for patient care documentation and Manual for JCAHO's to maintain their improved knowledge and performance levels.

***Key words*:** Accreditation standards, Nursing documentation

Introduction

Accreditation is an accurate self-assessment and external peer assessment process for health care organizations performance against established standards, and implemented continuously for improvement [(1)]. Accreditation is recommending way to be a voluntary program, in which trained external peer reviewers evaluate a health care organization's compliance with pre-established performance standards [(2)]. The Egyptian Minister of Health and Population establish a National Accreditation Board (NAB) to supply technical assistance to develop and test accreditation standards and build the institutional capacity for the program [(3)]. One among the key principles of credibility was agreement that the Egyptian standards should closely mirror international standards [(4)].

The international accreditation standards of the joint commission within the world are unique and designed for measuring the standard of patients' care [(5)]. Joint Commission International (JCI) standards define the performance expectations, structures, and functions that must be in place for a hospital to be accredited by JCI [(6)]. The Egyptian General Authority for Healthcare Accreditation and Regulation GAHAR was established under Law No. 2 for the year 2018 pertaining to the Universal Health Insurance system. The GAHAR responsibility for maintaining the status of being the accrediting and regulating body was strongly rooted in its independence, and by law [(7)].

The accreditation standards requirements are designed to support the development of healthcare quality and patients' safety by planning, managing services and measuring improvements [(8)]. So, accreditation sets standards for patients' documentation to identify and address the gaps and deterioration in quality and safety of the services provided and to promote nursing staff responsibility and accountability as a part of their accreditation process [(9)]. Nursing staff documentation is an important part of clinical documentation. Nurses are the largest professional groups in hospitals and they have a long background in nursing care documentation [(10)].

Documentation includes any written and/or electronically generated information about patient that describes the care or service provided timely and appropriate reports of assessments, decisions about patient status, plans, interventions, and outcomes. It demonstrates how a nurse has applied their knowledge, skills, and judgment according to the standards of practice. Also, it is a

comprehensive record of care provided to patient as evidence in legal proceedings [11]. The Joint Commission released a set of new and revised standards for patient documentation divided into three standard statements that describe broad practice principles requirements for communication standards, accountability and liability and information security standards to help nurses understand and apply the standards to their individual practice [12].

Each statement in the standard is followed by corresponding indicators that outline a nurse's accountability for ensuring that their documentation is accurate and meet the communication standards that influence quality of care and decision-making [13]. Also, provide guidance on applying the accountability and liability according to professional and ethical standards to practice patients' safety and staff values. The information security standards are required to keep records confidentiality and security of their professional practice [14]. The manual of the Joint Commission for Accreditation of Healthcare Organization (JCAHO) involve requirements for accreditation standards to successfully achieve and maintain compliance with nursing documentation including planning and delivering of nursing care [15,16].

Documentation accreditation standard requires, initial patient assessment and reassessments to include systematic and continuous collection of data; and communication of the data collected [17]. Also, nursing diagnoses to be developed based on data obtained during the nursing assessment and enable the nurse to develop the care plan [18]. The nursing interventions establishing a preferential sequence for address nursing diagnoses. The nursing evaluation for goals and expected outcomes must be measurable and patient-centered. The nursing discharge summary to include patient's condition at discharge, discharge instructions, and required follow up care [19].

Auditing process used to identify any gap present in documentation aiming for enhancing staff nurses' documentation and teaching the accuracy of data in either written or electronic information as well as improve patient safety and quality of care [20].

Achieving the national or international healthcare accreditation is important for providing safe, effective, patient-centered, timely, efficient and equitable health care services to all their patients, families and care providers [21]. However, attention should be given to the frequency of audits and time needed to do it, as it might interfere with staff workload and delay the

identifying strategies to address deficiencies [22, 23].

Aim of the study

Design program about accreditation standard to enhance staff nurses' documentation performance in Intensive Care Units at Tanta International Teaching Hospital.

Research hypothesis:

Staff nurses' performance documentation is expected to be enhanced after implementation of the designed program about accreditation standard for documentation.

Subjects and Method

Study design:

Staff nurses' performance documentation is expected to be enhanced after implementation of the designed program about accreditation standard for documentation.

Setting:

The study was conducted in three Intensive Care Units (ICUs) at Tanta International Teaching Hospital. Emergency Hospital ICUs included Anesthesia and Medical ICUs, and at Tanta International Teaching Hospital ICUs.

Subjects:

The study subjects consisted of:

- All (n = 90) nurses working in ICUs
- Sample of 300 patient charts randomly selected, 150 before program and 150 post program.

Tools: Two tools were used for data collection:

Tool 1: Staff Nurses' Knowledge about Accreditation Standards for Patient Care Documentation Questionnaire developed by the researcher guided byCollege and Association of Registered Nurses of Alberta (2014) [24], Egyptian accreditation standards set by the General Directorate of Quality in the Ministry of Health and Population (2015) [25] and recent related literature including Joint Commission International Accreditation Standards (2020) [26], and GAHAR Handbook for Hospital Standards (2021) [6] including 2 parts:

Part (1) Nurses' characteristics data such as age, sex, unit, marital status, experience and level of education.

Part (2) Structure questionnaire Sheet about Accreditation Standards for Patient Care Documentation.

It included 50 questions were cover the follows

- Aspects of accreditation and Egyptian health care accreditation program
- Accreditationstandardsfor patient care documentation
- Manual of the Joint Commission on Accreditation of Healthcare Organization (JCAHO) for accreditation
- Aspects of nursing documentation as definition, goals, purposes and elements

- Nursing documentation principles, standard forms and importance.

Scoring system:

Nurse's answers score of (1) for correct and (0) for incorrect.

Levels of Nurses' knowledge were classified as follows:

Good level of knowledge > 75%

Fair level of knowledge 60 % -≥75%

Poor level of knowledge < 60%

Tool 11:Audit Nursing Documentation in Patient Chart Checklist

developed by researcher based on Egyptian accreditation standards set by the General Directorate of Quality in the Ministry of Health and Population (2015) [25] and recent related literature to audit nursing staff documentation performance. It translated into Arabic language. It was include two parts:

Part I: Retrospective Auditing of Nursing Documentation against Standards for Patient Care. This part was used to audit patient charts nursing documentation against standards it included 28 items divided into three subscalesas follows:

1- Communication standard
2- Accountability and liability standard
3- Information security standard

Part II: Retrospective Auditing of Documentation against Manual for JCAHO's Accreditation.

This part was used to audit patient charts against manual for JCAHO's accreditation that nurses must document to justify accreditation it included 48 items divided into six subscales as follows:

Initial patient assessment and reassessments, diagnosis, planning, interventions, evaluation and patient discharge summary

Scoring system:

Staff nurse's performance of documentation were measured in (3) points Likert Scale ranging from complete correct done =2; incomplete correct done =1; and not done =0.

Levels of staff nurses documentation were as follows:

Good level documentation ≥ 75%

Fair level documentation 60 % -≥75%

Poor level documentation < 60%

Method

- Official permission obtained from Tanta university faculty of nursing to administrator of Tanta International Teaching Hospital to obtain the approval and assistance in data collection.
- Ethical consideration: Nurse's informed consent for participation in the study obtained after explanation of the nature and the purpose of the study, confidentiality of the information's obtained from them and the right to withdrawal.

- Tool (II) translated into Arabic and presented to a jury of seven experts in the area of specialty to check content validity and clarity of the questionnaire. The seven experts were two professors, three assistant professors and two lectures in Faculty of Nursing, Tanta University.
- The experts responses were represented in four points rating score (4-1) ranging from; 4 =strongly relevant, 3 = relevant, 2= little relevant, and 1= not relevant. Necessary modifications were done, included clarification, omission of certain items and adding others and simplifying work related words.
- Reliability of tools was tested using Cronbachs Alpha Coefficient test, its value = .958 for staff nurses' knowledge about accreditation standards for patient care documentation, .989 for checklist of auditing of nursing documentation against standards for patient care and 0. 964 for auditing of documentation against manual for JCAHO's accreditation.
- A pilot study was carried out after the experts' opinion and before starting the actual data collection. It was carried out on a sample 10% of staff nurses (n=٩٠) and they excluded from the main study sample during the actual collection of data. The aim of pilot study was to test the sequence of items, clarity, applicability, and relevance of the questions. Necessary modifications were done. Pilot study also served to estimate the time required for filling the questionnaire sheets. The estimated time needed to fulfill knowledge test tool I for staff nurses was approximately 30 minutes.
- **Data collection phase:**tool (I) staff nurses' knowledge about accreditation standard for documentation of patient care, and tool (II) auditing of nursing documentation in patient chart were used before and after implementation of the program.
- ICU staff nurses at Tanta International Teaching Hospital were divided into 10 groups. The program was 5 sessions 2hr for each session. The program time was 10 hours conducted for subjects at their work setting
- The appropriate time for data collection was according the type of work and workload for each department. The data collection started from August 2020 and lasted 4 months

Construction of educational program

The educational program about accreditation standard for patient care documentation to enhance nurses' performance designed by the researcher based on review of relevant recent literature. This research was conducted in four phases: assessment phase, development of the educational program,

implementation of the educational program phase and finally evaluation phase.

Phase1: assessment structure questionnaire sheet tool (I) distributed by researcher to all ICUs staff nurses to assess their level of knowledge about accreditation standards for patient care documentation pre and post implementation of program, and auditing nursing documentation in patient chart checklist tool (II) collected by the researcher before and within 3 months after implementation of the program to audit staff nurses performance documentation against standards for patient care and auditing staff nurses performance against manual for JCAHO's accreditation.

Phase 2: development of the educational programthe first step in the construction of this program was the statement of instructional objectives. These objectives were derived from the assessed need of the sample and literature review.

Instructional objectives the main objective of the program is to improve the staff nurses knowledge about accreditation standard for patient care documentation and effectively perform manual standard at patients' charts for Tanta International Teaching Hospital ICUs.

Specific objectives at the end of the program the nurses should have knowledge about accreditation standard to enhance nurses' documentation performance at Tanta International Teaching Hospital charts as follow:

- Identify accreditation aspects and Egyptian health care accreditation program.
- Identify accreditation standardsfor patient care documentation.
- Understand information about manual of JCAHO for accreditation
- Identify aspects of documentation include information as definition, goals, purposes and elements.
- Identify information about nursing documentation principles, standard forms and importance.

Selection and organization of program contents after determining objectives of program, the content was specially designed; method of teaching and evaluation was identified. The content was selected after carful assessment of subject needs. Simple and scientific language was used. This content was designed to provide knowledge related to accreditation standard for patient care documentation which includes 5 sessions under (5) titles as follows:-

- Accreditation aspects and Egyptian health care accreditation program.

- Accreditation standards for patient care documentation
- Information about manual of JCAHO for accreditation
- Aspects of documentation include information as definition, goals, purposes and elements
- Information about nursing documentation principles, standard forms and importance

Selection of learning strategies was governed by studying the subject themselves and content of accreditation standard for patient care documentation program. The methods used were lecture, group discussion, example from patients' charts.

Learning strategies aids used for attainment of program objectives were data show, handouts, flow sheet, pen, and paper.

Phase 3: Implementation of the program

The study was carried on all available (n = 90) staff nurses working in Tanta International Teaching Hospital ICUs. The staff nurses divided into ten groups. The program time was 10 hours for each group. One session every day for 5days, every session 2 hour, program was conducted for subjects at their work setting. They preferred to start the session after finishing necessary work. ICU nursing staff was informed about the general objectives of program and each session. The researcher built good relationship and motivated them to participate and share in program activities.

- The program was implemented in ICUs at Tanta International Teaching Hospital.

Phase 4: Evaluation of the program

The program evaluated by:

a- Pre-implementation of the program, pre-test done for nurses using tool I and tool II to assess their level of knowledge and performance about accreditation standard for patient care documentation

b- Immediately after implementation of the program, post – test was done for nurses using tool I.

c- After three months post program using (tool II) to audit chart of patient care for nurses' documentation performance.

Statistical analysis Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using number and percent.

Results

Table (1) Shows staff nurses characteristics. The age of staff nurses ranged from 21- 41 years with mean (26.64 ± 3.209). Majority (91.1%) of staff nurses aged ≤ 30 years, 75.6 % were single and 62.2% had children. Staff nurses 65.6% were female compared to 34.4% were

male, 62.2% had ≤5 years and the rest had > 5 years of experience. They 45.6%, 34.4% and 20% respectively were working in cardiac, anesthetic and medical ICUs. Staff nurses 63.3 % had associate degree and 36.7% had bachelor degree. More than half (52.2%) of staff nurses not attended accreditation standards courses while 47.8% attended it.

Table (2) shows levels of staff nurses' knowledge about accreditation standards for patient care documentation pre and post program. There was statistically significant improvement of levels of staff nurses' knowledge about all domains of accreditation standards for patient care documentation at ($P \leq 0.001$). Pre-program staff nurses 26.7%, 55.6% and 17.8% showed good, fair and poor levels of total knowledge respectively on international and Egyptian health care accreditation. They 45.6%, 26.7% and 27.8% respectively showed good, fair and poor level of total knowledge on accreditation standards for patient care documentation as well as 35.6%, 44.4% and 20.0% of staff nurses respectively showed good, fair and poor level of total knowledge on manual of (JCAHO) for accreditation. Majority (81.1%), (73.3%) showed poor level of total knowledge respectively on aspects of nursing documentation and nursing documentation principles. All (100%) staff nurses showed good level for all domains of accreditation standard of documentation post program.

Table (3) shows retrospective auditing of staff nurses documentation domains against accreditation standards for patient care pre and post-program. There was statistically significant improvement of staff nurses documentation for all domains of accreditation standards post than pre-program at ($P \leq 0.001$). Pre-program the staff nurses' total means score was 27 ± 1.77 significantly increased to 50.97 ± 1.9 post-program. Pre-program majorities (98.7%, 95.3% and 89.3 %) of charts showed that staff nurses' had poor documentation level in communication standard, information and security standard and accountability and liability standard respectively. But post program 100%, 99.3%, and 82% of charts showed that staff nurses became at good level for communication standard, information and security standard and accountability and liability standard respectively.

Tables (4) illustrate retrospective auditing of staff nurses documentation against Manual for JCAHO's Accreditation pre and post-program. There was statistically significant improvement of staff nurses documentation for all items at ($P \leq 0.001$) post than pre- program. Pre-program staff nurses means score of documentation was

25.81 ± 3.57 significantly increased to 88.73 ± 3.44 post-program. Pre-program all charts showed that staff nurses had poor documentation level against manual for JCAHO's for all items. Post-program staff nurses' documentation level became good for all items against manual for JCAHO's

Figure (1)shows levels of staff nurses' total knowledge about accreditation standards for patient care documentation pre and post program. Preprogram above half of staff nurses had fair level of total knowledge about accreditation standards for patient care, improved to majority had good level post program

Figure (2) shows retrospective auditing of staff nurses total documentation against accreditation standards for patient care pre and post-program. Preprogram none of staff

nurses' were at good level of total performance documentation against accreditation standards for patient care, improved to be all were at good level post-program.

Figure (3) show retrospective auditing of staff nurses documentation against manual for JCAHO's Accreditation pre and post-program. Preprogram none of staff nurses were at good level of documentation against manual for JCAHO's accreditations improved to be all have good level post-program.

Table (1): Staff nurses characteristics (n = 90)

Characteristics	N	%
Age **≤30 years** **>30 years**	 82 8	 91.1 8.9
	Range Mean ±SD	21- 41 26.64 ± 3.209
Marital status Married Single	 22 68	 24.4 75.6
Sex Male **Female**	 31 59	 34.4 65.6
No. of Children		
 No Yes	 34 56	 37.8 62.2
Years of Experience ≤ 5 years >5 years	 56 34	 62.2 37.8
Department: • Cardiac ICUs • Anesthetic ICUs • Medical ICUs	 41 31 18	 45.6 34.4 20.0
Education level: • Associate degree • Bachelor degree	 57 33	 63.3 36.7
Accreditation program Yes No	 43 47	 47.8 52.2

Table (2): Levels of staff nurses' knowledge about accreditation standards for patient care documentation pre and post program (n = 90)

Domains	Staff Nurses Knowledge				χ^2 p
	Pre		Post		
	N	%	N	%	
International and Egyptian accreditation program					
• Good	24	26.7	90	100.0	104.21
• Fair	50	55.6	-	-	0.001**
• Poor	16	17.8	-	-	
Accreditation standards of documentation					
• Good	41	45.6	90	100.0	67.33
• Fair	24	26.7	-	-	0.001**
• Poor	25	27.8	-	-	
Manual of (JCAHO).					
• Good	32	35.6	90	100.0	85.57
• Fair	40	44.4	-	-	0.001**
• Poor	18	20.0	-	-	
Aspects of documentation					
• Good	8	8.9	90	100.0	150.61
• Fair	9	10.0	-	-	0.001**
• Poor	73	81.1	-	-	
Documentation principles					
• Good	8	8.9	90	100.0	150.61
• Fair	16	17.8	-	-	0.001**
• Poor	66	73.3	-	-	

** Significance at $P \leq 0.001$

Table (3): Retrospective auditing of staff nurses documentation domains against accreditation standards for patient care pre and post-program (n = 150)

Domains of accreditation standards	Pre- program			Post-program			χ^2 p
	Good	Fair	Poor	Good	Fair	Poor	
	%	%	%	%	%	%	
Communication standard	-	1.3	98.7	99.3	.7	-	297.333 0.001**
Accountability and liability standard	-	10.7	89.3	100.00	-	-	300 0.001**
Information and security standard	-	4.7	95.3	82.0	15.3	2.7	262.97 0.001**
Total	-	-	100.00	100.00	-	-	300 0.001**
Range Mean ± SD	24 – 32 27 ± 1.77			43 – 54 50.97 ± 1.9			-112.8 0.001**

Table (4): Retrospective auditing of staff nurses documentation domains against manual for JCAHO's accreditation pre and post-program (n = 150 chart)

JCAHO Domains	Pre- program			Post-program			χ^2 p
	Good	Fair	Poor	Good	Fair	Poor	
	%	%	%	%	%	%	
Initial patient assessment record	-	-	100.00	94.0	6.0	-	300 0.001**
Nursing diagnosis	-	-	100.00	96.0	3.3	.7	298 0.001**
Nursing planning	-	-	100.00	98.7	.7	.7	300 0.001**
Nursing interventions	-	8.0	92.0	100.00	-	-	300 0.001**
Nursing evaluation	-	-	100.00	98.7	1.3	-	300 0.001**
Patient discharge summary	-	-	100.00	97.3	2.7	-	300 0.001**
Total	-	-	100.00	100.00	-	-	300 0.001**
Range Mean ± SD	17 – 37 25.81 ± 3.57			81 – 95 88.73 ± 3.44			-155.46 0.001**

**Significance at P ≤ 0.001

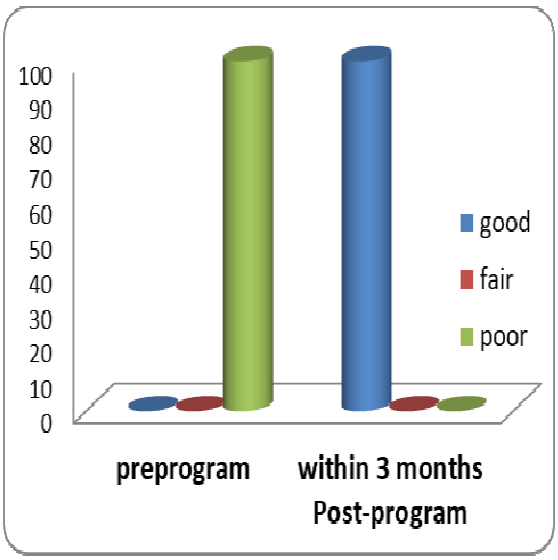

Figure (1): Levels of staff nurses' total knowledge about accreditation standards for patient care documentation pre and post program (n = 90)

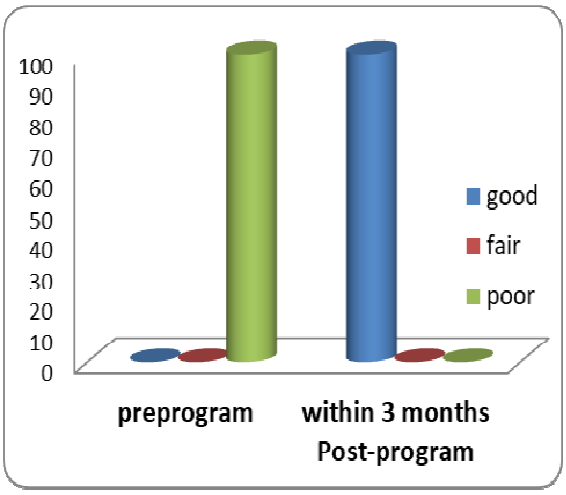

Figure (2): Retrospective auditing of staff nurses total documentation against accreditation standards for Patient Care pre and within 3 months Post-program (150 charts)

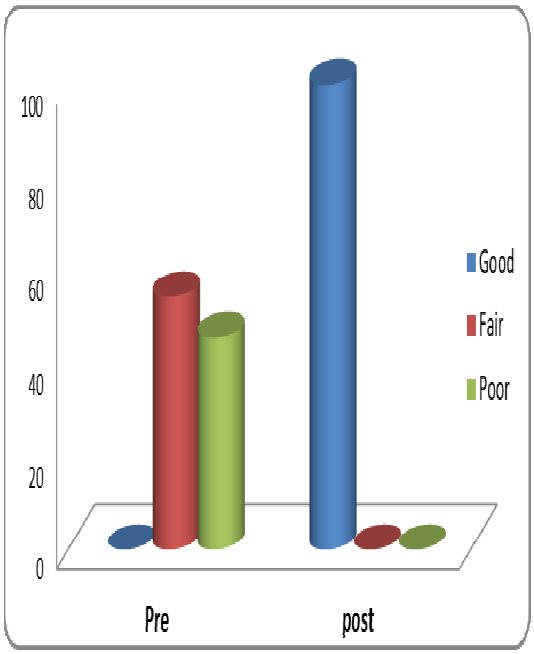

Figure (3): Retrospective Auditing of staff nurses documentation against Manual for JCAHO's Accreditation pre and post-program (n = 150 charts)

Discussion

Accreditation is an international evaluation process aims to define key functions, activities, process and structure required for health care facilities to ensure provision of acceptable level of quality care. Patients' documentation is a part of accreditation process for identifying and addressing gabs in quality of services provided. The accreditation committee sets standards for patient documentation to be met by staff nurses to evaluate documentation process and services outcome achieved. The documentation standards specially promote staff nurses' responsibility and accountability, facilitate communication and convey contribution of nursing to health care. The standards were designed to support the development of quality and patient safety by planning, managing and measuring improvements.

Result of current study indicated that preprogram more than half of staff nurses showed fair total knowledge and the rest were at poor level about accreditation standards for patient care documentation. Despite the fact that most of them are single middle aged females don't have new family responsibilities and have time to improve their knowledge about accreditation standards. Especially they were associate degree education staff nurses not attend any previous program or course about accreditation standards. Actually they were insufficiently equipped with information about accreditation standards for patient care documentation, hospital policy, team work, management support, communication openness and continuous training. Those staff nurses are responsible to improve and update their knowledge by self-learning and reading magazines about accreditation standards domains for patient care documentation, as well as attending in-service education programs specially they working in intensive care units which equipped with well-educated staff to meet hospital accreditation. Most probably they were suffering from lacking of human resources management including continuous training session and workshops, extending shared vision among staff nurses and staff motivation .

El- Gendy et al. (2021) [28] study about awareness of nursing staff and patients regarding hospitals accreditation, conducted the study at El Helal Governmental hospital, National Liver Hospital, Shebin-Elkom Teaching Hospital and Menoufia University Hospitals, found that the staff nurses in all hospitals understudy had not satisfying knowledge level about hospital accreditation standards

while, Menoufia University Hospitals staff nurses had lowest level of total awareness because it is largest and main hospital in Menoufia governorate and nursing staff had excessive workload. They viewed accreditation standards required them to document what they do as "unnecessary paper work" or waste of time. Also, **Due et al. (2019)** [28] study about understanding accreditation standards in general practice found that the majority of staff nurses were confused and had poor knowledge about the requirements of the accreditation standards for patient care. The participants described the problems was due to the readability of the style of language in the standard book, the standards contained references to several different concepts and they sought out information and clarification from different sources in order to increase their understanding of the requirements and how to conform to them. Preprogram above half of staff nurses showed fair level of knowledge about International and Egyptian accreditation program. They gave incorrect answers for principles of patient-centered care and effective ways to identify a patient according to national patient safety and organization centered standards. The fact is that staff nurses at ICUs of Tanta International Teaching hospital always busy and had excessive workload. Most probably they have nursing staff shortage and their staff nurses are associate degree with inadequate basic knowledge for quality of care and accreditation program. They required to strengthening their knowledge to be able to deal with international and Egyptian accreditation standards. They don't know that patient-centered care refer to a plan of care entirely based on the patient and his/her family's wants, needs, and culture. They also not understand that patient-centered care includes patients' preferences, coordination of care, access to care, emotional support, information and education.

These results are consistent with the study of **Kapurkar et al. (2021)** [29] about assess effectiveness of plan teaching program on national accreditation board for hospitals and health care providers guidelines among newly recruited staff nurses at Krishna hospital, found that staff nurses preprogram has low level of knowledge about national accreditation standards. Only 16.83% have average knowledge on accreditation board for hospital including the access, assessment and continuing of care, care of patients, management of medication, patient rights and education, and hospital infection control.**Araki (2019)** [30]study about patient centered care and professional nursing practices,

concluded that patient centered care (PCC) is a model of care that respects the patient's values, needs, choices and preferences in the planning process and implementation of his or her care. Model of PCC has been shown to contribute to improved outcomes for patients and organization, decreased costs and increased satisfaction with care. To improve PCC consider the importance of its dimensions in their specific context of care provision, which will improve levels of patient centeredness in efficient, effective and focused manner. Health care providers should acknowledge primary ethical principles to ensure that patients are provided with the information they need to make decisions and are supported in any decision making processes. When PCC is provided with support, education and information, patients are capable of appropriately applying this information to better manage their health and evaluate their own health status .

But post program majority of staff nurses of present study had good level of total knowledge about all domains of accreditation standards for patient care documentation. Really, the well-designed program attracted those staff nurses and explained the accreditation standards of documentation so that their knowledge level significantly improved about all its domain. The program gave them not only information about International and Egyptian accreditation, but also knowledge on accreditation standards of documentation, manual of (JCAHO), aspects and principles of documentation. On the same line **Vafaei et al. (2018)** [(31)]study about improving nursing care documentation in emergency department: a participatory action research study in Iran, indicated that the staff training and awareness development effectively improved the quality of staff nurses' documentation. Also, **Andri and Soewondo (2018)** [(32)] study about nurses' perception of patient safety culture in the hospital accreditation, support the study and revealed that staff nurses knowledge were at high level about accreditation standards through educational programs that are well communicated throughout hospitals and other health care organizations. Beside **Vasseur (2015)** [(33)] study about evaluation of new graduate nurses' physical assessment and documentation skills using simulation, debriefing, and a nurse transition program, reported that the majority of staff nurses acquired information about nursing documentation through attending training courses in hospital .

Preprogram the retrospective auditing showed that none of staff nurses were at good level of total documentation against

accreditation standards for patient care. Actually, those staff nurses had poor documentation in patient charts. They have poor documentation level in communication, information and security and accountability and liability standards. Indeed their insufficient basic documentation information reflected on their level of practice. Another reason of their poor level of documentation includes lack of follow-up from head nurses, and quality assurance personal. Through regular review of documented information on patient charts which evaluate quality and accuracy of care provided by staff nurses supervisors .**Tasew et al. (2019)** [(34)] study about nursing documentation practice and associated factors among nurses in public hospitals regarding the practice of patient care documentation, found that most of staff nurses had poor nursing documentation practice due to associated factors related to inadequacy of documenting sheets, lack of time and lack of familiarity with operational standard of nursing documentation. **Ramukumb and El Amouri (2019)** [(35)] study about nurses' perspectives of the nursing documentation audit process, reported weaknesses in the auditing of nursing documentation and suggested focused training. Also, **Jannatiet al., (2017)** [(36)] study about hospital accreditation: what difficulties does it face in Iran, found difficulties due to insufficient training of surveyors and shortage of their time spent on assessment of staff nurses documentation.

Result of present study post program implementation revealed that there was significant improvement in staff nurses documentation to be at good level for all domains of accreditation standards. However a slight decline occurred in staff nurses' documentation performance against accreditation standards for patient care after three months post program due to staff nurse need for periodical training program. Actually, post program those staff nurses receive adequate support to apply the accreditation standards in patient files by using communication, information and security standards and accountability and liability standards. Furthermore, simplification and well-presented educational matter with suitable educational aids attracted staff nurses to improve the practice of their documentation performance .**Silva et al., (2019)** [(37)]confirmed that documentation performance improved by implementation of educational program as (simulation exercises, role-play on consent). Also, **Vahedi et al. (2018)** [(38)] reported that after the workshop the majority of the essential items of information was documented with significantly

improvement. In particular documentation of the patients' date and time of admission, past medical and social history. Also, **Azzolini et al. (2019)** [39] discussed effectiveness of auditing in improving medical records practice. Beside, **Obioma (2018)** [40] study about improving the quality of nursing documentation in home health care setting, indicated that staff nurses need for periodic audits of nurses' notes in the agency in order to demonstrate compliance with quality of documentation standards.

Result indicated that preprogram auditing of charts showed that none of staff nurses were at good level but all had poor documentation against manual for JCAHO's accreditations. Most probably those staff nurses' lack important knowledge about manual of JCAHO's, and they don't understand that nursing process used as a frame work for patient nursing care plan. They required to understand that nursing process include six phases namely assessment, diagnosis, outcome, planning, implementation and evaluation. Adding to the ICUs over work load, and lack of supervisor appreciation.**Hussein (2020)**[41] study about implementation of nursing process program and assessment factors affecting nurses' knowledge and performance, found that preprogram staff nurses had poor performance in documentation of nursing process due to its time consuming, undesirable content design, shortage of materials and supplies and the atmosphere of work.**Asmirajanti et al. (2019)**[42] study about nursing care activities based on documentation, stated that the majority of staff nurses performance in patient identification, assessment, nursing diagnosis formulation, discharge planning, intervention, monitoring and evaluation, and nursing outcomes were below standard due to having to perform a large number of non-nursing duties, manual documentation, a lack of standards in documenting patient progress notes. They explained that patient safety is a fundamental concern for all nurses and health professionals, from the patient's admission to the hospital until discharge phases in the nursing process are interconnected and become a continuous cycle. Therefore, steps in this process are interrelated, interactive, and cannot stand alone.

Statistically significant improvement of staff nurses documentation for all items of documentation against manual for JCAHO's accreditations identified post program. Auditing helps to identify discrepancies between what is done and what should be done. Actually, this improvement due to the well-designed program and training the staff nurses to

follow the documentation skills on forms during practical session. Yet the researcher corrects any mistakes for staff nurses and gave them feedback immediately about their performance. Also, they gain the knowledge information during program sessions regarding effective communication, documentation skills, recording and reporting .**Hussein (2020)** [(41)] found that post program staff nurses had good performance in documentation of nursing process. **Frigstad and Andre (2017)** [(43)]study about impact of an education intervention on nursing diagnoses in free-text format in electronic health records revealed that educational programs directed at improving nursing skills significantly increase the prevalence and accuracy of documented nursing diagnoses.

