Tanta Scientific Nursing Journal

Volume 23 Number 4

November

2021

- **Publisher :**

Tanta University, Faculty of Nursing

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Effect of Implementing Fall Prevention Strategies on Nurses' Performance at Neurological Diseases Intensive Care Unit

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Abstract

Background: In-hospital falls are a significant clinical, legal, and regulatory problem, moreover, is considered one of the nursing-sensitive quality indicators and essential goal of international patient safety goals IPSG.In hospital falls well-thought-out to be any unintentional positional change that results in the person coming to rest on the ground, floor, or other lower surface. Falls are the most frequently reported incidents among hospitalized patients. It is considered a challenge for healthcare workers because information on effective fall reduction is lacking. **The study aimed** to determine the effect of implementing fall prevention strategies on nurses' performance at Neurological Intensive Care Units.**Subjects and Method**:**Design:**A quasi-experimental design was utilized in this study. **Setting:**The study was conducted at Neurological Intensive Care Units in Neurological Medical Center, in Tanta Main University Hospital. **Subjects**: All nurses (50) nurse from Tanta University Neurological Intensive Care Units. **Tools:** Three tools were used to collect data: Tool I: Nurses' knowledge and socio-demographiccharacteristics Tool II: Nurses compliance fall prevention tool: (Rounding tool) Tool III: Nurses' performance for prevention of patient fall checklist.**Results:** The main results of this study revealed that there was a significant improvement in the mean scores of the total level of knowledge and practice immediately and one-month post-program implementation in a studied group at $P < 0.05$. Conclusion: **Conclusion:** The study findings revealed that nurses' performance of intervention for patient fall prevention had improved after the application of the educational program. **Recommendation:** It was recommended that an In-service training program should be conducted continuously for nurses regarding fall prevention strategies and essential presence of nurse's instructor to distribute guideline booklet with knowledge and practices about patient fall prevention.

Keywords: In-hospital fall, nurses' knowledge, nurses' performance, fall preventionstrategies.

Introduction

Falls are a serious health care problem and often result in major injuries and even deaths. [1]In addition, patient falls consider a significant challenge and ongoing issue for acute-care hospitals, long-term care facilities, and community health clinics in the United States [2]thus; there is a need for appropriate, effective interventions[1].Patient' falls measure for hospital compliance with patient safety standards. Many falls lead to serious injuries which increase hospital costs[3]. The international benchmark for patient falls ranges from 2.3 to 7 falls per 1000 patient days. This accounts for approximately 700 000 to 1 000 000 falls per year in the United States. More alarming is the estimate that annually more than 1% (11000) of these falls are fatal. Unassisted falls inevitably lead to more serious injuries than assisted falls, thus causing greater harm to the patient such as serious fractures or sprains, or even fatal injuries [4]. There are many risk factors for falls age, physical status, and medical conditions which lead to weakness [5].Other factors that most frequently contribute to patient falls are inadequate assessment of patients and communication failures; staff not following procedures and safety measures; deficiency in staff orientation, supervision, leadership, and in the level of the staffing skill mix; and the physical environment surrounding the patient [6]. The most common causes of falls can be dizziness, different medications, medical conditions like Parkinson's, physical conditions like uneven floor, slippery or snowy roads, slippery footwears, poor eyesight, poor lightning, improper placement of the furniture, etc. [7]. Another reason for a patient's fall in the acute care setting is the patients' reluctance to call for assistance that is influenced by a perception that nurses are too busy [8]. Falls have contributed to major injuries, some resulting in death, among patients admitted to acute care hospitals. [9] The effects of falls can be devastating and include physical, emotional, and financial consequences, for which appropriate, effective interventions must be implemented. The researchers further indicated that injuries sustained from falls can result in increased inpatient hospital days, unscheduled surgeries, and sometimes loss of life the cost related to managing patients post-fall is significant [1].Fall prevention is the main concern among healthcare institutions since providing quality and safe care is their primary goal. As healthcare systems continue to adopt and implement fall prevention strategies, nurses play a critical role in implementing fall prevention procedures in the acute care setting. The hallmark of most fall prevention strategies