Conclusion

None of staff nurses' were at good level of total performance documentation against accreditation standards for patient care at Tanta International Teaching Hospital. The present study well designed program improved their knowledge about accreditation standards for patient care documentation. As well as, staff nurses became knowledgeable about international and Egyptian health care accreditation, accreditation standards for patient care documentation, manual of (JCAHO) for accreditation, aspects of nursing documentation and nursing documentation principles. Still these staff nurses performance level require specific auditing against accreditation standards for patient care and manual of (JCAHO) to maintain develop their performance level.

Recommendations

- Tanta International Teaching Hospital need to collaborate with continuing education department in healthcare organization to develop effective training program on concepts and guidelines of hospital accreditation and to provide training for nurses about policies and procedures of hospital accreditation and how to implement it.
- Head nurses required to periodically audit patient chart to evaluate staff nurses gaps in documentation of nursing care and provide them direction and correction for their deficiencies.
- Staff nurses’ periodical attend educational program to update their knowledge about accreditation standards for patient care documentation.
- Periodical training program to staff nurses to strengthening their knowledge about international and Egyptian accreditation standards.

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Efficacy of Guidance Program on Head Nurses' Practice for Delegating Managerial Tasks in Intensive Care Units

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Abstract

Background: Delegation is an art and skill of professional nursing that is considered as one of the core concepts and major element of the organizing and directing functions of head nurses and managing their time. Using effective delegation by head nurse can motivate the subordinates' leaders to do more than what is being expected. **Aim:** The aim of the study was to determine theefficacy of guidance program on head nurses practice for delegating managerial tasks in Intensive care units. **Subjects and Method: Setting:** Study was conducted at ICUsof Tanta Main University Hospital including Cardiac, Medical, Neurology and Chest ICUs, Emergency Hospital including Anesthesia and Medical ICUs, and Tanta International Teaching Hospital including Cardiac, Medical and Chest, Burn and Anesthesia ICUs. **Subjects:** All (24) head nurses and (54) subordinate leaders working in ICUs are participated in the study. **Tool:** Three tools were used; (1) Delegation of managerial tasks knowledge questionnaire (2) Head nurses practice for delegation of managerial tasks. (3) Barriers of subordinate leader's acceptance of delegated managerial tasks. **Results:** Preprogram 66.7% of head nurses had poor knowledge and79.2% had unsatisfactory total practice level for delegation of managerial tasks. Changed post program to be majority(79.2%) had good knowledge and 83.3%had satisfactory total practice level for delegation of managerial tasks. Majority (72.2%) of subordinate leader had high and moderate levels of barriers for acceptance of delegated managerial tasks. There was statistical significant positive correlation between head nurse's total knowledge and practices about stepsof delegationmanagerial tasks preprogram at (p =0.572) and post program at (p =0.640). **Conclusion:** The designed and implemented guiding program significantly improve head nurses' knowledge and practice about delegation of managerial task. **Recommendations:** Periodical orientation program about importance and steps of delegation process of managerial task is recommended to be implemented regularly.

Key words: Authority and Accountability, Delegation, Delegator, Delegatee Intensive care units and Responsibility.

Introduction

Intensive care unit (ICU) is a specifically designated area monitor and treats critically ill patients requiring immediate and continuous attention. ICU should be staffed by specialized personnel and equipped with a variety of monitors and life-support equipment's that can sustain life in fatal situations, including trauma, respiratory distress syndrome, cardiac failure kidney failure, multiple organ failure and sepsis [1-4]. Head nurse is responsible for supervising and evaluating quality of nurse's performance and managing the ICU work twenty four hours a day, seven day a week [5,6]. Effective head nurses delegate work to subordinate leaders to expand access to quality nursing care and facilitate utilization of resources to manage clinical and managerial tasks. The ability to properly delegate tasks to subordinate leaders became an essential skill for the head nurse [7,8]. Also delegation is important for subordinate leaders to develop the talent, job satisfaction, empowerment, responsibility, productivity and professional growth [9]. So, basic knowledge about delegation process is fundamental for effective management head nurse and subordinate leaders' safe practice [10,11]. Delegation means transfer of responsibility for the performance of a task form head nurse to subordinate leaders or from one subordinate leader to another while retaining accountability for the outcome [12]. Although the head nurse delegator remains accountable for the task while subordinate leaders the delegatee is also accountable to the delegator for the responsibilities assumed [13,14]. The head nurse can delegate all technical tasks but for managerial tasks involve only planning, scheduling, purchasing and other such tasks, while should never delegate the managerial tasks that require high supervisory authority[15]. Delegating managerial tasks process consists of five steps head nurse start to select and organize tasks by making list with priority order according to ongoing functions and job that regularly or routinely recue such as ordering supplies. Then select the proper subordinate leaders qualified to match with delegated tasks and determine their accepting responsibility for taking doing that task. Third step is to instruct the subordinate leaders in writing as well as motivate, encourage and train them to perform the task personally [16].Fourth step is to maintain reasonable degree of control to subordinate and judge not to be over or under control. As well as, it is important for set reasonable deadline and make follow up for tasks completion. Fifth step is to

give subordinate leaders feedback for positive aspects and train them to overcome the negative aspects of managerial tasks completion [17]. However, the key aspects of delegation are responsibility, authority and accountability. Head nurse must not only consider five rights of delegation involve selecting right tasks and right subordinate leaders but also safe circumstances, right direction and proper level of control [18,19].

Science delegation is a learned skill, new head nurses with little experience in its use frequently make common errors such as over-delegation [15]. As well as the under-delegation and the improper delegation at the wrong time, to the wrong person or the wrong reason [16]. Therefor the prior preparation of subordinate leader is central to the head nurses delegation of management tasks. Successful head nurses not only continue to refine their art of delegation but also challenge subordinate leaders with assignments that match with their capabilities [16]. Delegation in nursing is a concept skill process and an art for working with subordinate leaders to accomplish more than head nurse can do alone.Also, it is important to overcome the subordinate leader barriers for accepting delegated task in order to reap its ultimate benefits [20].So, design and implement a guidance program is essential for head nurses and subordinate leaders to have strong foundation and improvement knowledge related to principles criteria and standards of practice governing managerial tasks delegation process.

Aim of the study

Determine the efficacy of guidance program on head nurses practice for delegating managerial tasks in Intensive care units.

Research hypothesis

The guidance program implementation is expected to improve head nurses knowledge and practice for delegating managerial tasks.

Subjects and Method

Study design:

Quasi experimental research design was used to achieve the aim of the present research, because such design fits the nature of the problem under investigation.

Setting:

The present study was conducted in ICUs of Tanta University Hospitals including Tanta Main University Hospital, Emergency Hospital and International Teaching Hospital. Tanta Main University Hospital ICUs included Cardiac, Medical, Neurology and Chest ICUs, Emergency Hospital ICUs included Anesthesia and Medical ICUs, and at Tanta International Teaching Hospital ICUs included Cardiac, Medical and Chest, Burn and Anesthesia ICUs.

Subjects:

The subject of this study included all (24) head nurses and all (54) subordinate leaders working in ICUs at previously mentioned setting and available at time of data collection. Head nurses (11) and subordinate leaders (20) working at Tanta Main University Hospital ICUs. At Emergency Hospital ICUs head nurses (5) and subordinate leaders (10) while head nurses (8) and subordinate leaders (24) were working at Tanta International Teaching Hospital ICUs.

Tools:

Three tools were used to achieve the aim of this study:

Tool I:Structure Questionnaire Sheet about Delegation of Managerial Tasks.

This tool developed by researcher guided by **Charles and Mcconnell** (2018) [21] and **Marquis and Hustion** (2017) [22] to assess subjects' knowledge about delegation of managerial tasks, it included two parts as follows:

Part (1) Characteristics of subject including: hospital name and unite age, marital status, level of education, years of experience and previous training program.

Part (2) Questions about head nurses' knowledge for aspects of managerial tasks delegation, it consisted of questions in the form of multiple choice, case study, put suitable word and true and false. They were classified into six categories as follows: -

- Items related principles of effective delegation and its benefits for managerial tasks, include (14) question.
- Items related steps of delegation process include (10) question.
- Items relatedhead nurses' common errors of delegation include (12).
- Items related delegating, non-delegating and barriers of delegating managerial tasks acceptance include (9) question.
- Items related practice of selecting and organizing tasks- selecting, instructing and motivating subordinate leaders include (2) question.
- Items related practice on maintaining reasonable control for subordinate leaders and giving feedback about their positive and negative aspects of managerial tasks completion. include (2) question.

Scoring system

Answers of participants were scored (57degree), was allotted a score of (1) for correct answer and (0) for incorrect answer.

follows: -

Good knowledge>75% = Score >43

Fairknowledge 60 - 75 = Score 34-43

Poor knowledge < 60% = Score < 34

Tool II:Head Nurses Practice for Delegation of Managerial Tasks SelfAssessment.

This tool developed by the researcher guided by **Charles and Mcconnell** (2018)[21]**Marquis and Hustion** (2017)[22] to assess head nurses' practice for delegating managerial tasks, it included question related to the following delegation steps:

Selecting and organizing tasks (9items).

-Selecting proper subordinate leader (4items)

-Instructing and motivating subordinate leaders (8items)

-Maintaining reasonable control leaders. (5items).

-Giving subordinate leaders feedback (5items).

Scoring system

Head nurses' responses measured on scale always done (2) sometime done (1) never done (0) as follows:

-Satisfactory head nurses' practice >65%. =Score >40.

-Un-satisfactory head nurses' practice ≤ 65%. =Score ≤ 40.

Tool III: Barriers of Subordinate Leaders Acceptance of Delegated Managerial Tasks Questionnaire

This tool developed by researcher guided by **Rebinson** (2013)[23] determine subordinate leaders barriers for acceptance of delegated managerial tasks. It included the following: -

(1) Subordinate leaders characteristics.

(2) Barriers for subordinate leaders' acceptance of delegated managerial tasks included items related to the following:

-Ineffective delegation, wrong time wrong person and for wrong reason. (6 items)

-Lack of direction about delegated tasks (5 items)

Lack of trust of subordinate leader (6 items)

- Unsafe circumstances at ICUs environment (6 items)

-Lack of supervision and control for subordinate leaders (6 items)

Scoring system

Subordinate leaders' responses measured on five points Likert Scals ranging from (1-5) strongly disagree to strongly agree.

as follows:

-High level barriers >75%. =Score> 109.

-Moderate level barriers 60-75%. =Score 87-109.

-Low level barriers <60% =Score <87

Method

1-Official permission to conduct the study obtained from responsible authorities.

Ethical consideration Subjects informal consent for participation in the study obtained after explanation of the nature. and the

purpose of the study, confidentiality of the information's obtained from them and the right to withdrawal.

2-After reviewing of the related literature and different studies in this field, the study tools were developed by the researcher based on recommended and relevant review.

3-Tool (III) of data collection presented to a jury of seven experts in the area of specialty to check content validity and relevancy of the tool. The seven experts were assistant professors from Faculty of Nursing Tanta University, five from nursing service administration department and two community health nursing department.

4-The expert's responses were represented in four points rating score ranging from (4-1); 4=strongly relevant, 3=relevant, 2=little relevant, and 1= not relevant. Necessary modifications were done including; clarification, omission of certain questions and adding others and simplifying work related words based on recommended and relevant review.The content validity was 97.0 % for tool (III) for barriers of subordinate leaders' acceptance of delegated managerial.

5-A pilot study was carried out on 9 subjects randomly selected to test the tools for clarity and applicability, then needed correction were done. Reliability of tools was tested by Cronbach's Alpha coefficient test. Its value was 0.784 for tool I, 0.861 for tool II and 0.815 for tool III

Data collection phases

I - Assessment phase

Structure questionnaire sheet about delegation of managerial tasks tool (I), head nurses' practice for delegation of managerial tasks self-assessment tool (II) and barriers of subordinate leaders' acceptance of delegated managerial tasks questionnaire tool (III) used before program implementation.

2- Planning phase

The guidance program about delegation managerial tasks in intensive care units prepared by researcher based on assessment of need and review of relevant recent literature.

Construction of educational program

Instructional objective the main objective of the program is to improve ICU head nurse's knowledge and practice regarding delegation of managerial tasks.

Specific objectivesat the end of the program the head nurses should be knowledgeable about delegation of managerial tasks as follow:

-Identify, principles and benefits of effective delegation for managerial tasks.

-Enumerate steps of delegation process.

-List common errors of delegation.

-Mention delegating, non-delegating and barriers of delegating managerial tasks acceptance.

-Selecting and organizing tasks, instructing and motivating subordinate leaders.

-Maintaining reasonable control for subordinate leaders and giving feedback about their positive and negative aspects of managerial tasks completion.

Program content

The content was designed to provide knowledge related to delegation of managerial tasks. The program includes six sessions as follows: -

-Aspects, principles and benefits of effective delegation for managerial tasks.

-Steps of delegation process.

-Head nurses' common errors of delegation.

-Delegating, non-delegating and barriers of delegating managerial tasks acceptance.

-Practice of selecting and organizing tasks-selecting, instructing and motivating subordinate leaders.

-Practice on maintaining reasonable control for subordinate leaders and giving feedback about their positive and negative aspects of managerial tasks completion.

Selection of teaching methods

Selection of teaching methods were governed by studying the subject themselves and content of delegation of managerial tasks program. The methods used were lecture, group discussion, example from real life, and work situations.

Teaching aids

The teaching aids used for attainment of program objectives were power point, data show and case study.

3- Implementation phase of program

The study program was carried on 24 head nurses. The head nurses were divided into five groups. The program was six sessions every session one hour. The program time was 6 hours for each group. They preferred time to start session at 10:30 a.m. – 11:30 a.m. as it was the most suitable time for head nurse's after finishing first necessary work. The head nurses were informed about objectives of program. The researcher built good relationship and motivated them to participate and share in program activities.The program was implemented in their ICU or conference room of intensive care units as available.

4- Evaluation phase

-Pre and post immediate implementation of program comparison between subjects' level of knowledge about delegation of managerial tasks tool (I).

-Pre and post immediate implementation of program comparison between subjects' practice for managerial tasks tool (II).

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 subjects characteristics, the age, marital status, name of ICUs, level of education, years of experience as well as attended previous training program about delegation were included. The age of head nurses and subordinate leaders ranged from 30->40 years with head nurses mean age 38.67±1.95 and 75% their age group 30-<40. While subordinate leaders mean age 27.74±1.66 and 88.9% aged <30. Majority (95.8%) of head nurses and all subordinate leaders were married. Head nurses 33.4% and subordinate leaders 33.3% worked in cardiac ICU. All the subordinate leaders and 91.7% of head nurses had bachelor degree. No head nurses had <5 years but all had 15 or more years of experience, while subordinate leaders 61.1% and 38.9% had 10 years and 5 years of experience respectively. Majority (91.7%) of head nurses and all subordinate leaders did not attend training program about delegation.

Table (2) Head nurses' levels of total for each dimension of knowledge for delegation of managerial tasks pre and post program. The table shows highly statistically significant improvement of head nurses' levels of total for each dimension of knowledge for delegation of managerial tasks post program at ($p<0.001$).

Preprogram majority (79.2%) and 70.8%) of head nurses had poor knowledge level for dimension of steps of delegation process and practice of selecting and organizing tasks, and selecting, instructing and motivating subordinate leader respectively. More than sixty percent (62.5%) of head nurses had poor level of knowledge for dimension of practice on maintaining reasonable control for subordinate leaders and giving feedback. Also, more than sixty percent (62.5%) of head nurses had good level of knowledge for dimension of delegating, non-delegating and barriers of accepting delegating managerial tasks. More than half (58.3%) of them had poor knowledge level for dimension of principles and benefits of effective delegation for managerial tasks and common errors of delegation respectively.

But post program rang (87.5% -75.0%) of head nurses showed good level of all dimensions of knowledge for delegation of managerial tasks.

Table (3) Head nurses' levels about dimensions of practice for steps of delegation managerial tasks pre and post program. The table shows highly statistically significant improvement of head nurses all dimensions of practice level for steps of delegation managerial tasks post than preprogram at ($p<0.001$). Preprogram head nurses rang (87.5%-83.3%) had unsatisfactory

level for giving feedback about their positive and negative aspects of managerial tasks completion, maintaining reasonable control for subordinate leaders and instructing subordinate leader dimensions, respectively changed post program to be 91.7%, 87.5% and 87.5% had satisfactory level. Also, preprogram head nurses 79.2%, 75.0%, 75.0% and 70.8% had unsatisfactory level for select delegated subordinate, motivating subordinate leader, selecting tasks and organize for tasks dimensions.

Improved respectively to 70.8%, 91.7% 83.3% and 83.3% showed satisfactory level post program.

Table (4) Levels of subordinate leader's barriers dimensions for acceptance of delegated managerial tasks. The table shows that majority (90.7%) of subordinate leader's had high level barriers in lack of trust. Followed by 87.0% and 83.3% had high level barriers in lack of direction about delegated tasks and unsafe circumstances at ICUs environment items respectively.

The lack of trust mean (4.7±0.27) ranked first followed by mean (4.5±0.38) for lack of direction about delegated tasks ranked (2). While unsafe circumstances at ICUs environment mean (4.2±0.35) and mean (4 ±0.31) for lack of supervision and control tasks ranked 3 and 4 respectively. Ineffective delegation, mean (3.8±0.34) ranked (5) was the lower barrier for accepting delegation of managerial tasks.

Figure (1) Shows levels of head nurses' total knowledge about delegation of managerial tasks pre and post program. Preprogram more than sixty percent of head nurses had poor knowledge level for delegation of managerial tasks, decreased to be few had poor level of knowledge post program.

Figure (2) Shows head nurses total practice levels about steps of delegation process of managerial task pre and post program. Preprogram high percent of head nurses had unsatisfactory total practice level for steps of delegation process of managerial task, changed post program to be majority of them had satisfactory total practice level.

Figure (3) Shows subordinate leader levels of total barriers for their acceptance of delegated managerial tasks. The figure shows that majority of subordinate leader had high and moderate level of barriers for acceptance of delegated managerial tasks.

Figure (4) The figure shows that there was statistically significant positive correlation between head nurse's total knowledge and practices about steps delegation managerial tasks preprogram at ($p = 0.572$) and post program at ($p = 0.640$).

Table (1) Characteristics of subjects (N= 78)

Items	Head nurse (n=24)		Subordinate leader (n=54)	
	N	%	N	%
Age (years)				
<30	0	0.0	48	88.9
30- <40	18	75.0	6	11.1
> 40	6	25.0	0	0.0
Mean±SD	38.67±1.95		27.74±1.66	
Marital status				
Single	1	4.2	0	0.0
Married	23	95.8	54	100.0
Hospital name				
International	8	33.2	24	44.4
Tanta university	11	45.8	20	37.1
Emergency	5	20.8	10	18.5
Unit				
Cardiac	8	33.4	18	33.3
Burn	1	4.2	1	1.9
Anesthesia	5	20.8	14	25.9
Medical chest	2	8.3	6	11.1
Neurology	2	8.3	4	7.4
Chest	2	8.3	0	0.0
Medical	4	16.7	11	20.4
Level of education				
Bachelor degree	22	91.7	54	100.0
Diploma degree	0	0.0	0	0.0
Master degree	2	8.3	0	0.0
Doctoral degree	0	0.0	0	0.0
Years of experience				
<5	0	0.0	21	38.9
5-10	0	0.0	33	61.1
15 or more	24	100.0	0	0.0
Mean±SD	16.67±1.95		5.85±1.23	
Previous training program about delegation				
Yes	2	8.3	0	0.0
No	22	91.7	54	100.0

Table (2) Head nurses' levels of total for each dimension of knowledge for delegation of managerial tasks pre and post program(N=24)

Dimensions		Levels						Chi-square	
		Good		Fair		Poor			
		N	%	N	%	N	%	X^2	P-value
Principles and benefits of effective delegation for managerial tasks	Pre	2	8.3	8	33.3	14	58.3	23.133	<0.001**
	Post	18	75.0	4	16.7	2	8.3		
Steps of delegation process	Pre	1	4.2	4	16.7	19	79.2	30.105	<0.001**
	Post	19	79.2	4	16.7	1	4.2		
Common errors of delegation	Pre	4	16.7	6	25.0	14	58.3	22.933	<0.001**
	Post	20	83.3	3	12.5	1	4.2		
Delegating, non-delegating and barriers of accepting delegating managerial tasks	Pre	15	62.5	7	29.2	2	8.3	27.446	<0.001**
	Post	20	83.3	2	8.3	2	8.3		
Practice of selecting and organizing tasks and selecting, instructing and motivating subordinate leader	Pre	2	8.2	5	20.8	17	70.8	24.848	<0.001**
	Post	19	79.2	2	8.3	3	12.5		
Practice on maintaining reasonable control for subordinate leaders and giving feedback	Pre	3	12.5	6	25.0	15	62.5	27.750	<0.001**
	Post	21	87.5	2	8.3	1	4.2		

****High Significant at p<0.001**

Table (3) Head nurses' levels about dimensions of practice for steps of delegation managerial tasks pre and post program (N=24)

Practice dimensions		Satisfactory		Un-satisfactory		Chi-square	
		N	%	N	%	X^2	P-value
Selecting tasks	Pre	6	25.0	18	75.0	16.448	<0.001**
	Post	20	83.3	4	16.7		
Organizefor tasks	Pre	7	29.2	17	70.8	14.307	<0.001**
	Post	20	83.3	4	16.7		
Select delegated subordinate	Pre	5	20.8	19	79.2	12.084	<0.001**
	Post	17	70.8	7	29.2		
Instructing subordinate leader	Pre	4	16.7	20	83.3	24.125	<0.001**
	Post	21	87.5	3	12.5		
Motivating subordinate leader	Per	6	25.0	18	75.0	21.943	<0.001**
	Post	22	91.7	2	8.3		
Maintain reasonable control	Per	4	16.7	20	83.3	24.125	<0.001**
	Post	21	87.5	3	12.5		
Giving subordinate leader feedback	per	3	12.5	21	87.5	30.136	<0.001**
	post	22	91.7	2	8.3		

****High Significant at p <0.001**

Table (4) Levels of subordinate leader's barriers dimensions for acceptance of delegated managerial tasks (N = 54)

Barriers	High		Moderate		Low		Mean ±SD	Rank
	N	%	N	%	N	%		
Ineffective delegation	28	51.9	16	29.6	10	18.5	3.8±0.34	5
Lack of direction about delegated tasks	47	87.0	4	7.4	3	5.6	4 .5±0.38	2
Lack of trust	49	90.7	3	5.6	2	3.7	4.7±0.27	1
Unsafe circumstances at ICUs environment	45	83.3	5	9.3	4	7.4	4.2±0.35	3
Lack of supervision and control	38	70.4	14	25.9	2	3.7	4 ±0.31	4

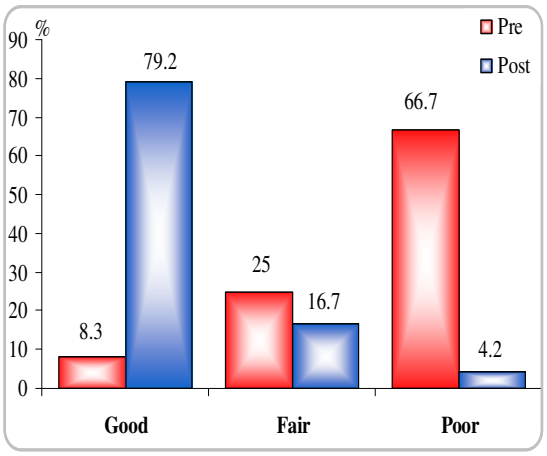

Figure (1) Levels of head nurses' total knowledge about delegation of managerial tasks pre and post program

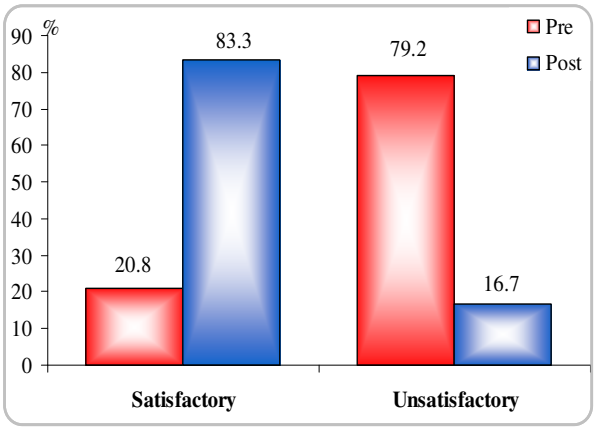

Figure (2) Head nurses total practice levels about steps of delegation process of managerial task pre and post program

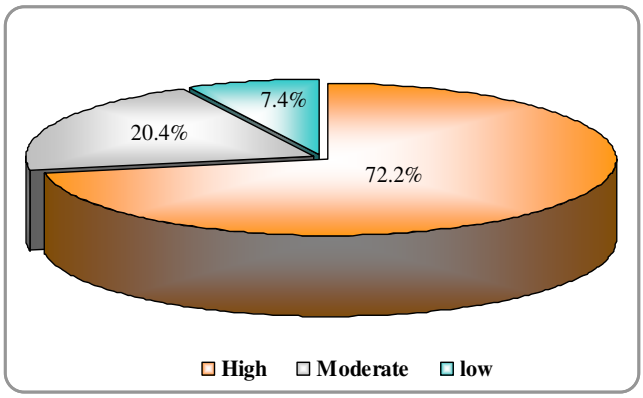

Figure (3) Subordinate leader levels of total barriers for their acceptance of delegated managerial tasks**.**

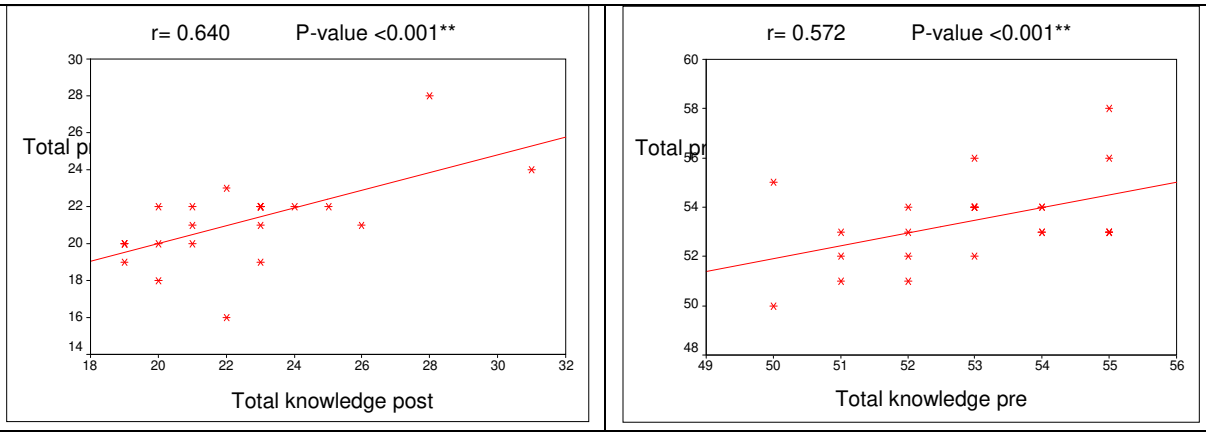

Figure (4) Correlation between total head nurse's knowledge with total practice about delegation managerial tasks pre and post program

Discussion

Intensive care units are specialized nursing facilities designed to manage and monitor patients with life threatening diseases and treatment of multiple organ failure. It is a high pressure environment 24 hour dedicated on-site, covered by professional nursing team. Head nurse is professional nurse occupying the first line nurse manager position has a full time responsibility for administration of nursing care of one intensive care unit. They are responsible for management and monitoring variety of managerial tasks which require supervision and take most of their time [(24).] So delegation guidance program is essential directing management skill must be taught for head nurses to improve their knowledge and practice for reinforcing some of their routine managerial tasks to subordinate leaders.

Present study revealed that more than sixty percent of head nurses had poor knowledge level for delegation managerial tasks preprogram. Actually, those head nurses showed poor level of knowledge about most dimensions of delegation of managerial tasks. Including steps of delegation process, practice of selecting and organizing tasks as well as selecting, instructing and motivating subordinate leaders. Even they showed poor knowledge about principles, benefits and common errors of effective delegation for managerial tasks. However, those head nurses do not have any previous training program about delegation, yet all of them are married having social responsibility and most properly they have social problems beside their 24 hours intensive care unit over workload pressure. Really they need refreshing guiding program for developing their knowledge about best practice for delegating managerial tasks to subordinate leaders.

Yet knowledge of most of head nurses had significantly improved in majority of items due to their attendance of present study program sessions which explained to them aspects, principles, benefits, common errors of delegation principles and steps for delegation managerial tasks. The well-designed program attracted those head nurses attention to recognize the giving and receiving of information and evoked their sense of responsibility toward steps of delegation managerial tasks. Reallythe program clarified steps to manage delegated managerial tasks, which positively impact on head nurses ability to deal

with delegation thought daily work actives.

Abdl Elmoghith (2019)[25]study about examining the time management training program on delegation skills regarding nurses managers, is consist with the present study results and showed that more than sixty percent of nurses managers had poor knowledge and less than half whom had knowledge about delegation pre training program implementation. While, nurses managers required to define responsibility to delegate and must use the effective key of delegation. But, post program. Showed that almost of head nurses the post the training program their knowledge had a highly statistically significant improvement related to delegation of tasks

Adding that **Kurtet al, (2018)**[26]study about assessment of delegation level in nurse managers, supported the study result and found that majority of nurse managers tended to have low level of delegation knowledge and difficulty delegating some tasks. They tending to show limited delegation because clinical experience of nurses decreased and their confidence in delegation might reduce. Majority of head nurse improved knowledge score levels regarding delegation after program implementation, compared to before program implementation.

Preprogram high percent of head nurses had unsatisfactory total practice level for steps of managerial task delegation process before program implementation.Those head nurses practice deficiency was obvious in relation to selecting tasks, organize for tasks, select delegated subordinate, instructing subordinate leader motivating subordinate leader, maintaining reasonable control and giving subordinate leader feedback. Lacking of head nurse practice before the guiding program might be attributed to their lack of knowledge about ideal steps of delegation and their high need for present study guiding program to guarantee better delegation knowledge, skills and practice. After implementation of the program, the findings of the present study have revealed statistically significant improvement in head nursespractice for all steps of delegation.

Clement (2016)[27] study about essentials of management of nursing service and education, reveals that head nurse need to perform delegation steps to be effective, as define the task, select the most capable person, assess ability and training needs, explain the reasons, state required results, consider resources required, agree

deadlines, support and communicate feedback on happened results.**Also Riisgaard** (2016)[28] study about relations between task delegation and job satisfaction in general practice, illustrated that high percent of head nurses had lower score about steps of delegation tasks due to head nurse poor skills in delegation. While, post training program their skills had a highly statistically significant improvement related to steps of delegation tasks. Also, added that guidelines steps of delegation managerial tasks help enhancing delegation practice between the head nurse and the subordinate.

Mikhemer (2016)[29]study about head nurses performance regarding delegation process,found that above two thirds of head nurses had satisfactory performance related to delegation process preprogram implementation.

Results revealed that subordinate leaders showed either high or moderate level of barriersfor acceptance of delegated managerial tasks. The common barriers,were their ineffective training, lack of head nurse's supervision to control and direct them concerning delegated tasks. Actually they reported lack of self-confidence, fear of making mistakes and high work overload. Basically those subordinate leaders have high need for educational program to explain to them the principles, responsibilities and benefits of delegated managerial tasks. While head nurses required to tolerate subordinate leader's mistakes and provide training for them. As wellas give them time to talk and raise clarified questions to understand the given direction to develop, trust relations with each other.

Omolawal (2020) [30] study about delegation of responsibilities a leadership tool for subordinates competence development, found that majority of the respondents agreed that lack of confidence on the part of the subordinates is a barrier to accepting delegated tasks. As they do not possess the right level of skill performing tasks, lack knowledge needed for performing tasks, and their inadequate training were barrier to accepting delegated tasks. In the same context, **Khadim et el., (2018)**[31] study about nurse manager's attitudes and preparedness towards effective delegation, mentioned that lack of trust in subordinates and the incompetency of the delegator are barrier of delegation process.

Conclusion

Head nurses at Tanta Main University Hospital, Emergency Hospital and Tanta International Teaching Hospital had total

poor level of knowledge and unsatisfactory level of practice of delegation of managerial tasks. Preprogram, which reflected on their demand for guiding program. They are in need for information about principles, importance, steps and errors of delegation process. As well as information about methods to overcome barriers of subordinate leader's acceptance of delegating managerial tasks. Also, they need to be trained or practicing of delegation process.

The present study well designed and implement guiding program enforced head nurses talents and significantly improving their knowledge and practice. Also explained to head nurses some motivated action for subordinate leaders to accept delegated managerial tasks. Apparently head nurses at each ICU need specific follow up to the application of delegation of managerial tasks skills to help them for dealing with their ICU different managerial tasks of work situations.

Recommendations

On the line of the findings of current study these recommendations are suggested:

-In-service training program should be done for all head nurses to improve their knowledge and practice regarding of managerial tasks delegation process.

-Advertise steps of delegation process in every ICU of each of three hospitals under study settings.

-Provide appropriate rewarding of a successfully achieved delegated task

-Assessing barriers in the practice setting and developing strategies to overcome.

-Prior preparation of subordinate leaders is central before delegating them managerial tasks.

-Subordinate leaders should improve their self-learning about aspects of delegation managerial tasks.

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Nursing Students' Attitude and Satisfaction regarding to Blended Learning at the Time of COVID 19 Pandemic

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Abstract

Background: Blended learning is an advance dmodel that encompasses the advantages of both traditional teaching in the classroom, Information and Communication Technology (ICT) supported learning. Blended learning requires rigorous efforts, right attitude, handsome budget and highly motivated teachers and students for its successful implementation**. Aim:** To assess the nursing students' attitude and satisfaction toward blended learning at the time of COVID 19 pandemic. **Subjects and Method: Design:** A descriptive design was used to achieve study aim. **Subjects:** 400 students participated in the study were drawn from all four study levels (100 of each) of undergraduate students from both sexes who enrolled in blended learning courses for two semesters at the academic year 2020\2021. **Tools:**Two tools were used to gather data, Students' attitude questionnaire and Student Satisfaction Survey Form. **Results**: 57.0% of studied students were female, 94% of them had secondary school certificate, 93.8% of them use smart phones, 84.2% had positive attitude toward blended learningand 90.2% were unsatisfied toward blended learning. **Conclusion:** Levels of nursing students' attitude and satisfaction shows non-significant relationship between sex and last scientific certification. There wasstatistically non-significant weak negative correlation between attitude total score and satisfaction total score among studied sample (-.040,p=.425). **Recommendations:** For faculty administration: Involve blended learning as alternative plan at the time of crisis. Improve the infrastructure of internet for effective implementation of blended learning. Encourage the students to discuss the barriers for using blended learning and support from administrative authority to deal with the barriers face the implementation of blended learning.

Key words: Blended learning, Attitude, Satisfaction, Nursing students, COVID 19 Pandemic

Introduction

Utilization of distance learning in higher education institutions has extended around the world [(1)]. Distance learning using digital tools can be defined as "the utilization of electronic innovation to convey, backing and improve both learning and instructing and includes correspondence among students and educators using on the web content" [(2)]. Distance learning might work with an instructive change from an educator focused methodology in which talks may bring about a single direction correspondence, to a student focused methodology which includesstudents' collaboration with their instructors. Training through distance learning with computerized instruments can work with changeability in learning circumstances and course content[(3)].

A blended learning (BL) approach involving campus based learning and distance learning may increase motivation for students in their learning process in comparison with distance learning only [(4)].Online learning in nursing education was as effective as traditional campus based learning as revealed in many studies[(5)].Also, previous studies reported contradictory or equivalent results regarding the advantages and barriers of traditional campus based learning and distance learning using digital tools for nursing education [(6)].

The call for blended learning as a mode of instruction arises from the common concern of keeping the educators and students safe from the pandemic by restricting physical contact. However, the distance learning setting presents some challenges like information technology (IT) skills and resources [(7)]. Blended learning has been described as the convenient combination of facetoface teaching and online approaches and learning technologies which provide synchronous and asynchronous teaching tools and educational strategies[(6)].

Recently, the use of BL in nursing education has increased dramatically[(2)]. It has been shown to aid in academic performance and to add educational value in terms of attitudes and motivation, student satisfaction, knowledge, and communication skills [(2,8)].

Blended learning is characterized by impressive learner autonomy,provides students with ahigh level of independence and control over their learning [(9)].So, it has been considered to facilitate Metacognitive skill development and collaborative learning [(10)]. The upgrade of student

inspiration through techniques as achievement motivation has been related to good self-regulating learning (SRL) skills and successful learning in BL environments [(11)].Today, debates of blended learning have started to look at the profitsderivative from learning conditions described as direct education and variedpatterns of learning. Nevertheless of contrasts done by academics and designers, those studying blended learning have approved that student gratification is a standard obligation for effective application. Student satisfaction is reflected an essentialaspect in determining the value of blended learning[(10)].Level of studentscontact and the quality of the information accessibility and communications technology (ICT) arebasics that can affect their attitudes and readiness to use e-learning [(12)].COVID-19 pandemic caused agreat interruption of the academic field. The fight to fast moveinto electronic learning (e-learning) settings has impacted colleges, teachers and students at all levels. The number of institutions and universities around the world, providing distance education programs has expanded significantly and numerous nations have seen a stream in distance education. The United Nations Educational, Scientific and Cultural Organization (UNESCO) revealed that more than 1.37 billion students (80% of the global student population) have been influenced by this crisis [(13)]. The disruptions have constrained students to move from physical college campuses and adjust to new online educational settings.

They have confronted by mixed feelings of fear, loneliness, and uncertainty over what will happen with classes, exams, graduation and other important assignments affecting their study path, such as platform availability issues not withstanding potential corona virus health threats[(14)].

Significance of the study:

At the beginning of 2020, many countries have closed most sectors including the education sector due to unfamiliar situations caused by outbreak COVID 19 pandemic. Faculty of Nursing, Mansoura University was not an exemption from these changes. The methods of learning are extremely important topic that should be discussed in the light of combating the pandemic. The universities seek to adapt to new circumstances of teaching and learning during these unfamiliar periods to better serve their students. So, the aim of this study is to assess the level of overall students' attitude and satisfaction toward blended learning at the time of COVID 19 pandemic.

Aim of the study

The aim of this study is to assess nursing students' attitude and satisfaction toward blended learning at the time of COVID 19 pandemic.

Research questions:

1. What is the level of students' attitude toward blended learning?
2. What is the level of students' satisfaction toward blended learning?
3. What is the relation between students' attitude and satisfaction toward blended learning?

Subject and methods

Study design:

A descriptiveresearchdesign was utilized to conduct the study.

Descriptive studies are used when little is known about a particular phenomenon. The researcher observes, describes, and documents various aspects of a phenomenon. Correlational designs involve the systematic investigation of the nature of relationships, or associations between and among variables, rather than direct cause-effect relationships. Descriptive correlational studies describe the variables and the relationships that occur naturally between and among them[(15)].

Study Setting:

The study was conducted at Faculty of Nursing, Mansoura University.

Study Sample:

Consisted of 400 students who was drained from all four study levels (100 of each) of undergraduate students from both sexes who enrolled in blended learning courses for two semesters during the academic year 2020\2021. Steve Thompson formula was utilized to calculate the sample size, at 5% ∞ error (95.0% significance) and 20.0 β error (80.0% power of the study) Janet L. Peacock and Phil J. Peacock,(2020).

$$n = \frac{N \times P(1-P)}{(N-1 \times (d2 / Z2)) + P(1-P)}$$

n=Sample size

N=Total society size (2527 students)

Z= Corresponding standard class of significance 95 d=error percentage = (0.05) = 1.96

P= Percentage of availability of the character and objectivity= (0.1)

d = Error percentage = 0.05

The sample size was calculated to be 333 students increased to be 400 to increase power.

Tools of the study:

Two tools adapted by the researcher used to collect data.

ToolI:Students'attitude questionnaire that composed of two parts:

1st part: Students' demographic\personal characteristic as regards their age, gender, and level of study.

2nd part:Students'attitude questionnaire form. This tool was adapted from Tang and Chaw (2013)[17] andaimed to investigate students' attitudes towards several dimensions of blended learning. The instrument consists of 34 items that measure students' attitude towards six different aspects of blended learning: learning flexibility (4 items); online learning (8 items); study management (6 items); technology (4 items); classroom learning (5 items) and online interaction (7 items) with 5 point LikertScale ranging from '1-strongly disagree' to '5-strongly agree'. **Level of attitude**

According to the scoring system of the previously mentioned above form, the level of students' attitude can be classified as follow:Negative attitude < 102, Positive attitude from 102 -170.

Tool II: Student Satisfaction Survey Form (SSSF), Adopted from Naji, Nachouki, andAnkit, (2012)[18] which consists of 35 items on a 5 point LikertScale, ranging from '1-strongly disagree' to '5-strongly agree'. It addresses elements integral to student satisfaction in blended learning environments. The thirty five items addressed under the following five student satisfaction elements: instructor (5 items), technology (6 items), class management (3 items), interaction (9 items), and instruction (12 items).

Level of satisfaction

According to the scoring system of the previously mentioned above form, the level of students' satisfaction can be classified as follow:Unsatisfied<140, Satisfied from 140-175.

Method

Validity and reliability of the tools:

The initial version of the questionnaire was reviewed and judged by five experts in the field of faculty education to test its content validity and clarity and accordingly needed modifications were done. It was calculated and found to be (96%). The questionnaire's reliability and validity were computed and achieved by CronbachAlpha's. Coefficient level was achieved above 0.71.

A pilot study:

A pilot study was conducted on 10% of students' sample from the previously mentioned above settings to test the clarity, feasibility and applicability of the tools, modifications needed were done. The pilot study sample was excluded from theoriginal sample.

Ethical considerations:

An official permission to conduct the study was obtained from the Dean of Faculty of Nursing, Mansoura University. Oral consent was obtained from each student enrolled in the study after providing comprehensive information about the nature of the study, aim, benefits. The researcher was emphasizing that participation is absolutely voluntary. Participants was informed that they have the right to refuse to participate in the study and withdrawn at any time.

Field work:

The study was conducted from October 2020 to April 2021. The questionnaire was distributed to the selected students who were enrolled in groups by the researchers according to their lectures schedule for every level. The researchers explained the aim of the study, the different parts and components of the tool used, and the student's oral instructions were given. The time needed to accomplish the questionnaire ranges from 10 to 20 minute. All participants were asked to fill out the questionnaire and respond to it at the end of the course.

Statistical analysis and data interpretation:

Data were fed to the computer and analyzed using IBM SPSS Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp. Qualitative data were described using number and percent. Quantitative data were described using mean, standard deviation for parametric data after testing normality using Kolmogrov-Smirnov test. Significance of the obtained results was controlled at the (0.05) level.

Data analysis

Qualitative data:

- Chi-Square test for association of 2 or more groups

Spearman's correlation:

The Spearman's rank-order correlation is used to determine the strong point and direction of a linear relationship between two non-normally distributed continuous variables and / or ordinal variables.

Results

Table (1): Frequency distribution of the studied students' demographic characteristics. This table clarifies that age of studied students were equally distributed with percentage of 25% for each age category. Females were more prevalent in the study sample than males; they constitute 57.0% of studiedstudents. Regarding last scientific certification 94% had secondary school certificate and only 6% had technical Institute certificate.

Level of study was equally distributed among studied students from 1st to 4th level with percentage of 25% for each level. Concerning mode of access to online courses, the highest proportion 93.8% ofstudiedstudentsuse Smart phones whereas only 6.2%use Laptop or PC.

Table (2): Frequency distribution and means of nursing students' attitude toward blended learning dimensions. This table represents frequency distribution and means of nursing student's attitude toward blended learning dimensions, which divided into six main domains. Mean of learning flexibility was 12.06±4.58. Regarding online learning's mean represented as 22.69±2.04. Study management dimension was 17.36±2.01andtechnology dimensionwas 13.03±1.38 concerning mean of classroom learning was represented as 24.34±1.09. Online interaction was 17.87±1.95, while mean of total attitude was 107.34±5.92.

Figure (1): Level of attitude among studied students toward blended learning. As illustrated in figure (1) the percentage of students who had positive attitude toward blended learning was 084.2% while negative attitude represented as 15.8% of studied sample.

Table (3): Frequency distribution and means of nursing students' satisfaction toward blended learning dimensions. This table represents frequency distribution and means of nursing students' satisfaction toward blended learning dimensions, which divided into five main categories. Students' mean satisfaction regarding instructor was 14.37±1.43.The mean of their satisfaction regarding technologywas15.67±1.35.Class management showed the mean of9.17±1.01.Themean of interactions dimension was 25.09±2.24. Students' mean regarding instruction was34.57±2.42.While mean of total satisfaction was 98.88±4.09.

Figure (2):Level of satisfaction among studied students toward blended learning. As revealed in figure (2) the majority of studied students (90.2%) was unsatisfied toward blended learning while 9.8% of them was satisfied.

Table (4):Relation between levels of nursing students' attitude and their characteristics.

Level of nursing students' attitude showed no significant relationship between sex and last scientific certification where P=0.278&0.652 respectively while there was a statistically significant relation between level of attitude and level of study P=0.008.

Table (5): Relation between levels of nursing students' satisfaction andtheir characteristics.

Level of nursing students' satisfaction showed no significant relationship between sex and last scientific certification where P=0.938&0.639respectively while there was a statistically significant relation between level of satisfaction and level of study P=0.005.

Table (6): Correlation between nursing students' attitude total score, ageand level of study.

This table shows statistically significant weak negative correlation between nursing students' attitude total score andboth age(-.147,p=.003) and level of studywhich alsowas (-.147,p=.003).

Figure (3)and (4): **Correlation between nursing students' satisfaction total score, age and level of study.**As revealed in figure (3) and (4) there is a statistically significant weak positive correlation betweennursing students' total satisfaction score and both age(-.143,p=.004) and level of study which also was (-.143,p=.004)

Table (7):Correlation between attitude total score and satisfaction total score among studied sample. This table shows statistically non-significant weak negative correlation between attitude total score and satisfaction total score among studied sample (-.040,p=.425).

Table (1): Frequency distribution of the studied students' demographic characteristics (n=400)

Students' Demographic characteristics	N=400	%
Age		
• 19 Years	100	25.0%
• 20 Years	100	25.0 %
• 21 Years	100	25.0%
• 22 Years or more	100	25.0%
Sex		
• Male	172	43.0%
• Female	228	57.0%
Last scientific certification		
• Secondary School	376	94 %
• Technical Institute	24	6 %
Level of study		
• 1st level	100	25.0%
• 2nd level	100	25.0%
• 3rd level	100	25.0%
• 4th level	100	25.0%
Mode of access to online courses		
• Laptop or PC	25	6.2%
• Smart phones	375	93.8%

Table (2): Frequency distribution and means of nursing students' attitude toward blended learning dimensions (n=400)

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	No	%	No	%	No	%	No	%	No	%
1- Learning flexibility										
1. I prefer to have limitless access to lecture materials	82	20.5	52	13.0	131	32.8	23	5.8	112	28.0
2. I prefer to choose where I want to study	71	17.8	63	15.8	124	31.0	46	11.5	96	24.0
3. I prefer to study at my pace	53	13.2	48	12.0	188	47.0	62	15.5	49	12.2
4. I would like to choose time of my study	48	12.0	112	28.0	140	35.0	39	9.8	61	15.2
Mean ± SD**12.06±4.58**										
2- Online Learning										
5. I suppose that on field learning is more successful than online learning	0	0.0	0	0.0	15	3.8	14	3.5	371	92.8
6. Self-directed learning was pleased for me	72	18.0	304	76.0	19	4.8	2	0.5	3	0.8
7. I don't refuse to have my lessons online	95	23.8	201	50.2	74	18.5	27	6.8	3	0.8
8. I prefer online learning as it supply sufficient content	127	31.8	184	46.0	68	17.0	19	4.8	2	0.5
9. I would like to diminish lecture time within classroom	7	1.8	217	54.2	118	29.5	37	9.2	21	5.2
10. I would like to study online instead of classroom	375	93.8	7	1.8	18	4.5	0	0.0	0	0.0
11. It is interesting tostudy online	0	0.0	0	0.0	0	0.0	0	0.0	400	100.0
12. It is not easy to study online	25	6.2	80	20.0	144	36.0	128	32.0	23	5.8
Mean ± SD 22.69±2.04										
3- Study Management										
13. I'm more likely to get assignment due dates in an online learning environment	40	10.0	87	21.8	146	36.5	98	24.5	29	7.2
14. .I coordinate my time wellduringonline study	16	4.0	40	10.0	171	42.8	0	27.5	0	15.8
15. I can study repeatedlymore online	6	1.5	13	3.2	88	22.0	249	62.2	44	11.0
16. Online learning inspire me to get ready well for my studies	305	76.25	56	14.0	30	7.5	8	2.0	1	0.2
17. Online learning helps me to construct plans	335	83.8	0	0.0	65	16.2	0	0.0	0	0.0
18. Online learning helps me to take the responsibility of my studies	0	0.0	0	0.0	60	15.0	76	19.0	264	66.0
Mean ± SD17.36±2.01										
***4-* Technology**										
19. I think that Web is a helpfullearning platform	0	0.0	206	51.5	1	0.2	89	22.2	104	26.0
20. I am intimate with Web technologies	13	3.2	22	5.5	282	70.5	63	15.8	20	5
21. Web technologies are easy to use for me	8	2.0	49	12.2	293	73.2	39	9.8	11	2.8
22. I believe that we ought to utilize technologies in learning	2	0.5	0	0.0	349	87.2	32	8.0	17	4.2
Mean ± SD13.03±1.38										
5- Classroom Learning										
23. I feel better once I meet other colleagues in the classroom	0	0.0	0	0.0	42	10.5	86	21.5	272	68.0

24. I prefer the rapid feedback during meeting my lecturer personally.	0	0.0	1	0.2	4	1.0	11	2.8	384	96.0
25. Collaboration with others vis-a-vis is more effective	0	0.0	1	0.2	2	0.5	9	2.2	388	97.0
26. I learn effectively through lecturer-directed classroom activities	0	0.0	0	0.0	5	1.2	18	4.5	377	94.2
27. I educateeffectively when someone guides me personally	0	0.0	1	0.2	2	0.5	23	5.8	374	93.5
Mean ± SD24.34±1.09										
6- Online Interaction										
28. I feel separated in an environment of online learning	208	52.0	103	25.8	89	22.2	0	0.0	0	0.0
29. It is suitable for me to use Web technologies in exchanging knowledge with others	0	0.0	79	19.8	321	80.2	0	0.0	0	0.0
30. I preferonline interaction with my lecturer	73	18.2	90	22.5	209	52.2	28	7.0	0	0.0
31. I preferinteractionoutside of the classroom with other students	21	5.2	42	10.5	261	65.2	52	13.0	24	6.0
32. I find it effortless to deal with others online	39	9.8	106	26.5	165	41.2	90	22.5	0	0.0
33. I acknowledgesimple online access to my lecturer	30	7.5	95	23.8	217	54.2	58	14.5	0	0.0
34. It is easy for me towork with a virtual team in performing assignments	67	16.8	140	35.0	193	48.2	0	0.0	0	0.0
Mean ± SD17.87±1.95										
Total attitude	Mean ± SD**107.34±5.92**									

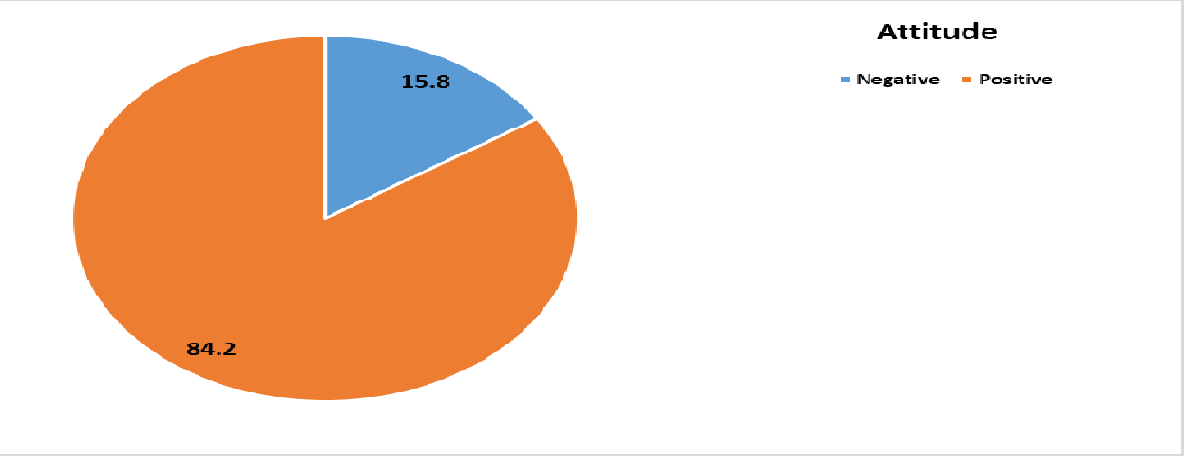

Figure (1): Level of attitude among studied students toward blended learning (n=400)

Table (3): Frequency distribution and means of nursing students' satisfaction toward blended learning dimensions (n=400)

	Strongly Dis-satisfied		Dis-satisfied		Neutral		Satisfied	
	No	%	No	%	No	%	No	%
1- Instructor								
1. The instructor helps me to be a member of the class	29	7.2	85	21.2	192	48.0	94	23.5
2. I'm satisfied with the availability of the instructor.	0	0.0	103	25.8	221	55.2	76	19.0
3. The instructor utilizetechnology of blended learning well	0	0.0	25	6.2	258	64.5	117	29.2
4. Class assignments were communicated to me obviously.	0	0.0	37	9.2	263	90.8	0	0.0
5. Tests and other tasksevaluation feedback was given in a timely pattern	0	0.0	230	57.5	170	42.5	0	0.0
Mean ± SD 14.37±1.43								
2- **Technology**								
6. The voice of instructor is audible	37	9.2	183	45.8	180	45.0	0	0.0
7. Course content clearlyshowed on the smart board	0	0.0	0	0.0	400	100.0	0	0.0
8. The microphone is working in a well condition	0	0.0	48	12.0	320	80.0	32	8.0
9. The video picture is obviouswhen the lecturer explain the lesson.	0	0.0	40	10.0	252	63.0	108	27.0
10. Technical issues are not recurrent and they do not antagonisticallyinfluence my understanding.	230	57.5	170	42.5	0	0.0	0	0.0
11. The technology utilized for blended teaching is reliable	42	10.5	78	19.5	214	53.5	66	16.5
Mean ± SD15.67±1.35								
3- **Class management**								
12. Punctuality is highly noticed during blended learning classroom	0	0.0	0	0.0	400	100	0	0.0
13. The lecturer always takes absenteeism	0	0.0	97	24.2	201	50.2	102	25.5
14. My attendance in anonline classes,the same ason field classes	0	0.0	86	21.5	165	41.2	149	37.2
Mean ± SD9.17±1.01								
4- **Interactions**								
15. Session of blended learning keeps me constantly focusedand alert.	0	0.0	93	23.2	205	51.2	102	25.5
16. Communication is appropriately maintained.in the blended learning classroom,	189	47.2	133	33.2	56	14.0	22	5.5
17. Presence ofmale or female studentsin the blended learning classroom paying attention to my participation notinterferewith my communication.	0	0.0	0	0.0	259	64.8	141	35.2
18. A blended learning enhances the students' need togo to their lecturer in their office-hours.	0	0.0	107	26.8	185	46.2	108	27.0
19.During the blended learning classroom, I can	121	30.2	159	39.8	117	29.2	3	0.8

discontinue the lecturer to ask any question.								
20. Quality of interaction was satisfied among all involved parties	0	0.0	36	9.0	204	51.0	160	40.0
21. I'm satisfied with the collaboration activities during the course	0	0.0	0	0.0	259	64.8	141	35.2
22. The manner of communication with other students wassatisfied for me.	72	18.0	90	22.5	210	52.5	28	7.0
23. My participation in the class wasconvinced for me.	34	8.5	98	24.5	187	46.8	81	20.2
Mean ± SD25.09±2.24								
5- **Instruction**								
24. Utilization of technology in the blended learning promote me to educate independently	0	0.0	54	13.5	229	57.2	117	29.2
25. My comprehension is enhancedin comparison with similar courses I studied before.	0	0.0	54	13.5	243	60.8	103	25.8
26. My achievement in exams is improved in comparison with previously similar courses that studied before	87	21.8	1	0.2	213	53.2	99	24.8
27. The level of effort this course required was satisfied for me.	0	0.0	79	19.8	253	63.2	68	17.0
28. I'm satisfied with my achievement in this course	2	0.5	20	5.0	262	65.5	116	29.0
29. I supposethat my final grade will be satisfied for me.	34	8.5	34	8.5	244	61.0	88	22.0
30. I am fulfilled with my ability to implement what I have learned.	80	20.0	65	16.2	226	56.5	29	7.2
31. In caseof I know this was going to be a blended learning class, I would have engaged in it.	75	18.8	67	16.8	232	58.0	26	6.5
32. I'mready to take other coursesvia the blended learning delivery mode	28	7.0	102	25.5	244	61.0	26	6.4
33. I am fulfilled with this course to recommend it to others.	18	4.5	74	18.5	285	71.2	23	5.8
34. I'm fulfilled sufficiently with this learning experience in comparison with face-to-face course settings,	23	5.8	53	13.2	295	73.8	29	7.3
35. I interest in working on duties by myself	46	11.5	40	10.0	276	69	38	9.5
Mean ± SD 34.57±2.42								
Total satisfaction Mean ± SD**98.88±4.09**								

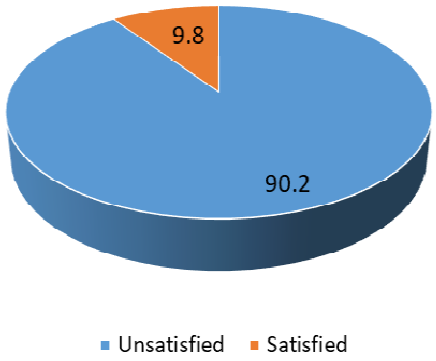

Figure (2):Level of satisfaction among studied students toward blended learning (n=400)

Table (4): Relation between levels of nursing students' attitude and their characteristics.

	Level of Attitude		Test of significance
	Negative N=63	**Positive N=337**	
Sex			
• Male	31(49.2)	141(41.8)	χ^2=1.175
• Female	32(50.8)	196(58.2)	P=0.278
Last Scientific certification			
• Secondary School	60(95.2)	316(93.8)	χ^2=0.203
• Technical institute	3(4.8)	21(6.2)	P=0.652
level of the study			
• 1st	13(20.6)	87(25.8)	χ^2=11.96
• 2nd	9(14.3)	91(27.0)	P=0.008*
• 3rd	15(23.8)	85(25.2)	
• 4th	26(41.3)	74(22.0)	

χ^2=Chi-Square test

*statistically significant if p<0.05

Table (5):Relation between levels of nursing students' satisfaction and their characteristics

	Level of Satisfaction		Test of significance
	Unsatisfactory N=361(%)	**Satisfactory N=39(%)**	
Sex			
• Male	155(42.9)	17(43.6)	χ^2=0.006
• Female	206(57.1)	22(56.4)	P=0.938
Last Scientific certification			
• Secondary School	340(94.2)	36(92.3)	χ^2=0.219
• Technical institute	21(5.8)	3(7.7)	P=0.639
level of the study			
• 1st	91(25.2)	9(23.1)	χ^2=13.04
• 2nd	89(24.7)	11(28.2)	P=0.005*
• 3rd	98(27.1)	2(5.1)	
• 4th	83(23.0)	17(43.6)	

χ^2=Chi-Square test

*statistically significant if p<0.05

Table (6): Correlation between nursing students' attitude total score, ageand level of study

	Attitude total score R
Age groups /years	-.147** (.003)
Level of study	-.147** (.003)

r:Spearman correlation co-efficient

**Correlation is significant at the 0.01 level

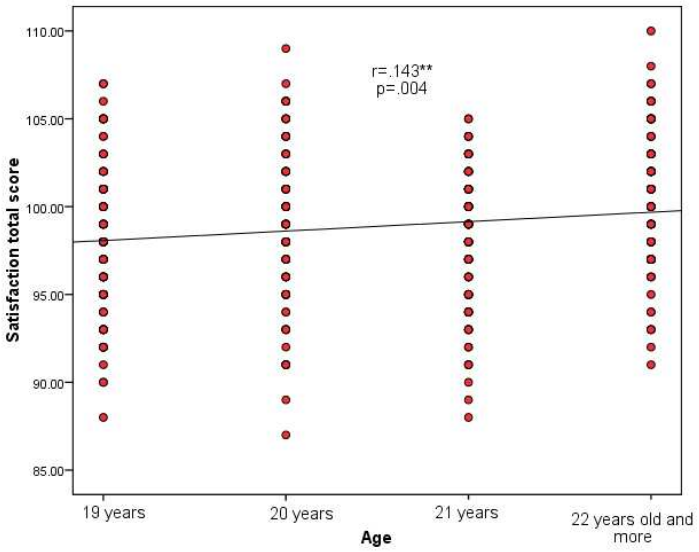

Figure (3): **Correlation between nursing students' satisfaction total score and age**

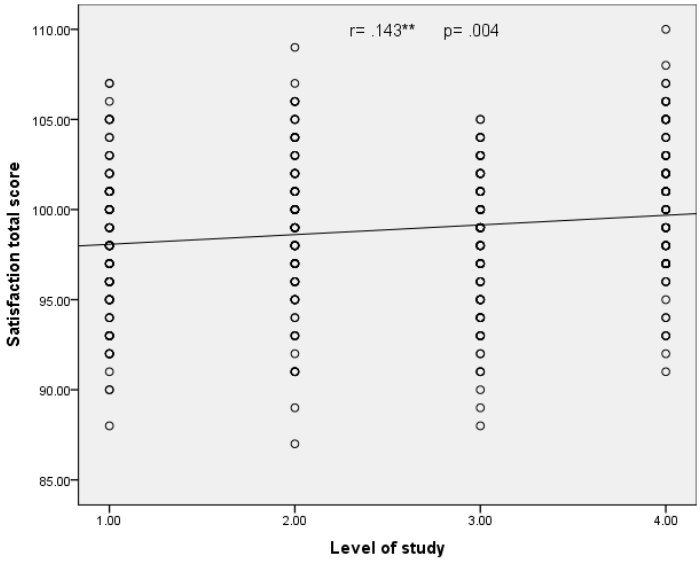

Figure (4): **Correlation between nursing students' satisfaction total score and level of study**

r: Spearman correlation co-efficient

**Correlation is significant at the 0.01 level

Table (7):Correlation between attitude total score and satisfaction total score among studied sample

		Satisfaction total score
Attitude total score	r	-.040
	P	.425

r:Spearman correlation co-efficient

**Correlation is significant at the 0.01 level

Discussion

Blended learning (or mixed or hybrid learning) emerged as a new teaching method for distance learning among higher education institutions. It integrates face-to-face teaching with web-based learning through the application of technology and the internet to improve students' learning and encourage teachers' to change their methods of education, and therefore to shift learning to a more student-centered model rather than a teacher-centered learning model. There is a need to measure the quality of blended learning through students' attitude and satisfaction because of increasing the usage of blended learning**Alsalhiet al.(2019)[18]andAbdul Rahman et al. (2015)[19]**.