is risk identification. Although an abundance of risk identification instruments exists, these assessment tools and risk-factor directed interventions are not consistently applied to explain the continued high incidence of falls among adult patients [7-10]. Many hospitals have standard fall prevention protocols in place including signs, alarms, fall assessments, nonskid socks, and patient instructions about calling for assistance before getting up [11]. Moreover, use of a conventional fall prevention method like the fall risk assessment tool is ineffective in reducing fall rates[12].Hourly rounding is an essential part of nursing and patient care that addresses patient's needs such as pain, potty (toileting), positioning, and personal belongings/needs[13]. The intentional grounding reduces patient's use of call lights, improves patient satisfaction, and decreases patient falls in various hospital settings. The nurse's role starts from the early prevention to the rehabilitation of falls and further follow-up and evaluation [14]. Nurses are also part of a team, in which there are a variety of other professions such as a doctor [15]. Nurses should implement patient safety and concern when providing nursing care to patients. Nurses must also involve cognitive, affective, and action that promotes patient safety [16]. Nurses need to use evidence to support development activities and translate evidence-based practice into daily nursing practice [17].That why this study aimed to determine the effect of implementing fall prevention strategies on nurses' performance at Neurological Intensive Care Units.

Aim of the study

The study aims todetermine the effect of implementing fall prevention strategies on nurses' performance at Neurological Intensive Care Units.

Research hypothesis:

Fall prevention strategies are exhibited to improve nurses' performance regarding fall reduction among neurological patients.

Subjects and methods

Research design:

Aquasi-experimental research

The design was being used in the study.

Setting:

The study was conducted at

Neurological Intensive Care Units in Neurological medical center, at Tanta Main UniversityHospital.

Subjects:

The subjects of this study has consisted of all critical care nurses N= (50) of both sex, who worked and direct caring for neurological patients in neurological intensive care unit in the previously mentioned setting, regardless of their age, sex, years of experience, level of education and residence.

Tools of data collection:

Three tools were used for data collection of this study as follows:**Tool (I)** Nurses' knowledge and socio-demographic characteristics: this tool was developed by the researcher after reviewing relevant literature[133,134]that collected socio-demographic data of nurses and nurses knowledge, it was written in both simple Arabic and English language for assessing nurses' knowledge. It has consisted of two parts as follows: this tool was included two parts:**Part I:** Socio-demographic characteristics of nurses as age, sex, marital status, years of experience, level of education, and previous education program and workshops about fall prevention

Part II: Nurses'knowledge regarding falls in neurological disorder patients, covered the following: a risk factor of fall that includes: individual factors, health factors, environmental factors, and other factors, fall prevention strategies, and risks of falls on the neurological patient. This part consisted of 36 closed-ended questions, it included five categories in the form of a multiple-choice question (MCQ) and true, falsequestion;it was covered the following item;-

Nurses knowledge regarding definitions, types related to fall and fall prevention, the risk factor of fall,consequencesof fall, and their knowledge regarding fall prevention strategiesScoring system of the nurses' knowledge questionnaire: the response incorrect and no response was be scored (0) and a correct answer was be scored (1) for each area of knowledge. The score was summed up and converted into total score percent. Grades of total knowledge according to the following category:High level >75%, Middle 60-75%, and low level <60%

Tool (II): Nurses compliance fall prevention tool (Rounding tool)It was being assessed by the researcher using Modified Scripps Mercy Hospital Rounding Tool (Rounding tool) it was adapted from Gutierrez and Smith, (2008)[17], it was being used to determine the nurses' compliance with fall prevention protocol (FPP) for patients identified as a high risk for falls.Scoring system of the nurse's compliance fall prevention tool; the degree of compliance with the FPP was graded according to the scores obtained on the tool as high, moderate, or low compliance. Compliance with each item as outlined in the rounding tool is calculated the lowest score that was obtained [16] indicates more compliance, the highest score that was obtained [18], indicates non-compliance.

Tool (III): Nurses' performance for prevention of patient fall checklist. The

researcher has used this tool to evaluate the nurses' level of performance regarding prevention of patient fall by using a new 34-item fall prevention checklist based on the existing fall prevention strategies that covered the following items: fall risk assessment, fall protection, fall elimination, staff orientation and training, safe environment, fall administration strategies, communicate with the care team and pharmacist about high-risk medication, medication review strategy. These strategies were adopted from Morganand Bjorkelo ([19,20],it was focused on the nursing staff's performance and compliance to each intervention to determine whether all prevention interventions were in place before accepting care of the patient and the incidence of falls was tracked daily. Scoring system of nurses' performance regarding prevention strategy each category of prevention strategy ranked as scored (0)when not done, scored(1) when need improvement, scored (2) when completely done. Total scoring considered satisfactory practice level is ≥75% and Unsatisfactory as practice level>75%

Method:

- Official permission was obtained from the responsible authorities to carry out the study.
- Consent obtained from every nurse included in the study after explanation of the aim of the study and assuring them regarding;
- Confidentiality and anonymity of the collected data are maintained by the use of code number instead of name and the right of withdrawal is reserved.
- Privacy of the studied nurses was be maintained.Ethical committee approval obtained in -4-2020
- Three tools were used in this study:
- A tool I and tool III was being developed by the researcher to evaluate the nurses' knowledge, performance, and nurses' compliance with fall prevention protocol, and translated into Arabic, But tool II was adopted fromGutierrez and Smith, (2008) [135].
- Content validity: the developed tools were tested for content validity for clarity and applicability by five experts in the Medical-Surgical nursing staff and staff of neurological medicine, Modifications were carried out accordingly.
- Reliability statistics: Alpha Cronbach's test was used to test tool I reliability and the reliability factor was =0.831.
- Alpha Cronbach's test was used to test tool II reliability and the reliability factor was =0.815.
- A pilot study was be conducted on 10% of the studied nurses to test the

applicability of the tools and to determine any obstacles that may be encountered during the period of data collection and needed modification was be done.

- Data collection: data were collected over 7 months, started from June to December 2020.Nurses' were interviewed by the researcher in the nursing room in the Neurological medical center, in Tanta Main University Hospital
- The study was conducted according to the following phases:

Assessment phase: (preparation phase):

The initial interview was done for the nurses, explain the aim of the study, obtaining official approval to participate in the study, obtain basic data through a pre-test questionnaire using tools I and III Grouping nurses as 5 groups (10 nurses at each group) according to their monthly roster. researcher prepare five sessions that were needed for the teachings strategies. Pre-test distributed for all staff before beginning the program.Assessment of the nurses' socio-demographic data using the tool I (part I) was collected from the nurses.Assessment nurses' knowledge was carried out using Tool I (part 2); the researcher assesses nurses' knowledge pre-implementation of the educational program. Assessment nurses' practice was carried out using Tool (II) and tool (III); the researcher assesses nurses' practice pre-implementation of an educational program.

Planning phase:

This phase was formulated based on data from the assessment phase, literature review, priorities, goals, and expected outcome criteria were taken into consideration when planning patients' care.The selection of teaching-learning strategies methods was governed by studying the subject themselves and the content of the program

Teaching methods were lecture, group discussion between the researcher and the nurses, and demonstration were used as a teaching method and it was translated into the Arabic language for nurses. Teaching aids used for the attainment of program objectives were: lab top, videos, and power-point prepared by the researcher based on literature review. A colored booklet was developed to be given to the nurses.

Implementation phase:

An educational program about fall prevention nursing intervention was developed and implemented by the researcher to all nurses in the nursing room in the center. Each interview lasted for about 30-50 minutes to complete the tool I. The time needed to complete the checklist (tool II) varies from 15-60 minutes depending upon the time of the different procedures inside the

department.Educational sessions were given to all nurses included in the study and it was implemented over four sessions. Nurses were divided into small groups each one ranges from 2-5. The content of the sessions was divided into two theoretical and two practical sessions. Sessions for nurses were carried out during the morning and afternoon shifts.

Evaluation Phase:

Each nurse was evaluated using a tool I,II, and III to determinethe effect of implementing fall prevention strategies on nurses' level of knowledge and their performance.

Limitations:

1-There was no policy or procedure used to assess patient risk for falls.

2- No available material as flyers,fall ID band, and /or fall sign.

3- Not found and data regarding calculating fall incidents or any counting for fall risk among neurological patients at the intensive care unit.

Results

Table (1):Illustrate percentage distribution of the studied nurses according to their Socio-demographic characteristics. The results revealed that more than half (52%) of studied nurses had a Bachelordegree in nursing and, majority of them (96%) were femalesand morethan half of them(62%) were married the mean of their age groupwere mean of age (33.45±5.78) yearsand (46%) of them the mean of their years of experience wasyears of experience in the neurological care unit, it was noticed that less than (46%) were 5-10 years with a mean ±SD of years of experience (12.32±4.9) years. Moreover, it wasobserved majority (96%) of nurses did not attend any training courses before caring out the program.

Table (2): This table Clarifies the distribution of the mean nurses' knowledge score of studied group pre, immediately post, and one-month post-program implementation regarding fall prevention program regarding the following items: fall in neurological disorder patient, risk factors of fall,fall prevention strategies, there was a statistically significant difference present among three phases of the study as P= (<0.001*) also as cleared that mean nurse' knowledge scoreduringpre-intervention phase were (2.52±0.,74,3.44±0.62, 2.8, and 3.2±0.7) respectively then Enhanced immediately post-intervention to be (5.88±0.45,8.19±0.83,9.07±0.6) respectively and while in follow up phase the mean score was (5.6±0.64,7.8±0.58,8.92±0.83) respectively.