The key factor in determining the quality of blended learning is students' satisfaction through measuring students' level of pleasure and the efficacy of the student's education experience **Naji, et al. (2012)[17].**Attitude concerning technology may be shaping think about student willingness for online learning, through this extremely advanced technology era, it's common for students to be adaptive and amenable of current technologies. Thus, their attitude encourages them to use these technologies to emphasize the standard of teaching and learning **Alanazy(2018)[20].**

Accordingly, this study attempted to assess the level of the overall nursing students' attitude and satisfaction toward blended learning at the time of COVID 19 pandemic. Regarding students' attitude toward blended learning, the present study revealed that all studied students were strongly agree about getting interested when studying online with more than sixty percent of them were agree about study over and over again online. This result may be related to the benefits of studying nursing online as save time and effort for both students and teachers, cost of studyis lower a more flexible. Besides that, technology makes it easier to reach out and collaborate with a teacher on materialsthat students may be struggling to understand in traditional classroom.This results was agreed by Khalilet al.(2020) [21], who revealed that the online modality was well-received, and all participants agreed that online sessions were time saving and that their performance was improved due to enhanced utility of time. Also, concluded that online classes were well-accepted by the medical students. On the other hand, this result was opposite with the survey by National Union of students(2020)[22], who surveyed of nearly 4,200 students has found that twenty- seven percent of students did not agree that they have been able sufficiently to access education online.

Regarding the level of nursing students' attitude toward blended learning, the result of this study showed that more that eighty-percent of studied students had positive attitude toward blended learning. This result may be related to the crisis condition of COVID 19 Pandemic which forcing all universities to follow the instructions of Egyptian Ministry of Health to decrease the spread of infection and reduce crowding of students. This made the universities to resort to blended learning as an alternative education method to finish the educational curricula on time according to their study plan.

This result go in the same line with the study of **Aladwanet al. (2018)**[23]who mentioned that In general the students have shown positive attitude towered blended learning. Also, **Taghizadehand Hajhosseini (2020)**[24]mentioned that most learners had positive attitudes to blended learning technology and argued that learning in blended classes happens better than face-to-face ones. This result was not accepted by the study of **Ja'ashan (2015)**[25]whichshowed that the students had negative impressions in some points as waste of time, easy cheating and social isolation.

Regarding the studied students' satisfaction toward blended learning, the current study revealed that he quality of interaction between all involved parties gained forty-percent of students' satisfaction.This results may be related to the variety of interaction means in blended learning, for example (in traditional classroom) they will have their peers sitting right next to them, which lets them work together on course activities inside classroom. In addition to the (online classes) students can interact with peers and teachers via the class message board or forum and other means which reflects good interaction.

This result go in the same line with **Taghizadeh and Hajhosseini (2020)** [24]who showed that the learners had highest amount of positive response to the items of interactions especially 'they receive enough feedback from their instructors when they need it'and ' The instructor regularly posts some questions for students to discuss on the discussion board'. In addition to**Roff, (2018)**[26]revealed that the main reason why students want to take blended courses is that it "provides interaction with the instructor.

The present study showed that the majority of studied student (more than ninety percent) were unsatisfied toward blended learning. This result may be related to difficult access to the internet,poor internet infrastructure and its high cost. This turned

out to be the most critical factors in both Web-based and blended learning.This result is opposite with the result of the study hold by **Al Awamleh(2019)**[27]and mentioned that students 'satisfaction was generally high with more than Eighty percent and also satisfied about blended program and online learning environment.

Regarding the relation between students' sex,last scientific certificationand level of attitude the present study revealed no relation between them. This result may be related to there are many factors affect the students' attitudes as experience, knowledge, learner confidence, system access, academic achievement not the gender. This result go in the same line with the finding of**Lake, (2020)**[28] who confirmed that many factors suchaslearners' experiences and knowledge required for using BELS can stimulate learners to be more confident to execute all BELS activities that helps increase learners' positive attitude and performance achievement. Also,the results of**Daset al. (2014)**[29] and **Goniet al. (2015)** [30]showed that there was no significant difference between boys and girls students in attitude towards education.

The result of the current study showed that there is no relation between level of students' satisfaction,sex and scientific certification. This finding may be related to there are many important factors that can affect the learners' satisfaction in using blended learning as e-learning adaptability, perceived usefulness, in-time of teacher's response, perceived ease of use and course applicability not the sex or scientific certification.

This result go in the same line with **Naji et al. (2012)**[17]who reported no statistically significant differences were found between females and males with respect to the satisfaction on blended learning. On the other hand, this result not matched with the finding of **Al-Fadhli(2008)** [31]thatshowed that there is strong significance difference between students' attitude and their gender toward e- learning.

The finding of the current study showed that there is statistically significant weak negative correlation between total attitude score and both age and level of study. This finding may be related to the factors that affect the attitude of students toward blended learning as experience, knowledge, learner confidence, system access, academic achievement not the age. This result go in the same line with the result of **Markovich (2015)**[32] who mentioned that no significant correlations were found between age and the total online learning attitude score

The finding of the recent study revealed that there is non-significant negative weak correlation between attitude total score and satisfaction total score toward blended learning among studied sample. This result not matched with the result of **Giannousiet al. (2010)**[33]who showed that a significant positive correlation between perceived e-learner satisfaction and students' general attitude toward blended learning.

Conclusion

In the light of our study findings, it was concluded that the majority of studied students had positive attitude toward blended learning, also, the majority of them were unsatisfied toward it. There is weak negative correlation attitude total score and satisfaction total score among studied sample. No significant relationship between students' attitude, sex and last scientific certification and no significant relationship between students' satisfaction, sex and last scientific certification.

Recommendation: Forfaculty Administration

1**.** Involve blended learning as alternative plan at the time of crisis

2. Improve the infrastructure of internet for effective implementation of blended learning

3. Encourage students for more usage of internet websites to implement all courses activities.

4. Encourage the students to discuss the barriers for using blended learning.

5. Support from administrative authority to deal with the barriers face the implementation of blended learning.

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Effect of Individualized Guidance on Knowledge and Self-Care Practices of Psoriasis Patients

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Abstract:

Background: Psoriasis is a chronic, immune-multisystem, inflammatory disease that affects the skin and joints and there is a necessity for monitoring and educating patients about benefits as well as risks that may be correlated. **Aim:** Evaluate the effect of individualized guidance on knowledge and self–care practices of psoriasis patients. **Subjects and methods:Design:** A quasi-experimental design was utilized. **Setting:** The study was conducted at the Dermatology outpatient clinic at El-Mansoura University Hospitals. **Sample:** Purposive sample of 100 adult patients diagnosed with psoriasis from both sexes and they equally divided into study & control groups, (50) patients for each one. **Tools:** Two tools were used for data collection; the first tool was a structured interviewing questionnaire, and the second tool was the psoriasis disability index. **Results:** Mean age of the studied psoriasis patients in the study and control group were 44±8.6 and 42± 7.9 respectively. There was a highly statistically significant difference between the study and the control group in all items of psoriasis knowledge (p-value > 0.001). As well there were highly statistically significant differences between both groups post individualized guidance implementation regarding reported skincare and psoriasis affected areas in all items with (p-value > 0.001). There was a significant difference between the study and control group in the total level of disability post individualized guidance (P > 0.001). **Conclusion:** Implementation of individualized guidance had a positive effect on patients' knowledge and overall reported self-care practices including skincare and self-esteem with a decrease of the level of psoriasis disability, additionally a positive correlation between total scores of knowledge and total scores of reported practices were found. **Recommendations:** Individualized guidance should be recommended as a nursing intervention protocol during the care of every patient with psoriasis.

Keywords: Individualized guidance, Psoriasis, and Self- care practice

Introduction:

Psoriasis is a chronic, immune-mediated disease that is equally prevalent in men and women, affecting 1%-3% of the population worldwide as well as affects approximately 7.4 million adults in the United States. It is a skin disorder that causes skin cells to multiply up to 10 times faster than normal [(1)]. This makes the skin build up into uncomfortable red patches covered with white scales. Psoriasis is associated with physical symptoms including red, scaly, itchy, and painful skin lesions, joint pain and many patients experience adverse psychological effects, including poor body image, stress, embarrassment, and depression [(2)].

Psoriasis can grow anywhere, but most appear on the scalp, elbows, knees, and lower back. Psoriasis cannot be transmitted from person to person. It sometimes happen in members of the same family. Psoriasis triggers differ from person to person but the commonest may include skin injury (cuts, scrapes or surgery, emotional stress, streptococcal or other infection that affects the immune system, certain prescription medications (such as lithium and beta-blockers), cold weather, or when people have less exposure to sunlight and humidity or exposure more to hot or dry indoor air**.** There are several types of psoriasis, and the patient may have more than one type of psoriasis at the same time. It is also possible for one type of psoriasis to develop and become more severe [(3)].

Psoriasis types include plaque psoriasis which is the most common form of the disease, and it appears as raised, red patches (plaques) covered with silvery scales. These patches or plaques most often show up on the scalp, knees, elbows, and lower back, and they are often itchy and painful, and they can crack and bleed. Guttate psoriasis; this type primarily affects young adults and children. It is usually triggered by a bacterial infection (such as strep throat). It is characterized by small, water-drop-shaped, scaling lesions that appear on the trunk (back, chest and abdomen), as well as the arms, legs, and scalp [(4)]. Guttate psoriasis can flare up on its own and it can improve on its own. Inverse psoriasis: causes large patches of red, inflamed skin to appear in body folds, (such as the armpits, behind the knees, between the thighs, and under the breasts), and it can affect some or all these areas at the same time. This condition worsens with friction and sweating. Other less common types of psoriasis include Pustular psoriasis is characterized by raised bumps (blisters) that are filled with

noninfectious pus. Pustular psoriasis can occur in any part of the body. Erythrodermic psoriasis can cover the entire body with a red, peeling rash that can itch or burn intensely. Individuals having an erythrodermic psoriasis flare should see a doctor immediately since this form of psoriasis can be life-threatening [(5)]**.**

To successfully control psoriasis, patients and healthcare providers must work with each other to recognize how to manage psoriasis considering psoriasis severity, comorbidities, and potential side effects of medications, treatment costs, and patient preferences. So, nurses might improve patients' disease conditions and can assist with these changes by providing educational opportunities and strategies that increase self-care practices, thus making a positive impact on patient's daily life. Additionally, the nurses spent the most time with patients and families, and they have many opportunities for educational activities. Patients experiencing psoriasis should know how to care for themselves to manage the symptoms [(6)]**.**

As well as the steps of psoriasis self-care practices which include avoidance of all factors which may aggravate psoriasis, avoidance of picking at or scratching the affected area. Ways to prevent dry skin are encouraged because dry skin worsens psoriasis. Water used in the care of the patient's skin should be warm, avoid too hot, and the skin should be dried by patting with a towel rather than rubbing. Oil bath or emollient cleansing has a moisturizing effect, avoid using soap or other irritating cleansing substances, wearing cotton clothes, and avoid wearing synthetic fabrics, or using too much salty, sour, or acidic foods [(7)].

Individualized guidance provides an opportunity for the patient to be fully aware of his/ herself and how the patient is responding to the influence of his/her environment and allows the patient to talk about their feelings, thoughts, and behaviors, or things that are troubling him. The nurse should work with the patient to set goals or identifying the things he would like to accomplish together. Individualized guidance promotes the individual's recognition of the disease, increases his/her incentive to make behavioral changes, and consequently improves clinical outcomes. On the other hand, training self-care practices for patients could improve the patients' knowledge and promote self-care practices about psoriasis. Furthermore, it could increase the patients' feeling of self-control over the disease and lead to better skincare procedures [(8)]**.**

Significance:

Psoriasis is a common disorder worldwide and is considered a frustrating disease for both patients and caregivers. The prevalence of psoriasis in Egypt varies from 0.19% to 3%. This means that it affects approximately 2 million Egyptian citizens [(9)]. A study done by Parisi et al. [(10)] reported that registration of psoriasis cases is not compulsory, therefore reliable data are difficult to be found. As the patient may suffer from psoriasis because of social stigmatization or delayed diagnosis and inadequate treatment options.

Psoriasis is an autoimmune disease that can lead to other comorbidities as psoriatic arthritis (PSA), eye diseases, Parkinson's disease, high blood pressure, metabolic syndrome, cardiovascular disease, type 2 diabetes, kidney disease, anxiety, and depression [(11)].

Psoriasis has been considered as a complex long-term condition involving physical, psychological, and social challenges, including a significant impact on daily living. Patients with lack knowledge about the disease and its self-care practices, as well as scientific evidence for these self-care practices are still limited patients with psoriasis. Just a few studies have been performed, while only a few nursing types of research were found, despite several searches in the literature. So, patient education and self-care practices seem to be essential assistance tools for helping those patients to increase their general knowledge about the disease and consequently their self-care practice skills, which could lead to higher therapy adherence and decrease disease severity [(12)]. Therefore, it is important to train patients with psoriasis on self-care practices and establish self-care interventions.

Aim of the Study:

This study aimed to evaluate the effect of individualized guidance on knowledge and self–care practices of psoriasis patients through:

- Assessing of level of knowledge and self-care practice of patients with psoriasis.
- Assessing the severity and level of disability of patients with psoriasis.
- Developing Individualized guidance for knowledge and self-care practices about psoriasis based on the patient's assessed needs.
- Implementing the Individualized guidance for the study group
- Evaluating the effect of the individualized guidance on the patient's knowledge and self-care practices.

Research hypotheses

H1. Patients in the study group will have a statistically significant improvement of knowledge and reported self-care practices to post individualized guidance implementation as compared to the control group.

H2. There will be a significant improvement in the level of psoriasis disability index among the study group who will receive the individualized guidance as compared to the control group.

H3. There will be a positive direct correlation between psoriasis patients' total scores of knowledge and total scores of reported self-care practices among the study group.

Subjects and methods

Research design:

A quasi-experimental research design was utilized to conduct this study.

Technical design:

It included research setting, subjects, and tools for data collection.

Setting:

The study was conducted at the Dermatology outpatient clinic at El-Mansoura University Hospitals.

Subjects:

A purposive sample of **100** adult patients diagnosed with psoriasis then equally divided into study and control groups, (50) patients for each one with the following criteria:

- The confirmation of the diagnosis of psoriasis by a dermatologist.
- Age over 18 years.
- Free from any other related medical condition that can interfere with their abilities to perform a daily living activity such as chronic cardiac or respiratory diseases as well as any other dermatology diseases.
- Willingness to participate in the study.

Sample size calculation:

Based on the flow rate obtained from the Dermatology outpatient clinic at El-Mansoura University Hospitals in the previous year 2019-2020 which was the year of the pandemic period of covid-19 the total population = 133 and according to Solvin's 1967 formula for sample size calculation the required sample was 100 patients were divided randomly and equally to be 50 psoriasis patients in each group [13].

Where:

n= Corrected sample size.

N = Population size.

e = Margin of error, and e = 0.05 based on the research condition.

Tools of data collection:

Two tools were utilized to achieve the aim of the study

The tool I: Structured Interviewing Questionnaire. It was developed by researchers in Arabic language after reviewing recent related literature and research studies [14,1,15], it included four parts:

Part 1: Demographic characteristics: It included (age, sex, marital status, residence, level of education, occupation, and source of information about psoriasis).

Part 2: Medical History: It was composed of seven (7) items in the form of closed-ended questions, it included duration of disease, factors that aggravate and increase risk of psoriasis, history of other chronic diseases, sites affected with psoriasis, severity, clinical manifestations that appeared on patients, types of psoriasis.

Part 3: Patient's level of knowledge: It was used to assess the patient's level of knowledge about psoriasis as (meaning of the disease, causes, types, signs and symptoms, possible complications and its management, definition, and steps of self-care and methods of psoriasis care).

Scoring system:

Knowledge obtained from studied patients was checked with a model answer and scored as the following: Complete correct answer takes "three", while the incomplete answer takes "two" and a wrong answer or don't know takes "one". The patients' knowledge total score 24 grades & converted into percentage and construed as follows:

- Good >80% with scores ranged from 19-24 grades.
- Fair 60 -80% with scores ranged from 14-18 grades.
- Poor < 60% with score ranged from 8-13 grades.

Part 4: The reported Self-care Practices and Self-esteem of Patients with Psoriasis: it included reported self-care practices regarding skincare, and care of affected areas as well as self-esteem of patients.

Scoring system:

This part was rated on a three-point rating scale of performance "always" three grades, "sometimes" two grades, "rarely one" grade. The total score of this part was 99 grades. The higher scores indicated higher practice levels. They were categorized as: scores equal to or more than 80 % were considered as satisfactory reported practice level and scores lower than 80 % were considered as unsatisfactory reported practice level.

Tool II: The Psoriasis Disability Index (PDI) which was adopted from [16]**,** is a disease-specific questionnaire measuring disability induced by psoriasis and the burden of living with psoriasis. It included 15 questions underline the heading

concerned with daily activities, work / school, personal relationships, leisure, and treatment. It was filled by the patients or researchers in the case of the illiterate patient.

Scoring system:

The scoring of each question is answered on a series of 4 answers (not at all scored (0), a little scored (1), a lot scored (2), and very much scored (3). The Psoriasis Disability Index is calculated by summing the score of each of the 15 questions, resulting in a maximum of 45 and a minimum of zero. The higher scores indicating greater impairment in a patient's ability.

Operational design:

- **Preparatory phase:**

It included reviewing current and past available literature and theoretical knowledge of various aspects of the study using the booklet, articles, internet, periodicals, and magazines to develop the data collection tools.

Validity of tools

The study tools were tested for validity through the judgments of 5 juries; four experts in Community and Adult Health Nursing (two professors in Community Health Nursing & two professors in Adult Health Nursing), and one expertise from medical staff at the dermatology department.

Reliability of the tools

The reliability test for the present study tools was established by using Cronbach's alpha which showed good internal consistency and good reliability as shown in this table

Reliability of the tools	
0.723	Knowledge
0.866	Practice
0.848	Psoriasis disability index (PDI) questionnaire

Ethical consideration

An informed consent from each participant in the study was obtained. Each participant was conversant about the purpose of the study and its significance. The participants were also informed that their participation in the study was completely voluntary, and they have the right to withdraw from the study at any time without giving any reason. Additionally, all study patients were assured that anonymity and confidentiality were considered through coding the data. Moreover, all of them were informed that the data were not reused in another research without their permission.

Pilot Study:

A pilot study was done on 10% of the study sample about 10 patients to evaluate tools' clarity, applicability, and feasibility and to estimate the time needed for filling in the tools. The pilot study data were analyzed, and no modifications were done to the study tools. So, those who participated in the pilot study were included in the main study sample.

Fieldwork (Procedure)

- Data collection was started and completed within 6 months in the period from beginning March 2021 till the end of August 2021.
- The purpose of the study was explained by the researchers to patients who agreed to participate in the study before any data collection; the study patients were divided into study and control groups. The study tools were filled in and completed by the researchers in 2 stages (pre-individualized guidance and post one month after the implementation of individual guidance.
- Researchers were available at the Dermatology Outpatient Clinic at El-Mansoura University Hospitals two days per week (Monday & Thursday) from 9 am to 1 Pm.

Data were collected through four phases:

Phase I: Assessment phase: In this phase, the researchers collected data from both groups (study & control). It was begun by the patient structured interview questionnaire which includes the patient's demographic characteristics, level of knowledge, and reported self-care activities, and PDI. The tools took about (20-30) minutes for each patient to fulfill. The data that was obtained during this phase was considered the basis for the individualized guidance (pre-test).

Phase II: **Planning phase:** After identifying the needs of the psoriasis patients in the assessment phase, an

individualized guidance program was designed and developed by the researchers, based on the assessment phase results. It was designed to improve patient's knowledge and self-care practices regarding psoriasis disease.

Proposed Individualized guidance

Individualized guidance was designed by the researchers based on patients assessed needs and related literature to enrich the patients with information regarding psoriasis aiming to improve their knowledge and promote self-care practices. It was written in a simple Arabic language. It covered the following items: meaning, types, causes, risk factors, signs and symptoms, diagnosis, management, complications of the disease, health guidance about self-care practices.

Phase III: Implementation phase: during this phase, the study group was individually interviewed by the researchers, and the aim of the study was explained for each patient. The researchers distributed hand-outs in the Arabic language to the study group; the study group received an Individualized guidance program through individual interviews by the researchers. It took about (45-60 min) to accomplish all booklet contents as well as explaining all instructions and self-care practices and answers all patient questions. While the patients in the control group received only pharmacological treatment.

Phase IV: Evaluation phase: Evaluation for both groups was conducted through interviewing patients at the outpatients' clinic one-month post individualized guidance implementation (post-test) using the same pretest tools to evaluate the effect of the implemented individualized guidance on improving patients' knowledge and reported self–care practice.

Administrative design:

Before carrying out the study, the necessary approvals were obtained from the hospital director and nursing director of El-Mansoura University Hospitals. An official letter was issued to them from the Faculty of Nursing, Helwan University explaining the aim of the study to obtain permission for the collection of data.

Statistical Design:

Data entry and statistical analysis were performed using personal computer software, the statistical package for social sciences (SPSS), version 20. Suitable descriptive statistics were used such as frequency, percentage, mean and standard deviation. A Chi-square test was used to detect the relation between the variables. Also, the correlation coefficient (r) test was used to estimate the closeness association between variables. Independent ANOVA (F) test was used to compare

more than two means scores of both studied variables. The p-value is the probability that an observed difference is due to chance and not a true difference. A significant level value was considered when the p-value < 0.05 and a highly significant level value was considered when p-value< 0.001, while p-value > 0.05 indicates non-significant results.

Results:

Table (1) presents that the mean age of the psoriasis patients in the study and control group were 44±8.6 and 42± 7.9 respectively. Regarding their sex 62%, 58% were males in both study and control groups respectively. As well regarding marital status in the study and control groups, 62% of both groups were married. Additionally, regarding their place of residence 60% of both groups were from rural areas. 52% and 38% respectively of the study and control group were secondary educated. Also, 28% and 32% respectively of both studied groups were housewives. As well, 48% and 38 % respectively of both study and control group did not hear before about psoriasis. No statistically significant difference was noticed among the study and control groups in all demographic characteristics.

Table (2) Reflects that the mean± SD of disease duration was 6.5±3.2 among the study group and was 7.6± 6.1 among the control group. Regarding the risk factors, the highest risk factor was new sore throat or URTI it was 54% in the study group and 38% in the control group. Regarding psoriasis, sites72% of the study group referred to the knee while the control group 78% referred to the elbow. Regarding the severity of psoriasis, the study and control group reported moderate severity it was 40 % & 46% respectively. Additionally, the signs and symptoms of psoriasis both groups reported red spots on the surface of the skin covered with thick silvery areas 88% & 82% respectively. While 80% & 66% respectively of the study and control group reported that they had plaque type of psoriasis

Table (3): Explains that there was a highly statistically significant difference between study and control group patients in all items of psoriasis knowledge pre and post-individualized guidance (p-value < 0.001). It is obvious that the total mean scores of psoriasis knowledge among the pre-study group and control group (11.12±3.23&11.76±3.64 respectively) confirmed poor knowledge; it was improved to be 19.90±3.72 among the study group post individualized guidance while there was no improvement among the control group (12.78±4.35).

Figure (1) Introduces that there was noticeable progress among study group's total score of knowledge pre and post-individualized guidance rather than the control group. As well as the figure shows that 80% of the control group, as well as 86% of the study group, had poor knowledge of pre-individual guidance, while 76.0% of the study group had good knowledge rather than the control group 18% after the individual guidance.

Table (4) Demonstrates that pre-individualized guidance both groups study and control reported that they rarely conducted the skincare practices with no statistically significant differences ($p > 0.05$) except in seven items like avoiding prolonged exposure to the sun to avoid dryness and irritation of the skin, wear light, soft, cotton clothes and apply psoriasis ointments and creams they conducted these items sometimes with significant differences between them related to those items.

Table (5) Demonstrates the highly statistically significant differences between study and control groups 'post individualized guidance implementation regarding reported skincare and psoriasis affected areas in all items with (p-value < 0.001).

Figure (2): Poses that, there was a radical satisfactory improvement in the study group' total score of reported practices post implementing the individualized guidance to be 82% in the post-test rather than of 12% in the pre-test among the study group and while no satisfactory improvement among control group post the individualized guidance implementation (16%).

Table (6) Demonstrates that there was no statistically significant differences between study and control groups' pre-individualized guidance regarding self-esteem of psoriasis patients reported in all items except with three items (satisfied with myself, can face life's challenges &get loved in my family) with (p-value >0.05).

Table (7) Demonstrates the highly statistically significant differences between study and control groups' post individualized guidance regarding self-esteem of psoriasis patients reported in all items with (p-value < 0.001) except in only three items (think about myself, get loved in my family and have reliable friends) there was no significant difference with p-value > 0.05.

Table (8) Illustrates statistically significant improvement in patient's total level of disability and appeared through patients' daily activities, studying/ working,

personal relationship, leisure time, and regular treatment with (p-value < 0.001) with totally highly significant differences between study and control group at (p-value < 0.001) post individualized guidance implementation. It is evident that the total psoriasis disability mean scores among the study group and control group pre-individualized guidance implementation were (32.22±7.23& 34.30±5.02) respectively which confirmed severe disability; it was dropped to 17.82±4.57 post-implementation period among the study group with no change in the control group.

Table (9) Reveals that there were detected statistically significant strong direct correlation between total scores of pre-knowledge and total scores of pre reported practices before individualized guidance with (p-value < 0.001), While a statistical significant week direct correlation of post-study group which was 0.021 and no statistical significant difference that was 0.938 among control group post individualized guidance with p-value > 0.05

Table (1): Demographic Characteristics of Psoriasis Patients Study and Control Group (n = 100)

Variables	Study Group (no.= 50)		Control Group (no.=50)		X^2	P-value
	N	%	N	%		
Age Group/ years						
- 30 to less than 40	19	38	21	42	16.6	0.940
- 40 to less than 50	18	36	20	40		
- 50 and more	13	26	9	18		
Mean± SD	44±8.6		42± 7.9			
Sex						
- Male	31	62	29	58	0.167	0.419
- Female	19	38	21	42		
Marital status						
- Single	9	18	11	22	1.57	0.665
- Married	31	62	31	62		
- Divorced	5	10	2	4		
- Widow	5	10	6	12		
Place of residence						
- Rural	33	66	30	60	0.386	0.534
- Urban	17	34	20	40		
Educational level						
- Primary	12	24	17	34		
- Preparatory	7	14	9	18	3.192	0.670
- Secondary	26	52	19	38		
- University	5	10	5	10		
Occupation						
- Not work	9	18	7	14	1.296	0.935
- Housewife	14	28	16	32		
- Worker	7	14	6	12		
- Free working	8	16	7	14		
- Professional work	7	14	6	12		
- Employee	5	10	8	16		
Source of information						
- Not hear before	24	48	19	38	8.573	0.199
- Internet	7	14	5	10		
- Mass media	0	0.0	5	10		
- Family/ Friends	3	6	5	10		
- Doctors/ Nurses	11	22	10	20		
- Other psoriasis patient	5	10	6	12		

P > 0.05= not significant

Table (2): Medical History Characteristics of Psoriasis Patients Study and Control Group (n = 100)

Medical history items	Study Group (No.= 50)		Control Group (No.=50)	
	N	%	N	%
Duration of disease (years)				
- ≤ 5	22	44	28	56
- 6-10	24	48	11	22
- ≥ 11	4	8	11	22
Mean± SD	6.5±3.2		7.6± 6.1	
Risk factors*				
- Family history	10	20	4	8
- New sore throat or URTI**	27	54	19	38
- Psychological stress	26	52	9	18
- Obesity	4	8	4	8
- Smoking/Coffee	20	40	15	30
- Ulcerative colitis	15	30	11	22
History of Chronic disease				
- Yes	16	32	25	50
- No	34	68	25	50
Psoriasis affected sites*				
- Elbow	32	64	39	78
- Knee	36	72	34	68
- Skin folds	17	34	17	34
- Hair scalp	33	66	26	58
- Palm	23	46	25	50
Severity				
- Mild	9	18	7	14
- Moderate	20	40	23	46
- Sever	21	42	20	40
Signs / Symptoms*				
- Red spots on the surface of the skin covered with thick silvery areas	44	88	41	82
- Small spots covered with scales	6	12	8	16
- There is dryness or cracks in the skin and there may also be bleeding in the affected area	22	44	26	52
- Itching or burning sensation in the affected area	35	70	27	54
- Nails may thicken or become wrinkled	22	44	16	32
- Swelling and stiffness of joints	13	26	11	22
Psoriasis type				
- Plaque	40	80	33	66
- Guttate	8	16	13	26
- Inverse	2	4	4	8
- Pustular	0	0.0	0	0.0

***Responses are not mutually exclusive **URTI: Upper respiratory tract infection**

Table (3): Comparison between Study and Control Group Patients Scores of Knowledge Pre and post-Individualized Guidance (n=100)

Psoriasis Knowledge Items	Study Group (No.=50)		Control Group (No.=50)		F- test	P-value
	Pre-Individual Guidance Mean± SD	Post-Individualized guidance Mean ±SD	Pre-Individual Guidance Mean± SD	Post-Individualized guidance Mean ±SD		
-Meaning	1.40±0.57	2.70±0.53	1.83±0.63	1.54±0.78	50.619	**0.000****
-Causes	1.42±0.64	2.50±0.64	1.30±0.54	1.34±0.51	48.882	**0.000****
-Types	1.30±0.58	2.38±0.60	1.44±0.64	1.68±0.819	25.781	**0.000****
-Signs and symptoms	1.54±0.45	2.64±0.66	1.74±0.59	1.90±0.73	28.182	**0.000****
-Complication and problems	1.36±0.56	2.28±0.57	1.44±0.54	1.46±0.50	31.373	**0.000****
-Concept of self-care	1.60±0.42	2.34±0.59	1.30±0.58	1.52±0.78	37.451	**0.000****
-Steps of self-care practices	1.34±0.51	2.54±0.57	1.46±0.64	1.62±0.78	36.529	**0.000****
-Methods of self-care practices	1.60±0.53	2.50±0.64	1.70±1.7	1.72±0.45	28.796	**0.000****
Total Scores	**11.12±3.23**	**19.90±3.72**	**11.76±3.64**	**12.78±4.35**	**58.166**	**0.000****

**** Highly statistically significant at p-value <0.001**

Figure (1): Comparison between Study and Control Group Patients Regarding Total Knowledge Scores Pre and Post Individualized Guidance (n = 100)

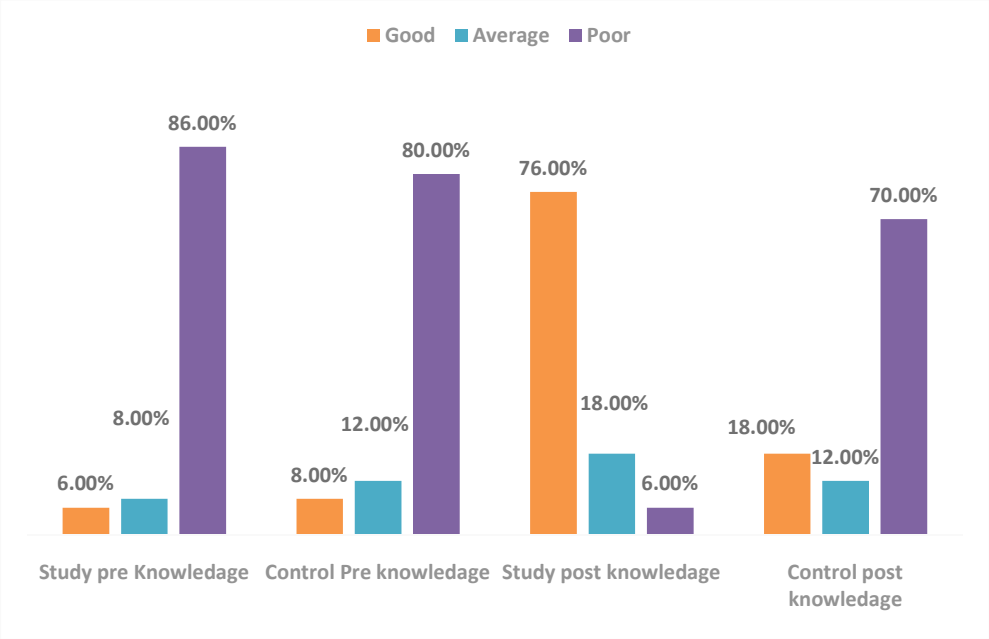

Table (4): Comparison between Study and Control Group Patients Regarding Reported Self Care Practices in relation to Skin Care and Psoriasis Affected Areas" Pre - Individualized Guidance (n = 100).

Items of skincare of psoriasis affected areas reported self care practices	Pre- Study Group No=50			Pre- Control Group No= 50			Chi^2-X^2	P-value
	Always %	Sometimes%	Rare %	Always %	Sometimes%	Rare %		
-Commit to showering with warm water daily, and the duration of the shower is 5-15 minutes	12.0	68.0	20.0	0.0	76.0	24.0	6.404	0.041*
-Use a soft towel to dry the skin	14.0	36.0	50.0	4.0	28.0	68.0	4.651	0.098
-Follow the tack method when drying the skin	10.0	46.0	44.0	0.0	34.0	66.0	8.100	0.017*
-Commit to daily moisturizing the skin 1-3 times a day	28.0	22.0	50.0	12.0	38.0	52.0	4.909	0.086
-Expose myself to the sun for 15-20 minutes to benefit from the ultraviolet rays	2.0	50.0	48.0	6.0	44.0	50.0	1.212	0.546
-Avoid prolonged exposure to sun to avoid dryness and irritation of the skin	18.0	56.0	26.0	0.0	38.0	62.0	18.087	0.000**
-Wear light, soft, cotton clothes	8.0	50.0	42.0	2.0	70.0	28.0	4.867	0.088
- Apply psoriasis ointments and creams under the supervision of a doctor	24.0	56.0	20.0	8.0	48.0	44.0	8.808	0.012*
-Avoid getting scratches or cuts on the skin	18.0	46.0	36.0	6.0	50.0	44.0	3.483	0.175
-Avoid using alcohol-containing products that may irritate the skin without	8.0		14.0	4.0		32.0		0.000**
-Consulting a doctor	4.0	78.0	14.0	4.0	64.0	32.0	4.879	0.087
-Get enough rest daily Walking / Deep Breathing	6.0	26.0	68.0	8.0	24.0	68.0	0.183	0.913
-Drink adequate amounts of water 6-8 glasses daily	28.0	32.0	40.0	8.0	40.0	52.0	6.783	0.034*
-Eat balanced meals rich in omega-3 fish (salmon) - olive oil / whole grains	12.0	38.0	50.0	6.0	32.0	62.0	1.900	0.387
-Eat vegetables like spinach and carrots, and fruits like berries and mangoes	10.0	30.0	60.0	4.0	56.0	40.0	7.216	0.027*
-Avoid eating red meat and dairy products in abundance	2.0	32.0	66.0	6.0	42.0	52.0	2.506	0.286
-Try to reduce/quit/exposure to smoking	0.0	36.0	64.0	4.0	48.0	48.0	4.000	0.135

**** Highly statistically significant at p-value < 0.001**

Table (5): Comparison between Study and Control Group Patients Regarding Reported Self Care Practices in relation to Skin Care and Psoriasis Affected Areas' Post - Individualized Guidance (n = 100).

Items of skincare of psoriasis affected areas reported self care practices	Post-Study Group No=50			Post- control No= 50			Chi2-X2	P-value
	Always %	Sometimes %	Rare %	Always %	Sometimes %	Rare %		
-Commit to showering with warm water daily, and the duration of the shower is 5-15 minutes	74.0	22.0	4.0	16.0	60.0	28.0	34.637	0.000**
-Use a soft towel to dry the skin	56.0	44.0	0.0	18.0	22.0	60.0	43.423	0.000**
-Follow the tack method when drying the skin	58.0	30.0	12.0	8.0	34.0	58.0	34.179	0.000**
-Commit to daily moisturizing the skin 1-3 times a day	48.0	34.0	18.0	12.0	36.0	52.0	19.0	0.000**
-Expose myself to the sun for 15-20 minutes to benefit from the ultraviolet rays	54.0	28.0	18.0	18.0	38.0	44.0	15.209	0.000**
-Avoid prolonged exposure to avoid dryness and irritation of the skin	70.0	30.0	0.0	0.0	38.0	62.0	66.471	0.000**
-Wear light, soft, cotton clothes	72.0	28.0	0.0	18.0	62.0	20.0	32.622	0.000**
-Apply psoriasis ointments and creams under the supervision of a doctor	62.0	38.0	0.0	16.0	48.0	36.0	32.145	0.000**
-Avoid getting scratches or cuts on the skin	56.0	44.0	0.0	16.0	42.0	42.0	32.134	0.000**
-Avoid using alcohol-containing products that may irritate the skin without	48.0	32.0	20.0	14.0	64.0	22.0	14.704	0.001**
-Consulting a doctor	64.0	36.0	0.0	22.0	28.0	50.0	35.756	0.001**
-Get enough rest daily Walking / Deep Breathing	54.0	26.0	20.0	12.0	24.0	64.0	24.927	0.000**
-Drink adequate amounts of water 6-8 glasses daily	64.0	38.0	0.0	12.0	38.0	50.0	42.817	0.000**
-Eat balanced meals rich in omega-3 fish (salmon) - olive oil / whole grains	60.0	40.0	0.0	10.0	30.0	60.0	48.571	0.000**
-Eat vegetables like spinach and carrots, and fruits like berries and mangoes	76.0	22.0	0.0	8.0	56.0	36.0	53.899	0.000**
-Avoid eating red meat and dairy products in abundance	30.0	52.0	18.0	8.0	40.0	52.0	15.408	0.000**
-Try to reduce/quit/exposure to smoking	44.0	38.0	18.0	18.0	46.0	36.0	8.833	0.012*

**** Highly statistically significant at p-value < 0.001**

Figure (2): Comparison between Study and Control Group of Psoriasis Patients 'Total Scores of Reported Self Care Practices Pre and Post Individualized Guidance (n = 100)

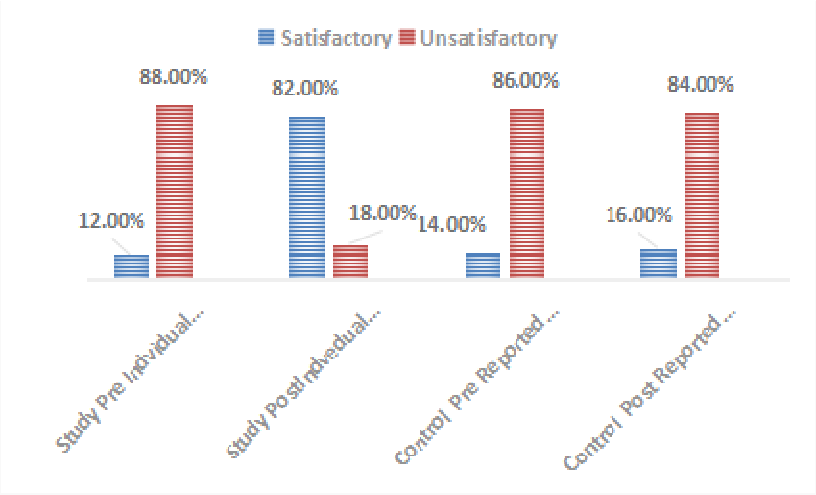

Table (6): Comparison between Study and Control Group Patients Regarding Reported Self Care Practices Concerning Self-Esteem of Pre -Individualized Guidance (n = 100).

Items of Self-esteem Reported Self Care Practice	Pre- Study Group No=50			Pre-Control Group No= 50			Chi^2-X^2	P-value
	Always %	Sometimes %	Rare %	Always %	Sometimes %	Rare %		
-Satisfied with myself	42.0	58	0.0	24.0	62.0	14	9.521	0.009**
-Think about myself that I'm a good person	30.0	65.0	14.0	34.0	50.0	16.0	0.361	0.835
-Face situations and problems with confidence	16.0	58.0	26.0	32.0	40.0	28.0	4.357	0.113
-Set goals that I want to achieve	10.0	58.0	32.0	22.0	40.0	38.0	4.160	0.125
-Can face life's challenges	8.0	76.0	16.0	28.0	50.0	22.0	8.712	0.013*
-Accept failure and change my plans	28.0	44.0	28.0	28.0	54.0	18.0	1.597	0.450
-Use the experiences of others to set my goals	28.0	56.0	16.0	40.0	34.0	26.0	4.938	0.085
-Find the ability to overcome difficult situations	34.0	48.0	18.0	36.0	46.0	18.0	0.050	0.975
-Accept fate and destiny	72.0	20.0	8.0	76.0	18.0	6.0	0.250	0.883
-Have reliable friends	44.0	26.0	30.0	38.0	42.0	20.0	3.102	0.212
-Get loved in my family	30.0	46.0	24.0	54.0	32.0	14.0	6.001	0.050*
-Keep my presence special among my friends	18.0	48.0	34.0	22.0	40.0	38.0	0.675	0.714
-Offer help whenever anyone need it	20.0	54.0	26.0	22.0	60.0	18.0	0.933	0.627
-Enjoy teamwork	16.0	54.0	30.0	18.0	54.0	28.0	0.093	0.954
-Ask for help when needed	38.0	48.0	34.0	38.0	52.0	10.0	0.413	0.813
-Have a good ability in building new relationship	26.0	46.0	28.0	42.0	28.0	30.0	4.106	0.128

** Highly statistically significant at p-value >0.001

Table (7): Comparison between Study and Control Group Patients Regarding Reported Self Care Practices Concerning Self-Esteem of Post Individualized Guidance (n = 100).

Items of Self-esteem Reported Self Care Practice	Post-Study Group No=50			Post-Control Group No= 50			Chi^2-X^2	P-value
	Always %	Sometimes %	Rare %	Always %	Sometimes %	Rare %		
-Satisfied with myself	98.0	2.0	0.0	26.0	62.0	12.0	55.028	**0.000****
-Think about myself that I'm a good person	54.0	28.0	18.0	36.0	50.0	14.0	5.153	**0.076**
-Face situations and problems with confidence	70.0	30.0	0.0	32.0	40.0	28.0	21.793	**0.000****
-Set goals that I want to achieve	58.0	42.0	6.0	24.0	40.0	36.0	22.721	**0.000****
-Can face life's challenges	54.0	46.0	0.0	30.0	50.0	20.0	13.512	**0.001****
-Accept failure and change my plans	78.0	22.0	0.0	30.0	54.0	16.0	25.404	**0.000****
-Use the experiences of others to set my goals	92.0	8.0	0.0	42.0	34.0	24.0	29.376	**0.000****
-Find the ability to overcome difficult situations	84.0	16.0	0.0	38.0	46.0	16.0	23.930	**0.000****
-Accept fate and destiny	68.0	30.0	10.0	78.0	18.0	20.0	2.176	**0.337**
-Have reliable friends	84.0	10.0	6.0	42.0	40.0	18.0	19.000	**0.000****
-Get loved in my family	74.0	24.0	2.0	58.0	30.0	12.0	4.874	**0.087**
-Keep my presence special among my friends	76.0	14.0	10.0	26.0	40.0	34.0	25.060	**0.000****
-Offer help whenever anyone need it	94.0	4.0	2.0	26.0	58.0	16.0	48.227	**0.000****
-Enjoy teamwork	80.0	20.0	0.0	22.0	54.0	24.0	36.301	**0.000****
-Ask for help when needed	82.0	18.0	0.0	42.0	50.0	8.0	17.981	**0.000****
-Have a good ability in building new relationship	92.0	8.0	0.0	46.0	26.0	28.0	26.431	**0.000****

**** Highly statistically significant at p-value< 0.001 & No significant at p value > 0.05**

Table (8): Comparison of Psoriasis Disability Level between the Study and Control Group Patients Pre and Post Individualized Guidance (n = 100)

Psoriasis patient abilities	Study Group (No=50)		Control Group (No.=50)		F- test	P-value
	Pre-Individualized Guidance Mean ±SD	Post-Individualized guidance Mean ±SD	Pre-Mean± SD	Post-Mean± SD		
- Daily Activities	12.4±2.20	6.74± 1.35	11.66±2.22	11.2±2.12	74.749	0.000**
- Studying or working/ Not Working	7.04 ±1.35	3.98±1.20	7.46±1.16	7.36±1.10	88.909	0.000**
- Personal relationship	3.16±1.69	1.74±0.89	4.26±1.50	4.14±1.63	32.02 4	0.000**
- Leisure time	8.14±2.77	4.46±1.70	9.0±2.37	8.82±2.59	40.320	0.000**
- Regular treatment	1.48±0.76	0.90±0.46	1.92±0.63	1.88±0.65	27.506	0.000**
Total	**32.22±7.23**	**17.82±4.57**	**34.30±5.02**	**33.48±5.65**	**129.095**	**0.000****

**** Highly statistically significant at p-value < 0.001**

Table (9): Correlation between Psoriasis Patients' Total Scores of Knowledge and Reported Self Care Practice Items Pre and Post Individualized Guidance (n = 100).

Total Scores of Reported Practice	Total Scores of Knowledge	
	r	p-value
Study Group Pre-Individual Guidance	0.904	0.000**
Study Group Post Individual Guidance	0.236	0.021*
Control Pre- Group	0.287	0.043*
Control Post Group	0.011	0.938

** Highly statistically significant at p-value < 0.001 & * statistically significant at p < 0.05

Discussion:

Psoriasis is a common chronic inflammatory skin condition. It is a complex immune-mediated inflammatory disease that occurs in genetically susceptible individuals. It has a chronic course with multiple evolving relapses and patients require long-term treatment and follow-up [(17)]**.** Evidence showed that patients prefer an individualized approach to their treatment; patients want to be seen as a person, not as a psoriasis case. Some patients report that their complaints are not considered by doctors, which hinders their treatment. So, those patients report that doctors are not prepared to face the situation and minimize the problem, leaving them with feelings of rejection and with the gravity of their problems underestimated. Hence, there is a great need to support the individual issues of their lives beyond illness [(18)] as cited at [(19)]**.**

Part I: Demographic Characteristics and Medical History of study patients

The results of the current study revealed that the mean age of the studied patients in the study and control group were 44±8.6 and 42± 7.9 respectively, slightly more than two-thirds and more than half were males in both groups. Moreover, two-thirds of both groups were married. Additionally, two-thirds of both groups were from rural areas. Slightly more than half and two-fifth of the study and control group respectively were secondary educated. Also, about one-third of both studied groups were housewives. The study findings revealed that no statistically significant difference was noticed among the study and control groups in all socio-demographic characteristics. This could be indicated that both the study and control group were homogeneous.

The study results were supported by Eid and Elweshahi [(20)] in a study entitled "Quality of life of Egyptian patients with psoriasis" and mentioned that the mean age in the studied patients was 46.46±13.78 years, more than two-thirds were male and the majority of the patients were married, on the other hand, the same study stated that half of the study sample were living in urban areas and were employed which in disagreement with the results of the present study. Furthermore, the result agreed with the study conducted by Megna et al. [(21)] who mentioned that the onset of disease in middle age. In the same context [(14)] in the study of "Effect of Self-Care Management Program on Quality of Life and Disease Severity among Patients with Psoriasis" reported that a high percentage of patients in the study and

control groups were married, unemployed, secondary educated and live-in rural area additionally, they illustrated that there were no statistically significant differences between the study and control groups in all demographic variables. Similar findings supported these results in a study carried out by Najafi Ghezeljeh et al. [6] about "The Effect of Self-management Education on the Quality of life and Severity of the Disease in Patients with Severe Psoriasis" and stated that the majority of the studied patients was in the age range of 30-44 years with a mean of the patients' age in the control and intervention groups were 39.387 and 42.26 years respectively as well patients were mostly male, married and had the academic degree less than diploma with no statistically significant difference between both groups in socio-demographic characteristics. The study finding in disagreement with El-Hanafy et al. [22] in a study conducted in Kasr Al-Ainy Psoriasis Unit, Dermatology Department, and Cairo University to detect different demographic and clinical factors that affect the quality of life in Egyptian psoriatic patients and stated that the majority of their same lived in urban areas. Also, Sawicka et al. [23] in a study of "Evaluation of Knowledge in the Field of Proper Skin Care and Exacerbating Factors in Patients with Psoriasis" stated that many subjects were female, more than two-fifths had higher education.

Regarding the source of information nearly half and more than one-third of study and control groups respectively were not here before about psoriasis and only one-fifth of both groups got information from doctor/ nurse. The study finding disagreed with Sawicka et al. [23] who mentioned that the main source of information as reported by the patients related to the disease in their study was the internet (85%) and a dermatologist (60%). Mueller et al.[24] noticed that patients should look for information related to the disease from proven sources such as books, magazines, or scientific websites. From the researchers' point of view this finding reflecting that psoriasis is a long-term disability disorder affecting the young patients during their productive years as well as the hospital serves the surrounding rural areas with minimal fees, finally; differences in results between researches could be due to differences of tools used for data collection and sitting at which the study was conducted. **Concerning the duration of disease**, the current study results revealed that the mean duration of disease among the study and control group was 6.5±3.2 &7.6± 6.1

respectively. This finding was in the same line with Bulat et al. [25] who study "The Impact of Psoriasis on Quality of Life: Psychological, Social and Financial Implications" and mentioned that duration of disease was between 6 and 10 years. However, this result was inconsistent with Najafi Ghezeljeh et al. [6] who mentioned that the mean (SD) duration of the disease in the intervention and control groups were 8.545 ±8.2 and 14.463 ±8.4 respectively. This result from the researchers' clinical experience confirmed the urgent need of those patients for continuous follow-up as along disease duration and multiple disease problems throughout their life. **As regards the type of psoriasis,** the majority of the study group and more than two-thirds of the control group had plaque type. This finding was supported by Alhammad et al. [26] in a study on "A review on Updates in Management and Treatment of Psoriasis" who clarified that psoriasis Vulgaris (plaque) is the most prevalent type in around 90% of cases. Also, Yildizhan et al. [27] in a study of "Epidemiological and Clinical Characteristics, Treatments, and Comorbidities in Elderly Patients with Psoriasis" reported that plaque-type psoriasis was the most common type, (88%). In the same context, this result is congruent with Rendon and Schäkel [28] in a review about" Psoriasis Pathogenesis and Treatment" which clarified that plaque-type psoriasis is the most prevalent type affecting 80% to 90% of patients with psoriasis. This result was in harmony with a study done in Malaysia by Affandi et al. [15] about "Epidemiology and Clinical Features of Adult Patients with Psoriasis" who stated that the most common type of psoriasis in their study was plaque psoriasis (85.1%), followed by guttate psoriasis (2.9%).**Regarding the risk factors**, both study and control groups stated more than one risk factor and it is noticed from the study results that more than half and near than two-fifth of the study and control group reported new sore throat or upper respiratory tract infection (URTI) followed by psychological stress and smoking/coffee. The study findings were consistent with Rademaker et al. [29] in a review article about "Psoriasis and Infection, A clinical Practice Narrative" which stated that throat infection with streptococci has long been associated with both the initiation and acute exacerbation of psoriasis. Likewise [30] in a study entitled "Prevalence and Possible Role of Candida Species in Patients with Psoriasis" supported the previous finding as they proved an association between psoriasis and streptococcal infection as psoriasis occurs after streptococcal infection.

Continuing talking about risk factors regarding psychological stress and smoking/coffee the study result was supported by Snast et al. [31] in a study of "Psychological Stress and Psoriasis" who mentioned that stress is considered a commonly well-established trigger of psoriasis and many patients with psoriasis and physicians believe that stress exacerbates psoriasis. Another factor to be considered is smoking, which was supported by Lee et al. [32] in a study of "Smoking and risk of psoriasis", which revealed that smoking is associated with an increased risk of developing psoriasis; in addition, smoking is strongly associated with Pustular lesions of psoriasis. This could be due to more than two-thirds of the study were male as well they reported current and /or ex-smoker.

In term of signs and symptoms of psoriasis it is noticed that more than one sign and symptom were reported by studied patients, the results indicated that the majority of both groups reported red spots on the surface of the skin covered with thick silvery areas followed by itching or burning sensation in the affected area. These findings were in agreement with a recent study conducted at Banha city by Mohamed et al. [33] about "Knowledge and Self-Care Practices among Psoriatic Patients in Benha City" and showed that the chief complaints of the studied patients were scaling of the skin, itching, erythema, and fatigue. In the same line with the above-mentioned findings Alhammad et al. [26] confirmed that classical clinical manifestations are sharply demarcated raised lesions covered in silvery scales. As well the finding was supported by Zhang [34] in a study of "Guidelines for the Diagnosis and Treatment of Psoriasis in China" who stated that signs and symptoms of plaque psoriasis are dark red plaques with infiltrating erythema covered by white and silver-white scales; wax spot phenomenon and skin rashes with or without accompanying itching. The researchers' view could be due to the most type of psoriasis found in the present study was plague type and its manifestations appear as red, thick, scaly, raised-up areas on the skin that are itchy, painful, and can flake and bleed.

Concerning psoriasis sites, the results of the present study illustrated that the most common psoriasis sites reported in both groups were knee and elbow followed by the hair scalp. These findings were in accordance with Alhammad et al. [26] who stated that the most common sites were on the extensor surfaces of the limbs.

Similarly, Dopytalska et al. [35] in a study about "Psoriasis in special localizations" found that the incidence of scalp psoriasis among psoriatic patients is more than half (56%). While these findings were incongruent with Aldredge and Higham [36] in a study of "Manifestations and Management of difficult-to-treat Psoriasis" who observed that the majority of the psoriatic patients (up to 90%) have the scalp affected by the disease. This could reflect that psoriasis had multiple and different sites of spread in the body.

Part II: Effect of individualized guidance on studied patients Knowledge

Regarding the total score of knowledge, the results of the current study revealed that the majority of both study and control group patients had poor knowledge pre-individualized guidance as there were no statistically significant differences between both groups pre- individualized guidance regarding total mean scores of knowledge and there was a noticeable progress among study group total score of knowledge post individualized guidance with a highly statistically significant difference was found between study and control group in all items of psoriasis knowledge post individualized guidance (p-value < 0.001). These results supported the research hypothesis **(H1)** which stated that the study group will have a statistically significant improvement in the level of knowledge post individualized guidance as compared to the control group.

These results were in accordance with Omar and Ramadan [37] in a study aimed to assess the self-care practices of patients with psoriasis and factors affecting them who found that most studied patients had a poor level of knowledge in their assessment before providing any intervention. In the same direction with Bubak et al. [4] in a study entitled "Analyzing the value of an educational program for Psoriasis Patients" who found that neither the intervention nor the control group reported significant improvement of knowledge before educational program implementation, while a statistically significant increase in the general knowledge about psoriasis was noted in the intervention group than the control group ((p-value < 0.001). According to researchers' point of view improvement post individualized guidance implementation might be due to the effectiveness health instructions given to each patient individually using different teaching strategies as lectures, and colored booklet according to his/ her level of education and understanding as well as delivery of valid, understandable, and reliable medical information is essential to

empower and motivate patients for self-management of their disease. As well as, these results agreed with Nagarajan and Thappa [38] study which entitled "Effect of an Educational and Psychological Intervention on Knowledge and Quality of Life among Patients with Psoriasis" reported that the knowledge was significantly increased in the experimental group post program from 9 ± 2.2 before intervention to 23.6 ± 1.5 after the intervention. Also, these results were consistent with Shehata et al. [39] who studied "The Effect of Self Care Instructional Guidelines on Quality of Life of Patients with Psoriasis" and reported that patients' level of knowledge about psoriasis was deficient before implementing the instruction guideline despite their different level of education while patients 'level of knowledge showed significant improvement after implementation of the instruction guideline.

Part III: Effect of individualized guidance on studied Patients' self-care practices

Concerning self-care practices as regards skincare and psoriasis affected areas, the present study clarified that both groups study and control reported that they were rarely conducting the skincare practices with no statistically significant differences ($p > 0.05$) pre-individualized guidance while there was highly statistically significant differences between both groups post individualized guidance implementation regarding reported skincare and psoriasis affected areas in all items with ((p-value < 0.001). These results also supported the research hypothesis **(H1)** which stated that study group will have a statistically significant improvement in the level of reported self-care practices post individualized guidance as compared to the control group.

This might be due to that patients become exhausted from signs and symptoms of the disease especially itching and have the interested desire to overcome this problem by acquiring skills about skincare of affected area which demonstrates the effectiveness of education. On the same line Nabhan et al. [14] stated that applying a proper self-care management program had a significant improvement on skincare, bathing, and diet as well modification and dealing with weather changes. Moreover, the program increased personal control, encouraging active coping strategies. Additionally, agreed with Omar and Ramadan [37] who found that most studied patients had a poor level of self-care practices pre-intervention phase. This results in the same line with Karimipour et

al. [2] in a study entitled "The Effects of a Self-Care Program on Promoting Self-Care Behaviours in Patients with Psoriasis" who indicated that skin self-care behavioural patterns were statistically improved post-program in all items as cotton clothing, bathing, and water temperature. **Regarding Self- Esteem,** the present study results demonstrated highly statistically significant differences between study and control groups post individualized guidance regarding self-esteem of psoriasis patients reported in almost all items with no statistically significant differences between study and control groups pre-individual guidance. The present study results agreed with the recent study by Aydin et al. [41] about "Psychological Impact of Skin Disorders on Patients' Self-esteem and Perceived Social Support" and mentioned that patients exhibiting the lowest overall self-esteem levels before the treatment phase. Furthermore, the overall self-esteem level also differed significantly between the groups' post-treatment phase ((p-value < 0.001).

From the researcher point of view psoriasis requires repeating treatment, leads to cosmetic problems, causes complaints like pain, itching all this have negative results in the daily life of patients and cause psychological embarrassment and stigmatization in addition to low self-esteem and by proving guidance for each patient individually using different motivational techniques and listening carefully to patients when expressing their feelings help to improve their self-confidence and self-esteem. This explanation was supported by Aydin et al. [41] in a study titled "Identification of Anger and Self-esteem in Psoriasis Patients" who concluded that patients with psoriasis had lower self-esteem as well, healthy and normal-looking skin has a big significance in terms of physical and mental health and plays an important role in self-esteem and self -confidence improvement.

Part IV: Effect of individualized guidance on patient's level of disability

As regards psoriasis disability index, the current study illustrated that total psoriasis disability mean scores were dropped from 32.22±7.23 to 17.82±4.57 post-implementation period among the study group with no change in the control group with statistically significant improvement in patient's total level of disability and appeared through patients' daily activities, studying /work, personal relationship, leisure time and regular treatment with totally highly significant differences between study and control group at (p-

value < 0.001) post individualized guidance implementation. These results proved the second research hypothesis (**H2)** which stated significant improvement in the level of psoriasis disability index for study group who will receive individualized guidance as compared to the control group. From the researchers' view, that could be due to the patient's compliance to proper self-care practices and prevention of complications which resulted in improving the disability.

These results were supported by Nagarajan and Thappa [38] who mentioned that the mean score in the experimental group was significantly decreased from 15.6 (±6.9) at baseline to 9.9 (±5.1) after intervention with a significant decrease in the mean disability score related to daily activities, studying/ working, personal relations, leisure time activities and treatment (p-value < 0.001) after the intervention. In the same context Leino et al. [42] in a study of "Influence of Psoriasis on Household Chores and Time Spent on Skin Care at Home" reported the greatest impact of psoriasis on activities of daily living, especially affecting clothing choice, bathing routine, and sporting activities. Similarly, these results were in the same direction as the result of a study conducted by Brihan et al. [43] who concluded that psoriasis negatively impacts school, jobs, and interpersonal relationships.

In addition, Shehata et al. [39] showed statistically significant improvement in patient's level of disability, daily activities, work, personal relationship, leisure, and treatment abilities (p-value< 0.05) with totally highly significant improvement at (p-value< 0.001) post instruction implementation. Also, Leino et al. [42] in another study about "Perceived Impact of Psoriasis on Leisure-time Activities" confirmed that there was a marked adverse impact of psoriasis on leisure-time activities as well most of the patients studied had either reduced or completely given up at least one leisure-time activity. According to researchers' point of view, it is commonly recognized that the stigma associated with psoriasis affects multiple aspects of a patient's life, including relationships, social activities, and work additionally psoriatic patients often feel nervous and great pressure because of their appearance. So, they are not willing to take daily physical activities or join in social activities. This results in disagreement with Najafi Ghezeljeh et al. [6] that showed that both intervention and control groups had no significant differences in the score changes of personal relationships, leisure,

and daily activities before and after the program.

In addition, a study conducted in Malaysia by Tang et al. [44] as cited in World Health Organization [45] **about** "Quality of life and Cost of Illness in Patients with Psoriasis" and showed that half of the patients reported that their disability due to psoriasis had a modest impact on activities of daily living, disability also, influenced career, studying, and relationships with friends. Additionally, several daily activities were adversely affected by psoriasis, including clothing choice, the need for more baths. Washing/changing clothes more often, sports activities, sleep disorders, inhibiting work/studying activities, sexual difficulties, and social relations.

Finally, the present study confirmed that there was a statistically significant strong direct correlation between total scores of knowledge and total scores of reported self-care practices of both study and control groups at pre and post individualized guidance which supported the current study hypothesis **(H3)** which stated a correlation between psoriasis patients' total scores of knowledge and total scores of reported self-care practices among the studied patients. These findings were in agreement with a recent study conducted at Banha city by Mohamed et al. [33] who reported that there was a positive correlation between the studied group's total knowledge score and their total reported practices score. In the same line Wahl et al. [46]**,** who studied "Psoriasis Patients' Knowledge about the Disease and Treatments" found that there was a strong relationship between the participants' knowledge and their total reported self-care practices.

Conclusion

Based on results of the present study, it could be concluded that there was a positive effect of individualized guidance on patients' knowledge and overall self-care practice including self-esteem with a decrease of the level of psoriasis disability, additionally, a positive correlation between total scores of knowledge and total scores of reported practices were be found. So, the research hypotheses were supported.

Recommendations

Based on the current study findings the following recommendations can be suggested:

- Individualized guidance should be recommended as a nursing intervention protocol during the care of every patient with psoriasis.
- Proper screening about comorbidities for early detections.

- Replication of this study on a large probability sample to achieve more generalization.
- Integrate interdisciplinary care approach for care of patients with psoriasis.

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Effectof Educational Intervention Based on the Health Belief Model on Preventive Behavior of Maternity Nurses towards COVID-19 and Its Vaccination

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Abstract

Background: Egypt has implemented stringent preventive and precautionary steps against COVID-19 to protect citizens. COVID-19 has a high risk of human-to-human transmission, and millions of people worldwide have suffered negative consequences. **Aim:**This study aimed to find out how an educational intervention based on the health belief model affects the maternity nurses' behavior towards COVID-19 and its vaccine.**Subjects and Method:Setting:**In the Department of Obstetrics at Zagazig University Hospital.**Subjects:**An interventional study was conducted via convenience sampling on all nurses who provided care to women during childbirth using the following **tools**; 1) Nurses' demographic features; 2) Nurses' understanding of the COVID-19 pandemic; 3) The health belief model; and 4) Nurses' COVID-19 pandemic prevention behavior.**Results**: The findings revealed a statistically significant positive correlation between nurses' Covid-19 knowledge and educational intervention (P 0.000). Before and after the educational intervention, there are statistically significant differences in the mean scores and level of the health belief model (P 0.000). A highly significant positive correlation between the health belief model and the intervention (r = 0.89 & p 0.000) was also found.**Conclusion:**Aneducational intervention based on the health beliefs model has significantly improved knowledge and preventive behavior of nurses towards COVID-19.**Recommendations:**Workers in the health sector should be targeted for health-education interventions since they are at a higher risk of getting COVID-19.

Keywords:COVID-19, Health Education Interventions, Health Belief Model, Knowledge, Preventive Behavior.

Introduction

Following its appearance in Wuhan, China in 2019, the coronavirus infection (COVID-19) has a high risk of human-to-human transmission, and millions of people worldwide have suffered negative consequences (Awadasseid et al., 2020). It is widely diagnosed (14,012,449 persons globally), and it can be severe and fatal (596,158 deaths globally) **(Taiwan Centers for Disease Control, 2020) [1]**. It has severe physical, psychological, emotional, and social consequences **(Dey SK et al. 2020) [2]**. COVID-19 knowledge, related health beliefs, self-efficacy, and defensive behaviors are all extremely important for lowering infection rates, lowering mortality, and maintaining people's health and quality of life. **(Kang et al., 2020)[3]**. COVID-19 can take from 1 to 14 days to incubate, and it can last anywhere from a few weeks to several months. It causes contact infections and human-to-human droplets **(Wang et al., 2020)[4]**. It's also possible to develop COVID-19 with or without symptoms **(Sun et al., 2020)[5]**.Chest tightness, headache, difficulty breathing, fever >38°C, sneezing, runny nose, stuffy nose, cough, nausea, abdominal pain, diarrhea, muscle aches, weakness, and overall weakness are some of the symptoms that can occur (Keesara et al., 2020). In addition, people are more likely to experience physical, psychological, emotional, and social issues, such as sleeplessness, stress, anxiety, depression, social support, coping issues, and exhaustion **(Tu et al., 2020)[6]**.

Nurses must have the adequacy of certain personal self-protection measures, such as hand washing, temperature taking, mask-wearing, open doorways and windows, and maintaining a strategic distance from entry into premises, as their knowledge of these indications and their associated effects of COVID-19 grows. Hand sanitizer with 60-75 percent alcohol should be used in public places, and disinfectant should be used on frequently used surfaces **(Tourer et al., 2020)[7].**

Perceived susceptibility, perceived severity, perceived advantages, perceived barriers, and action cues are all part of the health belief model's framework when it comes to the implementation and maintenance of healthy habits. People's health and infection are linked to their beliefs about their well-being in terms of perceived helplessness, seriousness, benefits, and barriers to sickness, as evidenced by preventative behaviors and behavioral intents. Healthy behaviors are important and have a significant impact

on people's health, thus they must be practiced and maintained to protect and promote people's welfare **(Mukhtar, 2020)[8]**.

Significance of the study

As a recommendation for preventing the spread of COVID-19, the World Wellbeing Organization promotes ensuring health care workers (HCWs) and patients' close contacts by following necessary preventive measures such as regular hand washing, social distancing, and respiratory hygiene (covering mouth and nose while coughing or sneezing) **(WHO, 2020)[9]**.

HCWs are at the forefront of COVID-19 broad defenses and are exposed to not just disease caused by COVID-19 as a result of their visits to infected persons, but also emotional stress, long working hours, word-related stigma, and aggressive behaviors. **(WHO, 2020; Gan et al., 2020)[10-11]**. Overcrowding, a lack of isolation facilities, and a dirty environment exacerbate infectious disease transmission among HCWs, which is likely improved by inadequate awareness and information of disease control methods among HCWs. **(Wu &McGoogan, 2020)[12]**. Inadequate information and inappropriate attitudes among HCWs can have a direct impact on nursing practices, resulting in delayed diagnosis and disease spread **(McEachan et al., 2016)[13]**.

Aim of the study

This study aimed to find out how educational interventions based on the health belief model affect the maternity nurses' behavior towards COVID-19 and its vaccine.

Study hypothesis

At this important period, a health belief model-based educational intervention is expected to improve maternity nurses' awareness and practice regarding COVID-19 and its vaccination.

Subjectsand Method

Studydesign

To achieve the study's aim, a quasi-experimental design was used.

Study setting and period

The study took place in the obstetrics building of Zagazig University Hospitals from May 1 to 30, 2021. Because it is the principal hospital in Sharkia Governorate, this building was chosen. It has five floors, with reception and administrative offices on the first floor, a postpartum care unit on the second floor, and a high-risk care unit with three rooms, ten beds, and an intensive care unit on the third floor. A nursing staff room, a bathroom, and a teaching hall are also available. The newborn intensive care unit, birth

examination room, and cardiogram (CTG) examination room are located on the fourth floor, while operation rooms are located on the fifth floor. It provides free treatment to all levels of society in the governorate, as well as the control and prevention of COVID-19.

Study sample and Subjects criteria

Using convenience sampling, all available nurses (82 nurses) who provided nursing care to women during childbirth were selected.

Data collection tools

(I) Nurses' sociodemographic characteristics: age (year), level of education, years of experience, place of residence, and source of information about covid-19.

(II) Nurses' knowledge of the COVID-19 pandemic. It was developed by the researchersafter reviewing the related literature. It consisted of 29 questions that covered the most frequent information on COVID 19, including the route of transmission and ways to avoid infection.

Nurses' Knowledge grading system

Each question was answered with one of the following options: yes, no, or don't know. Yes, for the ones that require a correct answer, and no, for the others. This was divided into three categories: poor, average, and good.

(III) Health Beliefs Model. It was adapted from (Khoramabadi.,2016)[14].Perceived susceptibility (6 items), perceived benefits (8 items), perceived severity (6 items), perceived barriers (15 parts), cues for action (10 items), and self-efficacy (10 items) were among the 51 items.

Health Beliefs Model scoring system

The nurse had selected one of five selections for each item: Strong Agree = 4, Agree = 3, no idea = 2, Disagree = 1, Strongly Disagree = 0. These were divided into three categories: low, moderate, and high.

(IV) Nurses' preventive behavior in the face of the COVID-19 pandemic.

It included 14 items; hand washing, duration, drying method, vaccination, standard recommendations, injection, using alcohol-based disinfectants and disinfecting surfaces, and herbal supplements as a preventative measure, and others.

Nurses' preventive behavior scoring system

There are five selections for each item ("always" with a score of 4, often with a score of 3, sometimes with a score of 2, rarely with a score of 1,

and "never" with a score of 0). The score was divided into three categories: low, moderate, and high.

Validity

The tools were presented to four professors of nursing sciences for reviewing and make the necessary adjustments.

Reliability

A test and a re-test were used to determine the questionnaire's reliability. Knowledge had a correlation coefficient of 0.69, the health belief model had a correlation coefficient of 0.83, and preventative activity had a correlation coefficient of 0.92.

Validity

The tools were distributed to 4 professors of nursing sciences and studying the comments and adopting the necessary changes by the experts.

Pilot study

A pilot study was conducted on a sample of 8 nurses (10%) to evaluate the questionnaires' validity and reliability, but no changes were made. This research sample was used in the research.

Data Collection procedure

The study was carried out in three phases.

1. ***The assessment phase of the intervention.***

The participants were greeted by a researcher who introduced herselfand discussed the study's scope. Then, nurses in the hospital filled out pretest questionnaires.

2. ***The implementation phase of the intervention.***

Pre-test data and the HBM frame were used to develop an educational program. During the two shifts, the training session was delivered in three 45-minute sessions in hospital educational courses. Sessions took place in person in the mornings and afternoons in shifts. Each session was focused onusing HBM parts and components (perceived susceptibility, perceived benefits, perceived severity, perceived barriers, cues for action, self-efficacy). The program's content centered on Covid-19, its vaccination, the importance of safety precautions, taking precautions, and preventing Covid-19 spread using HBM parts and components. Based on pretest results that showed a high level of hospital risk among nursing staff, the study intended to remove barriers to healthy behaviors in study content and teach nurses of the benefits of healthy behaviors. At the end of each session, a few minutes were set out for questions and responses, as well as for overcoming the lack of clarity. The nurses were provided a booklet based on

the resources and publications that included information about COVID-19 and vaccination to encourage them to practice healthy behaviors. Furthermore, the benefits and drawbacks of healthy practices are discussed, as well as a variety of strategies for overcoming perceived

barriers.Using educational booklets, grou ps and individuals were educated face-to-face throughout this phase.

3. ***Evaluation phase.*** A post-assessment was conducted after one month of the educational program for nurses, the nurses completed the questionnaire as a pre-assessment. After one month of the educational program for nurses, a post-assessment was conducted in which the nurses completed the questionnaire as a pre-assessment.

Ethical considerations

The ethical committee that approved the study was the Faculty of Nursing, Zagazig University, with the ethics approval number "NUR2021". The anonymity of study participants was secured throughout the study by keeping participant information private and requiring individuals to give truthful replies. This was a completely voluntary and unpaid event.

Data analysis

Data were encoded and analyzed using the Statistical Package for Social Sciences (SPSS) version 22. Descriptive analyzes were considered as the means and standard deviations (SD) of the numerical data and the number and percentage of the qualitative data. The Chi-square test was used to compare qualitative variables. A comparison mean of knowledge, HBM, and preventive behavior scores was made using the paired t-test. Pearson correlation of knowledge, HBM, and preventive behavior scores was performed. $P \leq 0.05$ was considered statistically significant

Results

Table 1 reveals that 56.1% of the nurses were between the ages of 22 and 28, with an average age of 29.08±6.0 years. With regards to education level and years of experience, 46.3%, and 56.1%, had enrolled in a nursing diploma and had 1-9 years of experience, respectively. In addition, 74.4% of them were from urban places.

Table 2shows that there is a statistically significant difference in the mean scores before and after educational intervention in nurses' knowledge of covid-19 (t = 90.542 &P<0.0001). Also,there is a statistically significant difference in nurses' knowledge level of covid-19 before and after the educational intervention (X^2 =32.33 & P<0.0001). Moreover, this table demonstrates a positive significant correlation (r = 0.365 &P<0.0001) between nurses' knowledge of Covid-19 and educational intervention (Table 2).

Figure 1 demonstrates that 41.9 % and 32 .4 % of nurses, respectively, had known a bout covid-19 via television and social media.

Table 3 shows that the mean scores of the health belief model before and after the educational intervention are significantly different (P<0.000).

Table 4 shows that there is a statistically significant difference in the level of health belief before and after educational intervention (P<0.000).

Table 5 demonstrates that, there is a highly positive significant correlation between the health belief model and the intervention (P 0.000), excluding perceived benefits (P =0.273).

Table 6 shows that the mean and level of total health belief model scores about Covid-19 and educational intervention are statistically different (t = 89.44 & X^2 =37.831; P < 0.000, respectively). As well as, the above table reveals that the health belief model and intervention have a highly positive significant correlation (r = 0.81 & P < 0.000).

Table 7 shows that there is a statistically significant difference between the mean scores and level of nurses' knowledge on how to avoid and control Covid-19 before and after the educational intervention (t = 70.568 & X^2 =56.119; P< 0.000), respectively. Furthermore, the above table shows that the health belief model and intervention have a highly positive significant correlation (r = 0.89 & P < 0.000).

Table (1): Sociodemographic characteristics of nurses (n = 82)

Socio-demographic characteristics	Number	Percent
Age/ year		
o 22-28	46	56.1
o 29-34	16	19.5
o 35-40	20	24.4
Mean ± SD	29.08±6.00	
Level of education		
o Diploma of nursing	38	46.3
o Bachelor in Nursing	8	9.7
o Post Graduate	36	43.0
Experience Years		
o 1-9	46	56.1
o 10-18	12	14.6
o 19-25	24	29.3
Mean ± SD	9.84±7.9	
Place of resident		
o Rural	61	74.4
o Urban	21	25.6

Table 2: Nurses' knowledge scores about Covid-19 before and after the intervention (n = 82)

Nurses Knowledge about Covid-19	Educational intervention				Test	P-value
	Before		After			
Mean ± SD	24.95±3.4		28.06±3.42		t = 90.54	<0.0001**
Level					X^2 = 32.33	< 0.0001**
Poor (no, %)	38	46.3%	23	28.0%		
Average	40	48.8%	24	29.3%		
Good	4	4.9%	35	42.7%		
Correlation					r = 0.365	<0.0001**

*. The Chi-square statistic is significant at the .05 level. **r:** Pearson Correlation

** Correlation is significant at the 0.01 level

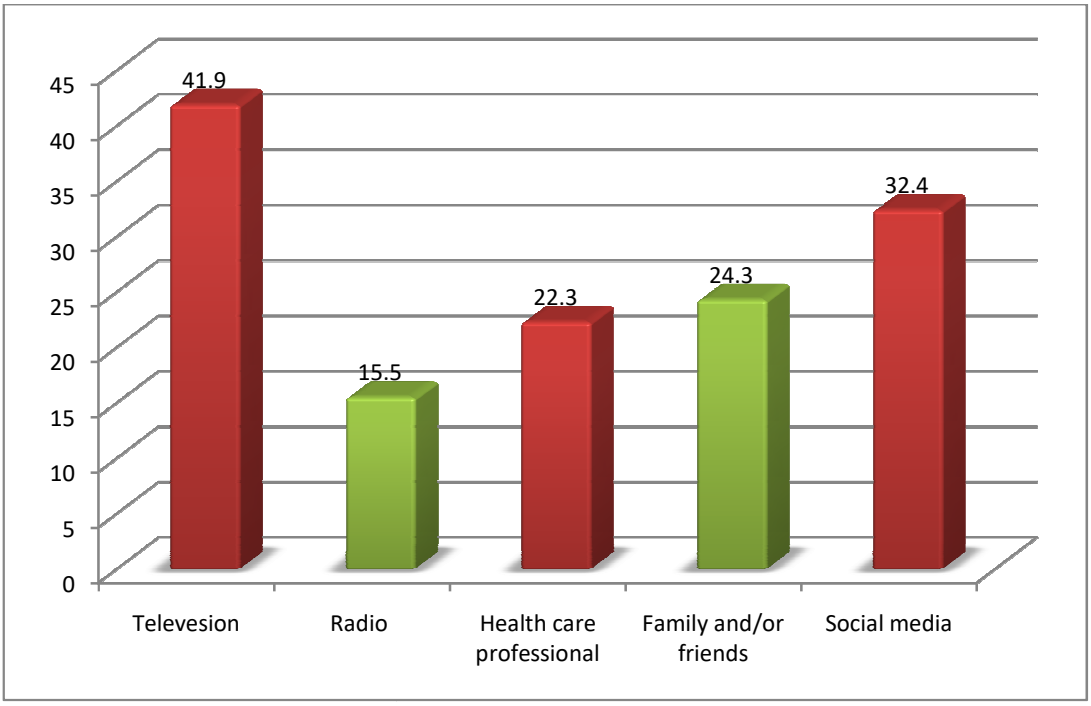

Figure 1. Sources of Nurses' information about covid-19

Table 3: Mean health belief model constructs scores for Covid-19 before and after the educational intervention (n = 82)

Health Belief Model items	Mean ± SD		Paired t-test	P-value
	Before Educational intervention	After Educational intervention		
Perceived susceptibility	20.73±5.59	24.76±3.88	55.938	.000
Perceived benefits	27.11±4.15	40.59±14.50	34.401	.000
Perceived severity	19.33±3.12	22.22±4.03	68.725	.000
Perceived barriers	26.38±6.37	31.23±9.05	45.156	.000
Cues of action	32.71±4.65	36.84±5.22	83.300	.000
Self-efficacy	21.68±2.76	24.63±2.93	92.658	.000
Total	198.95±20.13	238.75±34.52	80.689	.000

SD: Standard Deviation

Table 4: Level of health belief model constructs about Covid-19 before and after the educational intervention (n = 82)

Level of Health Belief Model		Educational intervention				Chi-square test	P-value
		Before		After			
		No	%	No	%		
Perceived susceptibility	Low	79	96.3%	7	8.5%	126.749	.000*
	Moderate	1	1.2%	30	36.6%		
	High	2	2.4%	45	54.9%		
Perceived benefits	Low	76	92.7%	13	15.9%	104.596	.000*
	Moderate	0	0.0%	59	72.0%		
	High	6	7.3%	10	12.2%		
Perceived severity	Low	6	7.3%	4	4.9%	40.254	.000*
	Moderate	31	37.8%	0	0.0%		
	High	45	54.9%	78	95.1%		
Perceived barriers	Low	14	17.1%	12	14.6%	40.536	.000*
	Moderate	42	51.2%	7	8.5%		
	High	26	31.7%	63	76.8%		
Cues of action	Low	13	15.9%	7	8.5%	36.057	.000*
	Moderate	46	56.1%	14	17.1%		
	High	23	28.0%	61	74.4%		
Self-efficacy	Low	16	19.5%	17	20.7%	18.455	.000*
	Moderate	58	70.7%	35	42.7%		
	High	8	9.8%	30	36.6%		

*. The Chi-square statistic is significant at the .05 level.

Table 5: Correlations between health belief model constructs and the educational intervention about Covid-19 (n = 82).

Health Belief Model	Educational Intervention	
	r	P value
Perceived susceptibility	.406	0.000
Perceived barriers	.889	0.000
Perceived benefits	.122	0.273
Perceived severity	.749	0.000
Cues of action	.808	0.000
Self-efficacy	.599	0.000
Preventive behavior	.887	0.000
Total	.808	0.000

Table 6: Total health belief model scores about Covid-19 before and after educational intervention (n = 82)

Score of health belief model	Educational intervention				Test	P value
	Before		After			
Mean ± SD	198.88±20.13		238.75±34.52		t = 89.44	<0.000
Level					X^2 =37.83	<0.000**
	No	%	No	%		
o Low	13	15.9%	11	13.4%		
o Moderate	47	57.3%	12	14.6%		
o High	22	26.8%	59	72.0%		
Correlation					r = 0.81	0.000**

Table 7: Nurses preventive behavior scores about Covid-19 before and after the educational intervention (n = 82)

Preventive behavior about Covid-19	Educational intervention		Test	P-value
	Before	After		
Mean ± SD	50.94±7.72	58.50±10.38	t-test = 70.568	.000
Level				
o Low	15(18.3%)	13(16.3%)		
o Moderate	51(62.2%)	8(10.0%)	X^2 = 56.119	.000*
o High	16(19.5%)	59(73.8%)		
Correlation between nurses preventive behavior about Covid-19 and educational intervention			r = 0.89	0.000**

Discussion

COVID-19 is widely reported (14,012,449 people worldwide), can be severe and fatal (mortality rate of 596,158 people worldwide is 4.25 %), and has an extremely high risk of human-to-human transmission **(Riou&Althaus, 2020) [15]**. COVID-19 knowledge, as well as related health beliefs, self-efficacy, and preventive behaviors, are vital for diminishing infection rates, lowering mortality rates, and maintaining people's health and quality of life **(Jia et al., 2020)[16]**.

The results of the current study showed that the ages of most of the nurses ranged between 22 and 28 years old with an average was 29.08 ± 6.00, and got a diploma in nursing, respectively.This result is in line with **Eldesouky et al. [17]** who conducted a quasi-experimental study in the Gastrointestinal Endoscopy Unit, Port Said Hospitals to evaluate the effect of an educational guidance intervention in relation to COVID-19 on nurses' knowledge and precautionary practices. They indicated that most of the nurses were less than 35 years old and had secondary nursing education. Similarly, a cross-sectional study was conducted in 2020, southwestern and northwestern Nigeria by **Alao et al. [18]**to assess health care workers' knowledge, attitudes toward, beliefs, and use of personal protective equipment to prevent SARS-CoV-2 infection in a resource-limited setting. They found that the mean age of the study group was 32.3 ± 9.9 years.

In regards to nurses' COVID-19 knowledge scores, the current finding indicated that the knowledge of nurses had significantly improved in relation to COVID-19 as the evidence for the success of the educational intervention ($P < 0.0001$). Nurses' knowledge of COVID-19 was also positively associated with the educational intervention, according to Pearson correlations ($P < 0.0001$).The results have led to the acceptance of the specific hypothesis. This result is consistent with a quasi-experimental study performed at the Gastrointestinal Endoscopy Unit, Port Said Hospitals by **Eldesouky et al. [17]**to assess the influence of an educational guidance intervention regarding COVID-19 on nurses' knowledge and precautionary practices. They found improvement with a highly statistically significant difference between nurses' knowledge of COVID-19 before/after the educational intervention ($P < 0.001$). The educational intervention was shown to be effective in improving

nurses' knowledge, according to the findings. As a result, it is suggested that health education programs on COVID-19 be enhanced in addition to improving nurses' awareness and empower them to confront the disease.

Similarly, **Abd-El Aziz Mohamed Madian & Hamdi Sayed[19]** conducted a randomized controlled educational study to assess the effect of an interactive digital educational intervention on COVID-19 knowledge and preventive behaviors among Damanhour University students. They discovered that after one and three months of the educational intervention about COVID-19, there was a statistically significant positive change in overall knowledge and preventative practices scores. Contrastly, in an Iranian study, the majority of respondents had sufficient knowledge about COVID-19transmission routes and symptoms **(Maleki et al., 2020)[20]**. According to a Ugandan study, nearly most of respondents had sufficient knowledge **(Olum et al., 2020)[21]**. This variance could be explained by the characteristics of the sample, which included those with a diploma and were under the age of 28.

The results of the current study showed that the best resources for nurses in regards to COVID-19 prevention are television and social media. Similarly, **Wahed et al., [22]** found that health care practitioners who obtained information about the condition through social media had a higher level of knowledge. This may be due to the fact that educated individuals are more likely to use the internet. In addition, the Ugandan study found that HCWs who obtained information through news media such as television, radio, and newspapers had better knowledge **(Olum et al., 2020)[21]**. **Al-Hanawi et al., (2020)[23]** conducted a cross-sectional study in Saudi Arabia to assess the Saudi public's knowledge, attitudes, and practices toward COVID-19. They found that people gained awareness and knowledge about the disease and its transmission through television, news, and media platforms to protect themselves and their families.

According to a study conducted in the United Arab Emirates, there is a lack of knowledge regarding disease transmission, and the symptom was observed in a high proportion of HCWs **(Bhagavathula et al., 2020)[24]**. In contrast, **Wahed et al. (2020)[22]** stated that the knowledge level of HCWs on COVID-19 was good in a descriptive study conducted in Egypt to assess the knowledge, perception, and attitude of

Egyptian Health Care Workers (HCWs) towards the COVID-19 disease.

The results of the current study showed that an educational intervention based on the health beliefs model of maternity nurses towards COVID-19 was critical, and plays a major role in internalizing preventive measures in emergency situations. This study concluded that the health belief model has an effective role in strengthening the precautionary measures of nurses to deal with and overcome the Corona virus.The results are similar to **Elgzar et al. [25]**who conducted an experimental study to investigate the effect of an educational intervention based on a health beliefs model on nursing students' knowledge and health beliefs in relation to COVID-19, Najran University, Saudi Arabia. They showed that there was a statistically significant difference observed overall constructs of the health belief model with respect to COVID19 after the intervention. Further, the health belief model has been instrumental in improving nursing knowledge, perceived sensitivity, severity, and benefits in relation to COVID-19. Additionally, it increased their self-efficacy to overcome perceived barriers to practicing preventive measures while dealing with COVID-19.

The results of the current study showed that the preventive actions of nurses in relation to COVID-19 were significantly improved as a result of the educational intervention. This result is supported by **Eldesouky et al. [17]**to assess the impact of an educational guidance intervention on the precautionary practices of nurses in a gastro-intestinal endoscopy unit towards COVID-19. They reported that the nurses' precautionary practice after the educational intervention improved significantly with regard to COVID-19. Also, this result is consistent with a study conducted in Israel by **Kaim et al. [26]**, who evaluate COVID-19 prevention techniques and found that educational interventions are an easy-to-implement design, an effective method, and have benefits for educating the community.This indicates that the educational intervention has been instrumental in strengthening the prevention and control measures for COVID-19. Hence, it is recommended that COVID-19 health education programs be implemented in the future to improve the practice and enable them to confront COVID-19 infection in the community sector.

Similarly, **Abd-El Aziz Mohamed Madian & Hamdi Sayed[19]** conducted a randomized controlled educational

study to assess the effect of an interactive digital educational intervention on COVID-19 knowledge and preventive behaviors among Damanhour University students. They discovered that after one and three months of the educational intervention about COVID-19, there was a statistically significant positive change in overall knowledge and preventative practices scores. This indicates that educational interventions are easy to design and implement, and effective and inexpensive strategies for the population.

Conclusion

The results of the study concluded that the results support the research hypothesis that the educational intervention based on the health beliefs model has a significant role in improving the knowledge and preventive practices of motherhood nurses towards COVID-19s, with significant differences before and after the educational intervention. There was a significant positive correlation between the nurses' knowledge and their precautionary practices scores with the educational intervention based on the health beliefs model.

Recommendations

1. The results suggest that targeted health education interventions should be directed at health care workers who are particularly at risk of contracting COVID-19.
2. Periodic educational program for nursing staff in Obstetrics and Gynecology Department regarding COVID-19 and importance of vaccination.
3. Prepared booklets about safety precautions regarding COVID-19 should be available to all nurses who work in Obstetrics and Gynecology Department.

Further researches:

1. Preparing guidelines for pregnant women regarding safety precautions against COVID-19.
2. Replication of the study on large representative probability sample is highly recommended in different maternity hospitals to achieve more generalization of the results.

Implications for Nursing & Health Policy

Workers in the health sector should be targeted for health-education interventions since they are at a higher risk of getting COVID-19

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Relation between Cognitive Emotion Regulations, Spiritual Intelligence with Occupational Stress amongCritical Care Nurses Staff

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Abstract

Background: Nurses working in intensive care units (ICU) confront several problems resulting from the complexity of patient care, work overloads, time constraints, and administrative responsibilities, all of which have an impact on their psychological well-being. **Aim of the study:**Asses levels of cognitive emotional regulation, spiritual intelligence, and occupational stress among critical care nurses**,** andexplores the relation between cognitive emotion regulations, spiritual intelligence with occupational stress**.Subjects and Method:Study design:** A descriptive correlational design. **Setting and subjects:** The study was conducted in Intensive care units at Tanta Universal Teaching Hospital. **Subjects**: It involved all available of critical care nurses that are working in the previous settings, their number was 130 nurses. **Study tools:**It consisted of three tools, tool one was structure questionnaire, itinvolved two parts: socio-demographic data was developed by researchers, andCognitive EmotionRegulation Questionnaire,it was developed by ***Garnefski. N and Kraaij.V(2001)***. Tool two wasSpiritual Intelligence Self-report Inventory, it was developed by ***King. D, Decicco.T (2008)***.Tool three was Expanded Nursing Stress Scale, it was developed by ***French S et al (1999)***.**Results:**Nearly half of the participants (45.4%) perceived moderate level of occupational stress, and 39.2% have higher level, regarding to cognitive emotional regulation, 40,8 %of them have moderate level , and 44.6% have lower level. Moreover 46.9 % of the nurses have moderate level of spiritual intelligence and 30.8% have lower level. Thereare negative correlations between cognitive emotional regulations, spiritual intelligence with occupational stress.**Conclusion:**Increased cognitive emotional regulation and spiritual intelligence among critical care nurses lead to decrease their occupational stress. **Recommendation:** Establishing training program for critical care nursesto improve their cognitive emotional regulation, and their spiritual intelligence fordeceasing theiroccupational stress.

Key words: Critical care nurses, Occupational stress, Cognitive emotion regulation, Spiritual intelligence.

Introduction

Occupational stress is currently one of the main health problems and a discussed issue in the 21th Century[1] .Occupational stress occurs when demands of the working environment overpower the capacities of workers to cope with them, and employees observe that workplace's needs for commitment and adaptation are beyond their capacity and ability[1]. Excessive occupational stress has been associated with increased risk to physical and mental health, and decreased work ability and life quality of the employees [2].

Although occupational stress exists in all occupations, but this is more important in healthcare that is dealing with human health. In such a system, the nurses are at the forefront of providing services to patients and this was given the critical nature of their occupation, they are one of the groups constantly exposed to stress. Nursing stress is attributed to the physical efforts, suffering and demands of patients and families, work load,(including extra working time, multiple duties in a limited time and limited rest time),and other burdens related to nurses' work[3].

Regarding to nurses in Intensive Care Units (ICU) compared to other departments, it is extremely challenging [4].Critically ill patients have a higher acuity of illness than other patients in medical/surgical units.Such harsh working conditions are major sources of stress for critical care nurses.Stressful situations such as performing procedures that are painful for the patient and fear of making mistakes were also recurrent in critical care nurses [5].In ICU, patients' conditions are diverse, unpredictable, and rapidly changing and therefore, nurses need to manage patients and families' conditions, concerns, and problems as well as possible amount of time[6].Furthermore the corona virus has been spreading throughout the world for the past two years, and nurses have been on the front lines of dealing with this crisis, which has increased stress, fear of infection, during nursing care of patients with COVID-19[7].

Critical care nurses are working in highly stressful working conditions necessitates remarkable ability to cope with daily emotions[8]. Therefore success in nursing work depends not only on intellectual abilities and practical skills but also on competence in cognitive emotion regulation that help critical nurses to improve their resistance to extreme emotions and feelings.Nursing has been considered an emotional demanding job, nurses are required many emotional in their relationships with patients, relatives, and with colleagues[9].

Studies revealed that the regulation of emotions by cognitions was helping people to control over their emotions during or after experiences of stressful events[10]. Cognitive emotion regulation (CER) refers to the conscious, cognitive way of handling the intake of emotionally arousing information, and can be considered part of the broader concept of emotion regulation[11].

Emotional regulation (ER) defined as the ability to manage one's own emotions, when they are of the wrong type, come at the wrong time; occur at the wrong intensity level. The focus on the emotional regulation process has permitted to know what, when, and how to convey and control emotional status, rather than the expression, containment or concealment of some discrete emotional states[12].

One of the most effective emotion regulation strategies is cognitive strategies, which cognitive processes help individuals regulate their emotions and feelings and improve their resistance to extreme emotions and feelings[13]. These strategies are divided into adaptive and maladaptive. Adaptive strategies include positive reappraisal, positive refocusing, putting into perspective, acceptance and refocus on planning, while maladaptive strategies are self-blame, other-blame, rumination, and catastrophizing[14].

The studies show that health individuals, who use adequate ER strategies, have lower levels of perceived stress. Conversely, those individuals with greater difficulties in regulating their emotions havesymptoms associated with stress[15].On the other hand, emotion regulation training is reducing and controlling negative emotions and improvesways of using positive emotions[16]. In previous studies, emotion regulation training was effective in coping with occupational stress, and improving psychological well-being[17].

Spirituality has been considered as an important aspect of human being, which has a significant relationship with health improvement [18]. In the work environment, nurses are confront on a daily basis with multiple occupational stressors, which can jeopardize their physical and mental health, in such cases the innate source such as spiritualty, which might help them because it gives meaning and purpose to life [19].

Spiritual intelligence (SI) is the ability of individuals to hear the voice of the heart to be closer to Allah, and to give the best and benefit to themselves. Moreover, SI is very meaningful and it can help an individual to be self-sufficient [20].SI allows nurses to place their actions and lives in a much wider, richer and meaning-giving context;

the intelligence which allows nurses to evaluate why a life path is more significant than another[21].SI is a collection of individual capabilities in terms of spiritual resources that contain the effective kind of adaptation and problem solving behavior [22].The important characteristics of SIinclude personal confidence, effectivecommunication, interpersonal understanding, managing changes, and moving from difficult routes. SI is one of the multiple intelligences that can independently grow and develop[22].

Significant of the study

Occupational stress may significantly affect nurse's physical and psychological health. It increases the probability of anxiety, depression, cardiovascular, and locomotors diseases; these negatively affect nurses' quality of life. There is a general agreement that work-related stress decreases the quality of nursing care[23]. Previous research concluded that healthy people who employ ER techniques have lower levels of perceived stress and individuals who have a harder time for controlling their emotions, on the other hand, will exhibit more stress-related symptoms[24].SI allows nurses to find a meaning and purpose from all physical and mental experiences, including the ability to create and dominate individual life goals[25]. SI also includes the highest levels of growth in various cognitive, ethical, emotional, and interpersonal fields, and it helps people to coordinate with the phenomena around them and to achieve internal and external integrity [26].

Aim of the study

This study aimed to assessthelevels of cognitive emotional regulation, spiritual intelligence, and occupational stress among critical care nurses**,** andexplored the relation between cognitive emotion regulations, spiritual intelligence with occupational stress**.**

Research questions

1- What are the levels ofcognitive emotion regulation, spiritual intelligence and occupational stress among critical care nurses staff?
2- What are relations between cognitive emotion regulation, spiritual intelligence with occupational Stress among critical care nurses staff?

Subjects and Method

Research design

Descriptive correlational design was utilized in the present study.

Setting

The study was conducted in the Intensive Care Units (ICU) at Tanta Universal Teaching Hospital that affiliated to Tanta University. These units are Cardiology, Medical and Chest, Anesthesia, and Pediatric unit.

Subjects

The sample of this study was consisted of all available nurses that are working in the previous settings and give direct care and contact with the patient. Their number was 130 nurses after excluded nurses who involved in the pilot study. Distribution of nurses in previous setting was as a follow: Cardiology ICU (45nurses), Medical and Chest ICU (35 nurses), Anesthesia ICU (30 nurses), and Pediatric ICU (20 nurses).

Tools of the study

Three tools were used to collect the study data:

Tool one : StructureQuestionnaire was consisted of two parts:

Part(1): Socio demographic charact-eristicsquestionnaire

It was developed by the researchers after review of related literature and included the following items:gender, age, educational level, marital status,years of experience in nursing,andyears of experience in critical nursing care.

Part two: Cognitive Emotion Regulation Questionnaire (CERQ)

It was developed by ***Garnefski. N and Kraaij.V (2001)***[27].It used to measure cognitive emotion regulation strategies that used by individuals after experienced stressful life events. This tool was used in the present study to measure nurses' cognitive emotion regulation style in response to their occupational stress. This tool was a 36 items questionnaire consisting of a nine subscales. That involved adaptive and maladaptive strategies.

Subscales are explained as a following

- Adaptive strategies consisted of five subscales: acceptance, positive refocusing,refocus on planning, positive reappraisal, and putting into perspective.
- Maladaptive strategies consists of four subscales: self-blame, rumination, catastrophizing ,and blaming others .

CERQ items are rated on a 5-point Likert scale ranging from 1= almost never to 5=almost always. Each subscale scores is summed, and ranged from 4 to 20. Higher scores reflect greater use of the strategy in this subscale .Total score of all subscales was summed to determine the total of cognitive emotion regulation and ranged from 36 to 180. The maladaptive strategies subscales have reversed score.

The levels of CER andits subscales was determined according to the following scoring systems: less than 50 % from total score referred tolower level , 50-75%

indicated to moderate level,and more than 75 % meanshigher level.

Tool (2): The Spiritual Intelligence Self-Report Inventory (SISRI)

This tool was developed by ***King. D, Decicco.T (2008)*** [28].It was used to measure the spiritual intelligence that individuals may be having. It was consisted of 24 items divided into four subscales as follow:critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion.

The responses of studied nurses were rated on five point Likert scale from not all true for me = zero to completely true for me = 4. The total score ranged from zero to 96. The higher scoreof SISRIwere referred to the higher abilities of spiritual intelligence. The levelsSI and its subscales were determined according to the following scoring system: less than 50 % from total score meanslower level of spiritual intelligence, between 50 % to 75% was meansmoderate level of spiritual intelligence, and more than 75 % refer to higher level of spiritual intelligence.

Tool (3): Expanded Nursing stress Scale (ENSS)

This scale was developed **by *Gray-Toft P and Anderson J (1981)*** [29].It was expanded and updated revision by ***French S et al (1999)*** [30]. It was used to measure nurses job related stressors. It was consisted of 57 items divided into 9 subscales that expressed about types of nursing stressors. The nine subscales were explained as follows: death and dying, conflict with physicians, inadequate emotional preparation, problems relating to peers, problems relating to supervisors, workload, uncertainty concerning treatment, patients and their families, and discrimination. The items of ENSS scale were arranged in five point LikertScale from zero=doesn't apply to 4= extremely stressful.The total score was ranged from 0 to 228. A higher score indicated to a higher frequency of experienced work stress by nurses. The level of occupational nurse stressorsand its typewas determined according to the following scoring systems: less than 50 % from total score means low level of occupational stress. Between 50 to 75% was moderate, andmore than 75 % washigher level of occupational stress.

Method

The study was accomplished according to the following steps

An official letter was addressed from the dean of the Faculty of Nursing to the director of Tanta Universal Teaching Hospital to request their permission and cooperation for data collection.

Ethical considerations

- The approval was obtained from ethical committee in the Nursing Faculty for implementing this study.
- Informed consent was taken from the participants after explanation of the purpose of the study.
- The participants were reassured about the confidentiality and the privacyof their obtained information. A code of number was used instead of their nurses' name on questionnaire sheet.
- Respecting the right of the participants to withdrawal at any time during the period of data collection.
- The study didn't cause harmful for participants, the researcher applied all safety precaution to avoid transition coronavirus during data collection.

Development of study tools

The socio-demographic question-aire(part one of tool one) was developed by researcher.Part two of thetool I, tools II, and III were translated into Arabic language. The study tools were tested for content and face validity by five of academic professors of psychiatric mental health nursing, in Faculty of Nursing Tanta University. The modifications were done accordingly such as change few words for other more clarified.

The studied tools were test for reliability by using Cronbach'sAlpha Test. Cognitive emotion regulation questionnaire was 0.950, Spiritual intelligence scale was 0.952, and Critical care nurses stress scalewas0.965.which means a higher reliable.

A pilot study

It was carried out on 10% (13 nurses) of studied nurses, who were selected randomly. Pilot study was conducted to ensure the clarity and the applicability of the study tools, and to identify the obstacles that may be encountered during data collection. Thesesubjects were excluded from the actual study. The results of pilot study revealed that the nurses did not have any difficulties when responding to the study tools, and all tools were found to be applicable and clear.

The actual study

The researcher greeted studied nurses, explained goal of the study,and received consent. The participants were given study tools and the researcher asked them for to fill all sheets, this was done individual based and in the presence of the researcher to clarify anything in tools if needed.Each

interview lasted from 20-25 minutes according to nurses' concentration and understanding.The researcher visited studied setting 7day per week.The duration of data collectionwassix months, starting from June 2020 to end of December 2020.

Statistical analysis

The study data were computerize and verified using the SPSS (Statistical Package for Social Science) version 25 to perform tabulation and statistical analysis. Quantitative data were summarizing by the arithmetic mean and standard deviation. Frequency tables with percentages were used to illustrate the result of categorical data. Pearson correlation (r) was used to test nature and strength of correlation between studied variables. Significant correlation at P value=≤ 0.05, highly significant correlation at P value = ≤ 0.01 levels.

Results

Table (1)appears socio-demographic characteristics of critical care nurses. The majority of the studied nurses (62.3 %) were female. Mean score of nurses age was (25.65±3.61). Concerning on marital status, more than half of nurses (62.3%) were married and only 26.2% were single. Regarding to their level of educational, 47.7% of nurses had nursing technician education, 42.3% had bachelor's education and only 10% had diploma of nursing education. In addition to, mean score of years experiencing in nursing care was 4.53±3.605.and mean score of experiences in critical nursing care was 2.91 ± 1.58 years.

Figure (1)explores levels of cognitive emotion regulation, spiritual intelligence, and occupational stress that perceived by critical care nurses, it show that 44.6% of studied nurse have lower level of cognitive emotion regulation, and 40.8% had moderate level, while only 14.6% had higher level. Concerning on spiritual intelligence , the around half of the studied nurse (46.9%) have moderate level of spiritual intelligence, and 30.8% had low level, while only 22.3% had high level of spiritual intelligence. In addition to, occupational stress it appears that around half of the studied nurse (45.4%) have moderate level of occupational stress, and 39.2% had higher level, while only 15.4% had low level of occupational stress.

Table (2)presented cognitive emotion regulation strategies that used by critical care nurses. It noticed the maladaptive strategies have the high level of using such as :self-blame, blaming others, catastrophizing and focus on thought/rumination is 55.4% - (3.20 ± 1.00), 54.6% - (3.22 ± 0.829, 53) .8% -

(3.12 ± 0.945) & 51.5%,(3.22 ± 0.931) respectively).On the other hand, the adaptive strategies such as: positive reappraisal, positive refocusing, acceptance, refocus on planning, putting into perspective ha moderate level of using (48.5% - (3.20±561), 45.4% - (3.13 ± 0.734), 44.6% - (3.08 ± 0.511), 40.8% - (3.19 ± 0.693) & 40% - (3.10 ± 0.666) respectively.

Table (3)reveals ways of spiritual intelligence that used by critical care nurses. It is observed that the average differences in levels between subscales, the high level of discovery of personal meaning, the conscious development& existence of critical thinking is (28.5% (2.63 ± 0.725), 26.9% (2.56 ± 0.762) & 25.4% (2.73 ± 0.650) respectively).On the other hand, the moderate level of existence of critical thinking, spiritual awareness& discovery of personal meaning is (25.4% (2.73 ± 0.650), 46.9% (2.56 ± 0.728) & 28.5% (2.63 ± 0.725) respectively).

Table (4)explores type of occupational stress among critical care nurses. There are the higher level of death and dying, problems relating to supervisors, workload, patients and their families is (54.6% - (3.05 ± 0.595), 48.5% -(2.90± 0.683), 42.3% - (2.73 ± 0.733) , 42.3% - (2.82 ± 0.661) respectively).On the other hand, the moderate levelof stress related to uncertainty concerning treatment, patients and their families, death and dying, conflict with physicians is (46.9% - (2.80 ±0.697), 43.8% -(2.82 ± 0.661), 39.2% - (3.05 ± 0.595), 38.5% - (2.70 ± 0.789) respectively. In addition to the low level of stress related to discrimination, problems relating to peers, inadequate emotional preparation (45.4% -(2.23 ± 0.925), 40.0% - (2.43 ± 0.718), 35.4% - (2.59 ± 0.861) respectively.

Table (5)presents the correlation between cognitive emotion regulation subscales and occupational stress among critical care nurses, the table showed that a statistical significant negative correlation between acceptance, positive refocusing, refocus on planning, positive reappraisal, putting into perspective and occupational stress. (r = -.181-, p = 0.039)(r = -.380-, p = 0.000)(r = -.260-**, p = 0.003)(r = -.264-, p = 0.002)(r = -.345-, p = 0.000) respectively. While a statistical significant positive correlation between self-blame, focus on thought rumination, catastrophizing, blaming others and occupational stress (r = .401, p = 0.000) (r = .345, p = 0.000) (r = .412, p = 0.000) (r = .424, p = 0.000) respectively.

Table (6)show the correlation between ways of spiritual intelligence and occupational stress, the table showed that a statistical significant negative correlation

between all spiritual intelligence subscales and occupational stress.

Table (7)demonstrates the correlation between cognitive emotion regulation, spiritual intelligence, and level of occupational stress among critical care nurses, the table showed that a statistical significant negative correlation between cognitive emotion regulation, and occupational stress (r =-.429, p = 0.000). Regarding the correlation between spiritual intelligence and occupational stress, there was a statistical significant negative correlation (r=-.460-, p= 0.000).

Table (1): Distribution of the critical care nurses according their socio demographic data (n = 130).

Socio demographic data		Nurses in critical care unit (n=130)	
		No	%
Sex	Male	49	37.7
	Female	81	62.3
Age in years	20 - < 24 years	45	34.6
	24 - < 28 years	45	34.6
	28 - < 31 years	34	26.2
	>31 years	6	4.6
Mean ± SD		25.65 ± 3.611	
Marital status	Married	81	62.3
	Single	34	26.2
	Divorced	12	9.2
	Widowed	3	2.3
Educational status	Diploma of nursing	13	10
	Nursing technician	62	47.7
	Bachelor's degree	55	42.3
Number of children	No present	50	38.5
	One	29	22.3
	Tow	38	29.2
	Three	11	8.5
	Four	2	1.5
Years of experience in nursing care	1-3 years	72	55.4
	4-7 years	27	20.8
	8-11 years	27	20.8
	>11 years	4	3
Mean± SD		4.53 ± 3.605	
Years of experience in critical nursing care	1-2 years	62	47.7
	3-4 years	38	29.2
	5-6 years	30	23.1
Mean ± SD		2.91 ± 1.582	

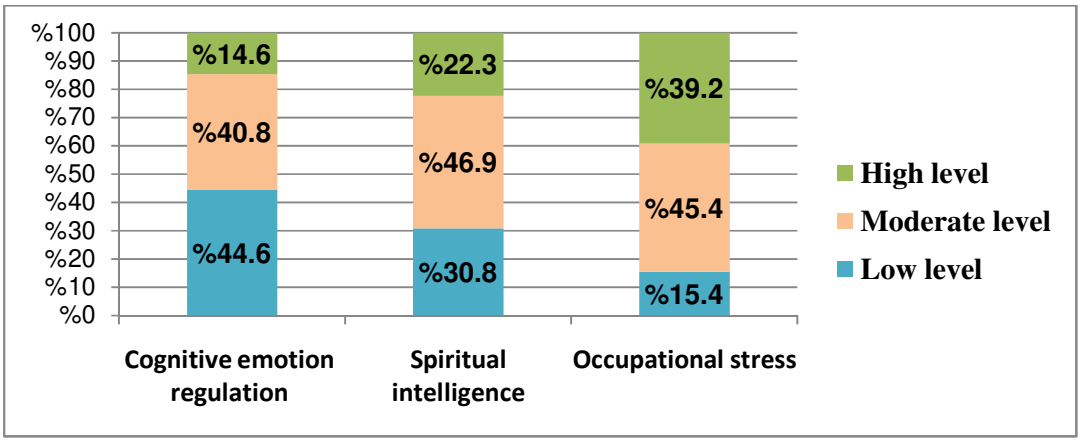

Figure (1): levels of cognitive emotion regulation, spiritual intelligence, and occupational stress among critical care nurses(n = 130).

Table (2) : levels and mean score ofcognitive emotion regulationstrategies that used by critical care nurses (n = 130).

Ways of Cognitive Emotion Regulation	Levels of cognitive emotion regulation subscales among critical care nurses (No = 130)						Mean	SD
	Low		Moderate		High			
	No	%	No	%	No	%		
Adaptive coping strategies								
Acceptance	70	53.8	58	44.6	2	1.5	3.08	0.511
Putting Into Perspective	67	51.5	52	40.0	11	8.5	3.10	0.666
Positive Refocusing	63	48.5	59	45.4	8	6.2	3.13	0.734
Positive Reappraisal	61	46.9	63	48.5	6	4.6	3.20	0.561
Refocus on Planning	66	50.8	53	40.8	11	8.5	3.19	0.693
Maladaptive coping strategies								
Self-Blame	33	25.4	25	19.2	72	55.4	3.20	1.00
Rumination	29	22.3	34	26.2	67	51.5	3.228	0.931
Catastrophizing	26	20.0	34	26.2	70	53.8	3.12	0.945
Blaming Others	31	23.8	28	21.5	71	54.6	3.221	0.829

Table (3): Distribution spiritual intelligence ways that used by critical care nurses (n= 130)

Ways of Spiritual Intelligence	Levels of spiritual intelligence subscales among critical care nurses (n = 130)						Mean	SD
	Low		Moderate		High			
	No	%	No	%	No	%		
Existence of Critical Thinking	21	16.2	76	58.5	33	25.4	2.73	0.650
Discovery of Personal Meaning	34	26.2	59	45.4	37	28.5	2.63	0.725
Spiritual Awareness	40	30.8	61	46.9	29	22.3	2.56	0.728
The Conscious Development	40	30.8	55	42.3	35	26.9	2.56	0.762

Table(4): Type of occupational stress that perceived by critical care nurses (n= 130).

Type of occupational stress that perceived by critical care nurses	Levels of occupational stress (n = 130)						Mean	SD
	Low		Moderate		High			
	No	%	No	%	No	%		
Death and dying	8	6.2	51	39.2	71	54.6	3.05	0.595
Conflict with physicians	28	21.5	50	38.5	52	40.0	2.70	0.789
Inadequate emotional preparation	46	35.4	45	34.6	39	30.0	2.59	0.861
Problems relating to peers	52	40.0	50	38.5	28	21.5	2.43	0.718
Problems relating to supervisors	18	13.8	49	37.7	63	48.5	2.90	0.683
Workload	31	23.8	44	33.8	55	42.3	2.73	0.733
Uncertainty concerning treatment	17	13.1	61	46.9	52	40.0	2.80	0.697
Patients and their families	18	13.8	57	43.8	55	42.3	2.82	0.661
Discrimination	59	45.4	47	36.2	24	18.5	2.23	0.925

Table (5): Correlation between cognitive emotion regulation strategies and occupational stress among critical care nurses (n= 130).

Cognitive emotion regulation strategies	Occupational stress	
	r	P value
Adaptive coping strategies		
Acceptance	-0.181-	0.039*
Putting Into Perspective	-0.345-	0.000**
Positive refocusing	-0.380-	0.000**
Positive Reappraisal	-0.264-	0.002**
Refocus on Planning	-0.260-	0.003**
Maladaptive coping strategies		
Self-blame	0.401	0.000**
Focus on thought/rumination	0.345	0.000**
Catastrophizing	0.412	0.000**
Blaming others	0.424	0.000**

(r) Pearson correlation coefficient.
*Statically significant at ≤ 0.05 level or less.**Highly Statically significant ≤ 0.01 levels.

Table(6): Correlation between ways of spiritual intelligence that occupational stressamong critical care nurses (n= 130).

Spiritual intelligence ways	Occupational stress	
	r	P
Existence of Critical Thinking	-0.350-	0.000**
Discovery of Personal Meaning	-0.438-	0.000**
Spiritual awareness	-0.500-	0.000**
The conscious development	-0.425	0.000**

Table (7): Correlations between total score of cognitive emotion regulation, spiritual intelligence with total score of occupational stress among critical care nurses (n = 130).

Item	Correlations Coefficient	Occupational stress
Cognitive emotion regulation	r P	-0.429- 0.000**
Spiritual intelligence	r P	-0.460- 0.000**

Discussion

Nurses are at the forefront of providing services to patients, and this is given the critical nature of their occupation. Nurses are considered one of groups that consistently exposed to stress[31]. The studies show that regulation of emotion by cognitive helps people to control of their emotion during and after of experiences of stress. In addition to, spiritual intelligence is effective kind of adaption and help in solving problems[32].Therefore the present study focus on assesscognitive emotional regulation, spiritual intelligence, and occupational stress among critical care nurses**,** andexploredthe relation of first two variables with occupational stress.

Regarding to occupational stress among critical nurses, the present study revealed that nearly half of studied nurses 45.4% have moderate level of occupational stress, and 39.2% have higher level, and only 15.4% of them have lower level. The most frequency of occupational stress that experienced by studied nurses were death or dying patients, problems relating to supervisors, dealing with patients and their families, uncertainty concerning patients treatment, conflicts with physician, work overload, inadequate emotional preparation to deal with patient in serious condition, problems with peers, and finally feeling of discrimination.

From the researcher point of view this finding may be related to shortage in staffing, lack of training on emergency situation, lack of emotional support from colleague and supervisors, inappropriate job description, given the direct care to suffering and death patient, and demands from patients, receives little recognition or appreciated. Moreover, fear from infected with corona virus during caring patients with COVID-19,

In this context the study by ***Azimi V et al., (2019),*** under title "Effects of stress on critical care nurses". They found 71% of nurses in intensive care units experienced moderate to severe level of stress[33]. It is important to mention that death or dying

patients is considered major stressors faced the participants in the present study. This may be explained by nurses perceive death as a poor outcome due to failureof management or nursing care for control patients deterioration. This consisted with the study by ***Sarafis P et al.,(2016)*** they assessed the occupational stress and its effect on health and quality of life among nurses in intensive care units, they found dying patients was most prominent stress for nurses [(23)].

The second most frequent stress experienced by participants in the present study was problems with supervisors among 48% of them. These problems may be related to shortage of staff members, disorganized monthly schedule, lack of support from direct supervisors. This agreement of the study by ***Mehta R, (2014)*** who studied stress among nurses working in critical care areas at a tertiary care teaching hospital in Nepal, they found a lack of a psychological readiness and poor of communication between nurses and their supervisors, and this is a main source of stress among critical care nurses[(34)].

The third most frequently of stress experienced by nurses in the present study was stress during dealing with patients and their families. 42% of participants were experienced higher level of stress. This may be explained by patients and their family members sometimes asked unreasonable demands, blamed nurses for wrong something, complained about inadequate nursing care, or profound abusive behavior. This goes in line with the study by ***Saedpanah D et al., (2016),*** who assessed effect of emotion regulation training on occupational stress of critical care nurses, in two teaching hospitals affiliated to the Kurdistan university of medical sciences, and found that dealing with patients was the third stressful event after workload and uncertainty concerning treatment[(10)].

The fourth most frequent stress that experienced by critical nurses in the current study was uncertainty concerning about patient treatment. 40% of nurses have high level of stress. They afraid from making a mistake in treating a patient, being in charge with inadequate experience, and worried about the absence of physician in a medical emergency, especially the most of studied sample (72%) has less three years in nursing care filed. In the same time, their lack of knowledge and experience may be cause frustration. The new staff in the current study reported during interview they felt inadequately trained for what they have to do when exposed to hazards in the nursing working environment. Such result is consisted with the study by ***Faremia F et al., (2019),***whoassessed of occupational related stress among nurses in two selected

hospitals in a city southwestern Nigeria,they showed that uncertainty concerning about patient treatment, it was the most stressor faced critical care nurses[35].

The work overload was considered a fifth most frequent stress experienced by 42% of nurses in the present study. This may be explained by shortage in staff, unpredictable staffing schedule. Those nurses were burdened with extra responsibilities such as having too many nursing tasks, working in official holidays, and in some case having to make decisions under pressure. Such result consisted with the study conducted by ***Al Rasasi A et al., (2015)*** who assessed work related stress among nurses working in Dubai, and they revealed that nurses showed the workload is the most stressors within the daily work stressors[36].

Regardingto,the cognitive emotional regulation by nurses in the present study,thefindings revealed that 44.6% of them have lower level of emotional regulation cognitively, 40.8% have moderate level, and only 14.6% have higher level. In addition to, the participants have lower level of adaptive or healthy ways of emotion regulation such as: acceptance their emotions, positive refocusing, focus on planning, put stressful events in perspective, and positive appraisal of these situation. In same line they have higher levels of maladaptive or unhealthy ways of regulate emotions such as: blame themselves for stressful events, focus on negative thoughts and rumination, catastrophizing stressful situations, or blame others.

This findings may be explained by, lack of training among participants about awareness and regulation their emotions effectively especially at time of occupational stress. In addition to, overload of work and a lot of daily stressful events, and absence of emotional support from peers or supervisors. In this context ***Pacaric S et al., (2018)*** mentioned nurses in their study reported that they should to provide care in an unemotional manner, without emotional response to the pain, and they have to focus on medical care, and this made them suffer from emotional exhaustion, and development of psychosomatic disorders and physical illnesses[37].

In addition, ***Royani Z et al., (2016)*** who assessed the relationship between job stressors and coping strategies from critical nurses, they showed the most nurses and physician in critical care units used maladaptive strategies more than adaptive[38]. Moreover ***Naushad V et al., (2019)*** in a study entitled "A systematic review of the impact of disaster on the

mental health of medical responders" they revealed that nurses had higher levels of unhealthy emotions than physicians incrisis situations[39].

On another hand, the results of present study contradicted with the study by, ***Hosseinigolafshani S et al.,(2018)*** under title "Cognitive emotion regulation strategies used by critical care nurses". They explored the participants have the higher level of healthy emotional regulation such as acceptance, and positive reappraisal.Moreover, they have the lower level of unhealthy ways such as self-blame, catastrophizing, other-blame[40]. Moreover the study by ***Zeabadi et al., (2021)*** who assessed cognitive emotion regulation strategies among nurses, they revealed maladaptive strategies is in lower level among critical care nurses[41].

The findings of the present study explored that a negative correlation between cognitive emotional regulation among participants and their occupational stress. This means that nurses who effectively regulate their emotions cognitively, were less experienced occupational stress and vice versa. In addition to, the results show that unhealthy ways of regulate emotions such as self-blame, rumination of negative thoughts, catastrophizing of stressful situation, and blaming others have positive correlation with occupational stress. That means the nurses failed to cope effectively with stress, thus lead to more compliance and problems. Moreover the healthy or adaptive ways of cognitive emotion regulation such as acceptance stressful situation, put it into perspective, positive refocus on it, positive reappraisal, and planning their action, all of these have negative correlation with occupational stress.

This results supported by the previous studies, ***Jamshidian Y et al., (2018)*** studied relationship between cognitive emotion regulation and meaning of life with health anxiety among emergency nurses, they found negative relationship between acceptance, positive focus on stress, putting it into nurses' perspective,and positive reappraisal with effect of stress [42].

Furthermore, ***Wang Q et al., (2021)***in theirstudy entitled "Anxiety, depression and cognitive emotion regulation strategies" in Chinese nurses during the COVID-19 outbreak" they concluded that more engagement of maladaptive strategies such as: self-blame, rumination and catastrophizing lead to anxiety and stress. [43]. In addition,***Gonnelli C et al., (2016)*** in their study about "Review the emotional regulation in nursing work" they found positive correlation between high cognitive emotion regulation and coping with the stressful events[44].

Regarding to spiritual intelligence among critical nurses who participated in the present study, the finding shows the around half of participants have moderate level of spiritual intelligence, 30.8% of them have lower level, and only 22.3% have higher level. In addition to, few percentage of them have higher level of spiritual intelligence such as:critical thinking, discovering personal meaning of this stressful situation, spiritual awareness, and consciously develop of self , and most of nurses have moderate level of using these ways. This means that those nurses need support and training to develop their abilities cognitively, emotionally, and spirituality to cope effectively with their occupational stress.

This finding is consisted with the result of, ***Moradnezhad M et al., (2017)*** who assessed spiritual intelligence of nurses working at the intensive care units of hospitals in Tehran University. They results revealed that only 21% of the participants had high levels of spiritual intelligence, and most of the studied nurses 76.25% had a moderate level of spiritual intelligence, also (2.75%) of the nurses had low levels of [(21)]. Similarly, **Naji S*, (2017)*** who examined the relationship between spiritual intelligence and quality of work life in nurses, they foundmoderate level of spiritual intelligence among their participants[(45)]. Furthermore, ***Riahi S et al., (2018)***, who studied the effect of spiritual intelligence training on spiritual care competency in critical care nurses, they detected the most nurses have moderate level of spiritual intelligence[(46)].

It is important to mention that, the finding of the present study shows the negative correlation between spiritual intelligence and occupational stress, and negative correlation between ways of spiritual intelligence " existence of critical thinking, discovery of personal meaning, spiritual awareness the conscious development " and stress that perceived by critical care nurses. This result may be explained by the spiritual intelligence help nurses to be flexibility, increase motivation, and helps nurses to solve their problems, it also makes nurses more stable by reducing their worries and anxieties, that help them for communicate with others more deeply, and cope effectively with stress.

The finding in the present study supported by study of ***Khandan M et al., (2017)*** under title " Relationship between spiritual intelligence and job performance among nurses and nursing aids " they detected the nurses who have high level of spiritual intelligence handled stressful situation than others [(47)]. Moreover ***Ali, et al., (2018)*** in their study about " Effect of spiritual intelligence training on perceived stress in a

psychiatric nurse " they foundnegative correlation between spiritual intelligence and occupational stress among nurses, and the occupational stress decreased after spiritual intelligence training [48]. Besides, ***Sunaryo H et al., (2017)*** in their study about the effect of emotional and spiritual intelligence on nurses, burnout and caring behavior, they found negative correlation between burnout, nurses' stress and their ways of spiritual intelligence [49]. Additionally, ***Beni K et al., (2019)***, who assessed roles of spiritual intelligence on enhance the quality of nursing care, they established negative relation between spiritual intelligence and nurses'stress[50].

Finally, spiritual intelligence is very important to nurses because help nurses to mutual understanding, improve wisdom, unconditional acceptance of the patient, promote hope and relaxation, agreement among colleagues and job satisfaction, this all benefits which decrease nurses stress during wok[51].

Conclusion

Based on the findings of the present study,it concluded that a majority of critical care nurses have moderate to lower level of cognitive emotional regulation, and spiritual intelligence, and more than half of them have moderate to higher level of stress during their work. In addition to cognitive emotional regulation and spiritual intelligenceare effective ways for coping withoccupational stress,increased cognitive emotional regulation and spiritual intelligence among critical care nurses lead to decrease their occupational stress.

Recommendation

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

- Establishing training program for new staff nurses about stress-management program which increase their abilities to coping with job stressors.
- Design training program to improve cognitive emotion regulation for nurses.
- Conducting educational workshops for strengthening nurses' spiritual intelligence and using the experienced nurses with higher levels of spiritual intelligence for help and support nurses with stress and burnout.
- Clearly define job description for new nurses in intensive care units.
- Future studies about develop spiritual intelligence of critical nurses for improve their quality of life and their nursing care that provide for critical patients.

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Talent Management and Its Effect on School Personnel' Performance at Alexandria School Settings

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Abstract

Background: Talent management of school personnel is a major global issuefacing most schools worldwide. As a result ofshortage of talented school personnel, schoolsworldwide are competing for the same pool of talented school personnel to acquire and retain talents for maintaining the schools' operations and continue for service and profitability growth. **This study aimed** to assess talent management and its effect on school personnel'performance at Alexandria School Settings. **Subjects and Method:Research design**: A descriptive correlational research design was conducted. **Setting and Subjects:** all available school personnel in Alexandria schools (N= 600) who represent all available school personnel enrolled in all Schools in Alexandria. **Tools**: threetools were used for data collection:Tool I:Assessment sheet.Tool II: Talent Management questionnaire. Tool III:Organization Performance questionnaire. **Results:**of the present study revealed that school personnel had a highlevel of dissatisfaction regarding total score of talent attraction, development, retention, and school performance. **Conclusion**: There was a highly statistically significant positive correlation between school performance and each of the three components of school personnel' talent management (talent attraction, development, and retention). **Recommendations:** of this studyincluded that all school settingsmust introduce talent management strategy in their educational planning in order to remain competitive in today's market.

Keywords*:* Talent Management, School performance, School personnel

Introduction

Talent management is the basic driving force for the school settings to be successful. In the face of globalization, educational sectoris concerned with how to design the talent management strategy that fits the national context. School settings have to attract, develop, motivate and retain their talented school personnelas long as possible, especially those who are extraordinary talented. Therefore, school settings are competing against each other to acquire and retain talents in order to maintain their operations and continue to grow[(1)].Furthermore, talent management is essential when the school settings will like to build skills of their talented school personnel. Human resource-especially talented personnel contribute to the achievement of competitive progress in their work settings because they are innovative in their field and hold the ability to make right decisions for achieving the ultimate goals[(2)].

Talent management of school personnel is a major global issue facing most schools worldwide. As a result of shortage of talented school personnel, schools worldwide are competing for the same pool of talented school personnel to acquire and retain talents for maintaining the schools' operations and continue for service and profitability growth [(3)]. There is no doubt that, technology and globalization have great changed our lives, as they have led to increased competition on talent. Thus, the potential growth of schools worldwide depends on the ability of schools to ensure that the right school personnelwith the right skills are in the right place at the right time, and focused on the right activities. For these reasons, talent management has been elevated to the top of strategic human resources management challenges, acquiring the highest priority across all organizations [(4)]

Educational institutions are increasingly looking at talent as a unique asset that can provide sustainable competitive advantage and superior performance. Right talent is the greatest asset for any school. In fact, strategic employment service of human resource management begins with the development of human resources management strategy, which reflects the school educational approach to dealing with key challenges and the anticipated future threat. Educational sector has the responsibility to fulfill the requirements of school settings

workforce. The main objective of this sector is not only the procuring and management of the school personnel but to nourish and maintain their skills, knowledge, and talent to meet their requirements[5,6]

Talent may be defined as the inherent ability of school personnel to do a particular task in a particular way. Talent is seen as the sum of school personnel'abilities, which includes their intrinsic gifts, skills, knowledge, experience, intelligence, judgment, attitude, character, and drive. It also incorporates the school personnel' ability to learn and grow[7]. It has also a significant role in the success and development of the school personnel educational skills therefore, recognizing and developing personnel' talent will increases their productivity, job satisfaction, motivation and school commitment which in turn reduces their turnover[8].

Moreover, talent management in schools is defined as a process of complete and interrelated set of schools' activities such as identifying, selecting, developing and retaining the best school personnel as well as building their potential for the most strategic positions, and assisting them in formulating the best use of strengths in order to gain their engagement and contribution, that ultimately contribute to schools' benefits [9].Additionally, talent management is known as a systematic approach to attract, screen, select the right talent, engage, develop, deploy, lead and retain high potential and performer school personnel to ensure a continuous talent feeding inside the school aimed at increasing workforce productivity [10].

Recently, talent management has gained great public attention and is considered one of the most valuable factors for personnel performance and schools success. It is designed to focus on the most key positions and on school personnel with innovative skills [11]. Therefore, the main goal of talent management is to create a high-performance, sustainable goals that meets strategic objectives of school.

Attracting, selecting, engaging, developing and retaining school personnel are the five main focuses of talent management. In order to gain a competitive advantage, the demand for human capital will continue to drive talent managementwithin school settings[12]. There are three elements that shape the talent management; they are the recruiting, the development, which include the nurturing, and the

retention, which is about motivation and commitment. Talent attraction is a management technique that School directors use to pull desired skills into theirschool settings. This technique is administered in order to get the right job fits. Talent attraction is composed of recruitment and selection, school director branding, school personnel' value preposition and employer of choice[13].

Indeed, attracting key talented personnel require flexible working hours as a strategy the school administration should be adopted. When school system allows their staff the freedom to work through a flexible schedule, they can also find themselves more desirable to work. In this context, competitive learning has become a backbone of educational sector success, without continuous learning and maintaining school personnel performance may become impossible[14]. Talent development is the process of changing schools, its school personnel, its stakeholders, and groups of people within it, using planned and unplanned learning, in order to achieve and maintain a competitive advantage for the School. Talent development is process of upgrading the skills and attitude of the school personnel[4].

Today, changes to the education landscape include increased globalization, use of information technology, evolving national curricula, the need for a more global education, attracting and retaining value-adding school members and the increased competition to attract students. Schools also need to deal with a shrinking pool of available school personnel as enrolment of young personnel into teacher education degrees are falling and many mature teachers are retiring from teaching[15]. However,school personnel ' retention is considered one of the primary concerns of many schools and also viewed as a strategic opportunity to maintain a competitive workforce. Retaining talented school personnel is the priority of many schools and it is the key differentiator of human capital management [14].The overall aim of school personnel' talent retention is encouragingschool personnel to remain in the school for the maximum period of time. Talent retention can be controlled through performance based pay, training, challenging work, intrinsic motivations, career

development and giving benefits before demand [9].

In fact, the war for talent is real and educational sector must take rapid steps to reduce key school personnel turnover.When critical personnel leave school settings, it is not only losing valuable talent, but also may experience a decrease in school team morale, damage relationships between students and their teachers, alter succession plans, and create even higher turnover[17]. Talent turnover is considered one of the most harmful methods to schools' productivity because of school personnel attraction demand highly cost. Direct cost refers to turnover, replacement, transitions costs while indirect costs relate to the loss of production, reduced performance levels, unnecessary overtime and low morale of school personnel. In the current competitive business environment, retention of highly talented school personnel is very important as they contribute positively in improving the schools' productivity.So, turnover reduction is very important for schools' success [13]. There are several benefits of talent management in schools such as school personnel' engagement, retention, increased productivity, efficiency and culture of excellence which in turn increased competitive advantage and creativity among school personnel[15,16].On the other hand, talent management system in schools may be failed due to lack of planning and implementation of management policies, processes and programs which have positive impact on the process of acquiring, developing and retaining talented school personnel to sustain schools competitive advantage[1].

In summary,schools' performance is the schools ability to attain its goals by using available human and nonhuman resources in an efficient and effective manner. Talent management needs to be seen as essential for achieving the schools' goals and objectives if it is managed properly in a comprehensive waymany schools can hardly compete without highly skilled school personnel and without the continual investment in the human capital. In order to achieve the competitive advantage, schools should recruit the right personnelin the right places and in the right time. Furthermore, the success of any school depends strongly on having talented school personnel. Talent management in schools

promotes school personnel' efficiency and productivity [14-16].

Significance of the study:

The study seeks to benefit the schools' administrators' particularly human resource management and employers in general in various ways. These include realization of the reasons for failure to attract and retain talented school personnel. Ultimately, corrective actions are taken after some of the policies that contribute to low morale of school personnelare eliminated; hence improve their services which eventually lead to improved schools' performance [16].

Based on the results of the reviewed literatures, it is found that there are limited studies done locally about talent management in schools. The field of talent management in schools is lacking hard academic research to establish what constitutes effective talent management in schools and how it can influence schools' performance. Also, most of talent management studies did not directly link talent management with the schools performance and therefore, there is a need to fill the existing research gap by conducting a study locally to determine the effect of talent management of school personnel on school performance[17].

Aim of the study

Assess talent management and its effect on school personnel' performance at Alexandria school settings.

Research Question

- What is the effect of talent management on school personnel' performance at Alexandria school settings?

Subjects and Method:

Research design

A descriptive correlational research design wasutilized to fulfill the aimof the present study.

Settings:

This study was carried out in all available schools in Alexandria.

Subjects:

The study included all (N= 600)available school personnel in Alexandria schools

Tools:

Three tools were used to measure the variables in this study from school personnel' points of view.

Tool I: Assessment Sheet

This sheet was designed by the researchers to collect the subjects' characteristics' data of the study participants included; age, gender,

qualification, occupation, years of experiences, and marital status.

Tool II: Talent Management Questionnaire

This questionnaire was adopted from El Nakhala (2013)[18]and translated into Arabic by the researchers. It examined school personnel' perceptions of availability of talent management components in the schools. The questionnaire consisted of 31 items representing the three theoretical dimensions of talent management components as follows:

a. The first section was about the talent attraction, which consisted of 10 items as "the school has a system to attract and recruit talented school personnel/ candidates"; "managers at the schools have the competencies to attract and recruit talented school personnel/candidates" and "there are opportunities for learning and development at the schools".

b. The second section was about talent development, which also included 10 items like " the schools identify training needs objectively and "school seeks to transfer expertise from highly skilled school personnelfor the less experienced".

c. The third section was about talent retention, which consisted of 11 items as "the salaries and benefits at the School are competitive "and "the employment conditions at the school satisfy work-life balance". Each of the three talent management dimensions was measured using a 5-point Likert Scale. The possible responses ranged from 1 (never satisfied) to 5 (highly satisfied) on all talent management subscales. Higher degrees of satisfaction were indicated by higher scores. The scores were calculated for the mean scores which were categorized as follows: mean scores < 3 = unsatisfied, and mean scores ≥ 3 = satisfied.

Tool III: Organization Performance Questionnaire

This tool was used to explore school personnel' opinion about school performance. It was developed by Milky (2013)[19] and translated into Arabic by the researchers. The questionnaire consisted of 11 items containing information about schools' communication, schools' policies, schools' development and change, and schools' performance appraisal. A total performance score was measured using a 5-point Likert Scale. The possible responses ranged from 1 (never satisfied) to 5 (highly satisfied) on all performance items. Higher degrees of satisfaction of school personnelwere indicated by higher

scores. The scores were calculated for the mean scores which categorized as follows: mean scores < 3 = unsatisfied, and mean scores ≥ 3 = satisfied[19].

Method

1. An approval from the Ethical Research Committee of the Faculty of Nursing at Alexandria University was obtained.
2. An official letter from the Faculty of Nursing was directed to the Directorate of Schools in Alexandria to obtain their approval to carry out the study at all Schools in Alexandria after explaining the aim of the study.
3. Directors of all schools in Alexandria were met to explain the purpose of the study and the time for starting of the study in order to facilitate data collection.
4. Tools Validity: The three tools were tested for their content validity by 5 experts in the field of nursing administration and community. The necessary modifications were done accordingly.
5. The reliability of the tools wastested by means of Cronbach'sAlpha (tool II=0.904, tool III= 0.876) and the tools were reliable.
6. A pilot study wasinitially carried out prior to the actual data collection phase on 20 of school personnel(10% of the subjects) to test the feasibility and clarity of the tools. Accordingly, the necessary modifications were done. Those school personnelwere excluded from the total study subjects.
7. The researchers attended to the administration office of the previously mentioned directors of all schools in Alexandria to take their permission.
8. The questionnaire was distributed individually in previously selected settings after brief explanation of the aim of the study to collect the needed data using the three tools.
9. Data collection started at the beginning of December 2019 and ended by April 2020.

Ethical Considerations

- Written informed consent was obtained from every school personnel included in the study after explaining the importance and aims of the study.
- Confidentiality of the obtained data was assured.
- Anonymity of school personnel response was guaranteed by statement in the cover page
- A code number was used instead of names.
- Participation and withdrawal of school personnel were on a voluntary basis.
- School personnel privacy was considered and respected.

Statistical analysis:

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0 (Armonk, NY: IBM Corp) Qualitative data were described using number and percent. Quantitative data were described using mean, standard deviation. Significance of the obtained results was judged at the 5% level.

Results

Table (1) demonstratesfrequency and distribution of school personnel according to their personal' characteristics. It was found thatmore than half(60%) of participantswere among the age group of 40 to less than 50 yearswith mean age of6.238years. More than two thirds (77%, 74.6%& 66%respectively) of school personnel were married,had years of experience ranged from 11 to 20 years and had Bachelor degree education.

Table (2) illustrates that the highest percentage (78.7%) of participants were dissatisfied regarding talent attraction dimensions. More than three quarters (80.7%, 76.7%) of the studied samplewere dissatisfied regarding school identifies its employees in terms of qualifications and experiencerespectively. Reasonable degree of security contributes to make school an employer of choice, those who were dissatisfied regarding the work at school is interesting and rewarding andschool reputation attracts the talented workers / candidates constituted 73.3%&63% respectively.

Table (3) reveals that the highest percentage (63.7%, 64.3%) of school personnelwere dissatisfied regarding total talent development dimensions and school allocate a special budget for training and development of talented employees. Moreover, more than half(55.7%, 55%) of participants were dissatisfied regarding school identify training needs, employees with high potential and formulates personal plans to develop them and school provides an opportunity to change the employee's job to develop themselves respectively.

Table (4) presents that the highest percentage (69.7%) of participants were dissatisfied regarding total talent retention dimensions. More than two thirds (73.3%) of school personnel were dissatisfied regarding the salaries and benefits at the school are competitiveand school avoids to over the working load and working stress more than the employee's ability respectively. Moreover, those who

were dissatisfied regarding the salaries and benefits at the hospital are fair and consistent at school, the salaries and benefits at school guarantees employee loyalty represented 66% & 66% respectively. More than half of (57.3%) ofthem were dissatisfied regardingschool allows the employee to work from homeand 43.7% ofthem were also dissatisfied regarding the employment conditions at the school satisfy work-life balance).

Table (5) shows that the highest percentage (74.3%) of participants were dissatisfied regarding total school performance dimensions and also half (50.7%) of themwere dissatisfied regarding the school have a clear sense of direction and focus. Moreover, those who were dissatisfied regarding school has policies that encourage career growth and developmental opportunities, place a high priority on workforce training and development and School builds a deep reservoir of successors at every level constituted 49.3%, 48.7%, 47.3% respectively.

Table (6) portrays that there is no statistically significant difference between the school personnel' socio-demographic characteristics (age, experience years, educational level, and marital status) and talent attraction where P more than 0.05.

Table (7) shows that there is a statistically significant difference between the school personnel' socio-demographic characteristics (age, experience years and educational level)and talent development where P=0.000. On the other hand, there is no a statistically significant difference between the school personnel' marital status and Talent development items (P= 0.550).

Table (8) clarifies that there is a statistically significant difference between the school personnel' socio-demographic characteristics (age, experience years and educational level) and talent retention whereP=0.001, P= 0.006 and (P=0.000). On the other hand, there is no a statistically significant difference between the school personnel' marital status and talent retention dimensions where P= 0.261.

Table (9) reveales that there is no a statistically significant difference between the school personnel' socio-demographic characteristics (age, experience years, educational level, and marital status) and school performance (P more than 0.05).

Table (10) highlights correlation coefficient (r) between talent management components (Talent Attraction, Talent Development, Talent Retention) and school performance of school personnel. There were a highly significant positive correlation between school performance total score and each of the three components of school personnel talent management. In addition, correlation coefficient between each two pairs of school personnel talent management components, showed a highly significant positive correlation wherer= 0.309, r= 0.476, P=0.000.

Table (1): Distribution of School Personnelaccording to their Personal'Characteristics

School Personnel'Characteristics	School Personnel n=600	
	No.	%
Age (years)		
20 to less than 30 years	42	7.0
30 to less than 40 years	198	33.0
40 to less than 50 years	360	60.0
Mean ± SD	6.238±40.3	
Experience years		
Less than 5 years	50	8.3
5 to 10 years	88	14.7
11 to 20 years	462	77.0
Mean ± SD	4.184±13.28	
Educational level		
Diploma	36	6.0
Technical education	28	4.7
Bachelor	396	66.0
Master degree	78	13.0
Doctorate degree	62	10.3
Marital status		
Single	100	16.7
Married	448	74.6
Divorced	52	8.7

Table (2): Distribution of School Personnelaccording to their Talent Attraction Items

Talent Attraction Items	School Personnel' Opinions n=600			
	Satisfied		Unsatisfied	
	No.	%	No.	%
School can attract and recruit personnel even though the limited supply of skilled and talented workers/ candidate	378	62.3	226	37.7
School has a system to attract and recruit talented workers/ candidates.	226	37.7	378	62.3
The recruitment process at the school succeeds in selecting the best talent	288	48.0	312	52.0
Managers at school have the competencies to attract and recruit talented workers /candidates.	282	47.0	318	53.0
School identifies its employees in terms of qualifications and experience	116	19.3	484	80.7
School reputation attracts the talented workers / candidates	222	37.0	378	63.0
The work at school is interesting and rewarding	160	26.7	440	73.3
There are opportunities for learning and development at school	230	38.3	370	61.7
The talent prefers to work at school where opportunities for career progression are available	272	45.3	328	54.7
Reasonable degree of security contributes to make school an employer of choice	140	23.3	460	76.7
Total Talent Attraction	128	21.3	**472**	**78.7**

Table (3):Distribution of School Personnelaccording to theirTalent Development

Talent Development Items	School Personnel' Opinions n=600			
	Satisfied		Unsatisfied	
	No.	%	No.	%
School develops a talent pool consisting of a skilled, engaged and committed workforce.	404	67.3	196	32.7
School encourages talented employees to develop their careers	286	47.7	314	52.3
School identifies employees with high potential and formulates personal plans to develop them	270	45.0	330	55.0
School has learning and development programs to develop talent.	278	46.3	322	53.7
School allocate a special budget for training and development of talented employees	214	35.7	386	64.3
School identify training needs objectively	266	44.3	334	55.7
The administration monitors the performance of employees and advises them to improve performance.	372	62.0	228	38.0
School provides an opportunity to change the employee's job to develop himself.	270	45.0	330	55.0
School seeks to transfer expertise from highly skilled staff for the less experienced	312	52.0	288	48.0
School Provides honest feedback about the performance of employees.	392	66.0	208	34.0
TotalTalent Development	218	36.3	**382**	**63.7**

Table (4):Distribution of School PersonnelAccording to their Talent Retention

Talent Retention Items	School Personnel' Opinions n=600			
	Satisfied		Unsatisfied	
	No.	%	No.	%
The salaries and benefits at the hospital are competitive	190	26.7	440	73.3
The salaries and benefits at the hospital are fair and consistent at school	196	32.0	408	68.0
The salaries and benefits at school guarantees employee loyalty	204	34.0	396	66.0
School actively creates opportunities for employee to participate in challenging assignments	314	52.3	286	47.7
The work at school matches the employee's abilities and skills	312	52.0	288	48.0
The employment conditions at the school satisfy work-life balance	256	42.7	344	57.3
School avoids to over the working load and working stress more than the employee's ability	262	43.7	338	73.3
There are flexible working hours, at school	366	61.0	234	39.0
School allows the employee to work from home	256	42.7	344	57.3
The school personnel at school are satisfied with their work.	338	56.3	262	43.7
There is an engagement between workers and their jobs at school	482	80.3	118	19.7
TotalTalent Retention	182	30.3	**418**	**69.7**

Table (5):Distribution of School Personnel according to their School Performance

School Performance Dimensions	School Personnel' Opinions n=600			
	Satisfied		Unsatisfied	
	No.	%	No.	%
School practices effective two-way communications	388	64.7	212	35.3
The school have a clear sense of direction and focus	296	49.3	304	50.7
The school rapidly adapt to needed operational changes	332	55.3	286	44.7
School Practice effective planning at all levels	334	55.7	266	44.3

Table (5): Cont.,

Place a high priority on workforce training and development.	308	51.3	292	48.7
The school conducts formal performance appraisals on a regular basis.	338	56.3	262	43.7
At my school my performance on the job is evaluated fairly	376	62.7	246	37.3
School has policies that encourage career growth and developmental opportunities.	304	50.7	296	49.3
School builds a deep reservoir of successors at every level	316	52.7	284	47.3
If you left your job tomorrow, someone in your unit could immediately take over	326	54.3	274	45.7
School has policies that encourage career growth and developmental opportunities	342	57.0	258	43.0
TotalSchool Performance	154	25.7	**446**	**74.3**

Table (6): Relation between the School Personnel' Socio-demographic Characteristics and Talent Attraction

Sociodemographic characteristics	Talent Attraction				Test of significance
	Unsatisfied		Satisfied		
	No	%	No	%	
Age					
20 to less than 30 years	26	62.0	16	38.0	X^2= 4.107 P= 0.128
30 to less than 40 years	162	81.8	36	18.2	
40 to less than 50 years	284	78.9	76	21.1	
Experience years					
Less than 5 years	32	64.0	18	36.0	X^2= 4.276 P= 0.118
5 to 10 years	66	75.0	22	25.0	
11 to 20 years	374	81.0	88	19.0	
Educational level					
Diploma	30	83.3	6	16.7	
Technical education	18	78.3	10	35.7	X^2= 6.877 P= 0.032
Bachelor	328	82.8	68	17.2	
Master degree	54	69.2	24	30.8	
Doctorate degree	42	67.8	20	32.2	
Marital status					
Single	66	660.0	34	34.0	X^2= 8.267 P= 0.082
Married	368	82.1	80	17.9	
Divorced	38	73.0	14	27.0	

Table (7): Relation betweenThe School Personnel' Socio-demographic Characteristics and Talent Development

Socio-demographic characteristics	Talent Development				Test of significance
	Unsatisfied		Satisfied		
	No	%	No	%	
Age					
20 to less than 30 years	10	23.8	32	76.2	X^2= 15.575 p=0.000*
30 to less than 40 years	134	67.7	64	32.3	
40 to less than 50 years	238	66.1	122	33.9	
Experience years					
Less than 5 years	18	36.0	32	64.0	
5 to 10 years	46	52.3	42	47.7	X^2= 13.405
11 to 20 years	318	68.8	144	31.2	p= 0.001*
Educational level					
Diploma	16	44.4	20	55.6	
Technical education	8	28.6	20	71.4	X^2= 32.224
Bachelor	296	74.7	100	25.3	P=0.000*
Master degree	34	43.6	44	56.4	
Doctorate degree	28	45.2	34	54.8	
Marital status					
Single	64	64.0	36	36.0	X^2= 1.196
Married	290	64.7	158	35.3	P= 0.550
Divorced	28	53.8	24	46.2	

Table (8): Relation between the School Personnel' Socio-demographic Characteristics and Talent Retention

Socio-demographic characteristics	Talent Retention				Test of significance
	Unsatisfied		Satisfied		
	No	%	No	%	
Age					
20 to less than 30 years	14	33.3	28	66.7	
30 to less than 40 years	150	75.8	48	24.2	X^2= 14.924
40 to less than 50 years	254	70.6	106	29.4	P= 0.001*
Experience years					
Less than 5 years	22	44.0	28	56.0	X^2= 10.236
5 to 10 years	56	63.6	32	36.4	P= 0.006*
11 to 20 years	340	73.6	122	26.4	
Educational level					
Diploma	20	55.6	16	44.4	X^2= 21.258
Technical education	12	42.9	16	57.1	P= 0.000*
Bachelor	310	78.3	86	21.7	
Master degree	42	53.8	36	46.2	
Doctorate degree	34	54.9	28	45.1	
Marital status					
Single	60	60.0	40	40.0	X^2= 2.683
Married	320	71.4	128	28.6	P= 0.261
Divorced	38	73.0	14	27.0	

Table (9): Relation between the School PersonnelSocio-demographic Characteristics and School Performance

Socio-demographic characteristics	School Performance				Test of significance
	Unsatisfied		Satisfied		
	No	%	No	%	
Age					
20 to less than 30 years	30	71.4	12	28.6	X^2= 0.368
30 to less than 40 years	144	72.7	54	27.3	P= 0.832
40 to less than 50 years	272	75.6	88	24.4	
Experience years					
Less than 5 years	34	68.0	16	32.0	X^2= 4.062
5 to 10 years	56	63.6	32	36.4	P= 0.131
11 to 20 years	356	77.1	106	22.9	
Educational level					
Diploma	28	77.8	8	22.2	X^2= 7. 487
Technical education	24	85.7	4	14.3	P= 0.112
Bachelor	306	77.3	90	22.7	
Master degree	46	59	32	41.0	
Doctorate degree	42	67.7	20	32.3	
Marital status					
Single	82	82.0	18	18.0	X^2= 5.320
Married	334	74.6	114	25.4	P= 0.070
Divorced	30	57.7	22	42.3	

Table (10): Correlation betweenTalent Attraction,Talent Development,Talent Retention andSchool Performanceof School Personnel

	Talent Attraction r (p)	Talent Development r(p)	Talent Retention r(p)	School Performance r(p)
Talent Development	r =0.440 P=0.000*	r =- P=-	r=0.543 P=0.000*	r=0.309 P=0.000*
Talent Retention	r =0.329 P=0.000*	r=0.543 P=0.000*	r=- P=-	r=0.476 P=0.000*
School Performance	r =0.309 P=0.000*	r=0.441 P=0.000*	r =0.476 P=0.000*	r =- P=-

Correlation is significant at the 0.01 level *

Discussion

Talent management has emerged as a global strategy for school personnel motivation and increasing their performance[20]. Therefore, schools recognized the significance of talented school personnel' attraction, development and retention for competitive market survival. Schools also have talent competition to maintain their school personnel' engagement, loyalty, retention which leads to an improvement of school performance [16].Talented school personnel are more productive by two to three times than the average school personnel. The more talented in schools the more productive and profitable schools will be. Talent management includes putting the right personnel in the right jobs. This maintains that the school personnel develop their talents for maximum school success [1].

Hence, the current study was conducted with the aim of assessing talent management and its effect on school personnel'performance at Alexandria School Settings. The current study's results denotedthat school personnel had high level of dissatisfaction regarding talented personnel' recruitment in their schools.This may be attributed to many reasons as law salary, inflexible working schedule, frustration, more responsibility that not matched with the demands of their daily life which in turn affect negatively on their preference and feelings. This result was inconsistent with **El Dahshanet al. (2018)**[21]who revealed that the level of talent recruitment is accepted. The highest percentage of dissatisfied school personnel were in school identifies its employees in terms of qualifications and experience,

reasonable degree of security contributes to make school an employer of choice and the work at school is interesting and rewarding.

Moreover, the result of the current study is incongruent with**Taie (2015)**[(1)]who maintained that, the 100 students from three universities of Islamabad are well aware of organizations recruitment techniques and they prefer to join those organizations where they can find better career growth. Moreover, the findings of current study were inconsistent with **El Nakhla (2013)** [(18)]who mentioned that the respondents at Al Aqsa voice radio station agreed that there are opportunities for learning and development at the station.

In the same line, the current study finding is inconsistent with the study conducted by **Roman (2011)** [(22)]who contended that the Western Cape Provincial Treasury (WCPT) adopted a short-term strategy to attract young students to the organization by offering internships after they completed their studies.

A growing body of evidence indicated that talent development is a series of processes designed to attract high-potential personnel. It is also help to develop, motivate, and retain top talent.So, developing talent is one of the best ways to assure an organization has the leadership it will need for a successful future. Few organizations have a sufficient supply of talent. Gaps exist in every school settings and talent is more and more scarce[(22)]. In consistently, results of current study portrayed that school personnel perceived had dissatisfaction level regarding talent development dimensions in schools.This may be due to, most of schools haven't plan regarding how to develop their personnel skills and talents. It has also little resources to provide them training on any updated educational issues which in turn affect their educational capabilities, create feeling of frustration and hopelessness.

Regarding talent retention, the highest percentage of school personnel were dissatisfied in relation tothe salaries and benefits at the school are competitive, school avoids to over the working load and working stress more than the employee's ability, the salaries and benefits are fair and consistent at schooland the salaries and benefits at school guarantees employee loyalty. These results may be related to that school personnel received not enough salaries in schools and less

appreciation and motivation. The findings agreed with a study by **Manafa et al. (2009)** [24]who indicated that their studied participants were particularly dissatisfied with what they perceived as unfair access to continuous education and career development opportunities.

Schools have a significant role in daily lives and intern; successful schools constitute a key element for nations' development. Continuous performance is the main determinants of school performance of any school because only through performance schools are able to develop and grow. Therefore, schools' performance is one of the most significant variables in the management research [10]. In this context, result of current study showed that the highest percentage of participants were dissatisfied regarding total school performance dimensions. This may be rely on most of participants among age group of 40 to 50 years which in turn affect theirperformance as one' performance decreased with the advanced age. So it creates sense of frustration and less productivity.

The results of the current study portrayed that there was a highly significant correlation between total score of school performance and each of talent management three components of school personnel. The finding of current study was consistent with **De Boeck et al. (2018)**[8]and**Mohammad(2015)**[13]who revealed that talent management is positively related to organizational performance and organizational success. Similarly, **Hafez et al.(2017)**[25] found thatthere is a significant positive correlation between talent management components (motivating outstanding performance, training and development, job enrichment) and employees' retention.Further supports add by **Yuniati et al. (2021)**[26] who study the impact of employee engagement as a mediator on the relationship between talent management and organizational performance. In addition, **Auranzeb and Bhutto, (2016)** [27]found a significant positive correlation between talent retention and organizational performance of healthcare organizations. On the other hand, the finding of current study is inconsistent with **Arif and Uddin (2016)** [28]who found that no significant relation between employee

development and organizational performance.

Furthermore, **Ejovwokeoghene et al. (2018)** [29]stated that there is a significant positive relationship between talent management and organizational performance. The same was also detected from study of **Baroda (2018)** [30]whoreported that a significant positive relationship between talent management practices and employees' motivation, satisfaction, creativity, development, performance and competency in the selected banks. Moreover, the finding of current study is in agreement with **Al-Lozi et al.(2018)** [31]who foundthat there is a significant positive relationship between talent attraction, talent development, talent retention, and successionstrategy. Further supports add by study of**El Dahshanet al.(2018)**[21]they concluded that talent attraction and talent retention had a significant positive relationship with organizational performance.

Conclusion

Based on the findings of the present study, it can be concluded that,there was a highly significant positive correlation between school performance and each of the three components of talent management of school personnel (talent attraction, talent development, talent retention)

Recommendations

Based onfindings of the presentstudy, it can be recommendedthat:

- Improving the financial reward/salary and benefits for school personnelgained from their work. This will lead to development of their performance which leads to school success.
- Schools provide education and development opportunities for school personnelthrough conducting education and development programs.
- All schools should introduce talent management strategy in their educational planning to remain competitive in today's market.
- Schools should introduce a system to attract and recruit talented school personnel.
- Schools introduce reasonable degree of security to make school an employer of choice.
- Schools allocate a special budget for training and development of talented school personnel.
- Replication of this study in different schools with school personnel will be beneficial.

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