Figure (1):This figurePercentage distribution of the studied nurses' total knowledge scores pre, immediately post, and one-month post-program implementation it was observed that thatnear fifty of the studied nurses (46%) hada moderate level of knowledge before

the implementation of the educational program compared to the more than three quarter (76%) and near three quarter (74%) had high knowledge level immediately post and one-month post-program implementation.

Figure (2): This figure demonstrates the percentage distribution of the studied nurses' according to their compliance level, It was noticed that pre-intervention (70%) of them hadunsatisfactory compliance levels compared with (12%) and (14%) respectivelywhile in post-intervention and in follow up phase majority of them(88% and (86% respectivelyin post-intervention phase and follow up phase their compliance level heightenedand become satisfactory.

Table (3): illustrate the Correlation between the Total performance of the studied nurses and their total knowledge score and total complianceamong three phases of the study it was observed thatit was found that apositive correlation between total knowledge, total performance, and total compliance through three phases of the study as in pre-intervention phase r= (0.806, 0.425)and immediate post-intervention (r=0.482, 0.433)and during follow up phase r= (0.375, 0.230).

Table 1: Percentage distribution of the studied nurses according to their Socio-demographic characteristics.

Characteristics	The studied nurses (n=50)	%
Age	N	%
21-30	14	28
31-40	22	44
41-50	8	16
51-60	6	12
Mean±SD	33.45±5.78	
Sex		
Male	2	4
Female	48	96
Marital status		
Single	8	16
Married	31	62
Divorced	7	14
Widow	4	8
Educational level		
Diploma	0	0
Technician	22	44
Bachelor	26	52
Postgraduate	2	4
Years of experience at Icu >1year 1-5 year 5-10year >10year	0 19 23 8	0 38 46 16
Mean±SD	12.32±4.9	
previous education programworkshops about fallpreventionin the neurological unit	Yes 2 No 48	4 96

Table 2: Percentage distribution of the mean nurses' knowledge score of studied group

Items of knowledge	Pre		Post immediately post		Follow after one month		Chi-square			
							Pre &post		post &follow	
	N	%	N	%	N	%	X2	P-value	X2	P-value
Falls in neurological disorder patients	18	36	42	84	40	80	24.00	<0.001*	0.27	0.60
	32	64	8	16	10	20				
	Mean±SD									
	2.52±0.74		5.88±0.45		5.6±0.64					
Risk factor of fall	17	34	41	82	39	78	23.64	<0.001*	0.25	0.61
	33	66	9	18	11	22				
	Mean±SD									
	3.44±0.62		8.19±0.83		7.8±0.58					
Fall prevention strategies	14	28	44	88	43	86	36.94	<0.001*	0.08	0.76
	36	72	6	12	7	14				
	Mean±SD									
	2.85±0.55		8.74±0.75		8.62±0.94					
Intervention to prevent fall	15	30	45	90	44	88	37.50	<0.001*	0.10	0.74
	35	70	5	10	6	12				
	Mean±SD									
	3.2±0.7		9.07±0.6		8.92±0.83					

Items of knowledge	Pre		Post immediately post		Follow after one month		Chi-square			
							Pre &post		post &follow	
	N	%	N	%	N	%	X2	P-value	X2	P-value
Falls in neurological disorder patients	18	36	42	84	40	80	24.00	<0.001*	0.27	0.60
	32	64	8	16	10	20				
	Mean±SD									
	2.52±0.74		5.88±0.45		5.6±0.64					
Risk factor of fall	17	34	41	82	39	78	23.64	<0.001*	0.25	0.61
	33	66	9	18	11	22				
	Mean±SD									
	3.44±0.62		8.19±0.83		7.8±0.58					
Fall prevention strategies	14	28	44	88	43	86	36.94	<0.001*	0.08	0.76
	36	72	6	12	7	14				
	Mean±SD									
	2.85±0.55		8.74±0.75		8.62±0.94					
Intervention to prevent fall	15	30	45	90	44	88	37.50	<0.001*	0.10	0.74
	35	70	5	10	6	12				
	Mean±SD									
	3.2±0.7		9.07±0.6		8.92±0.83					

Fig (1): Percentage distribution of the studied nurses' total knowledge scores

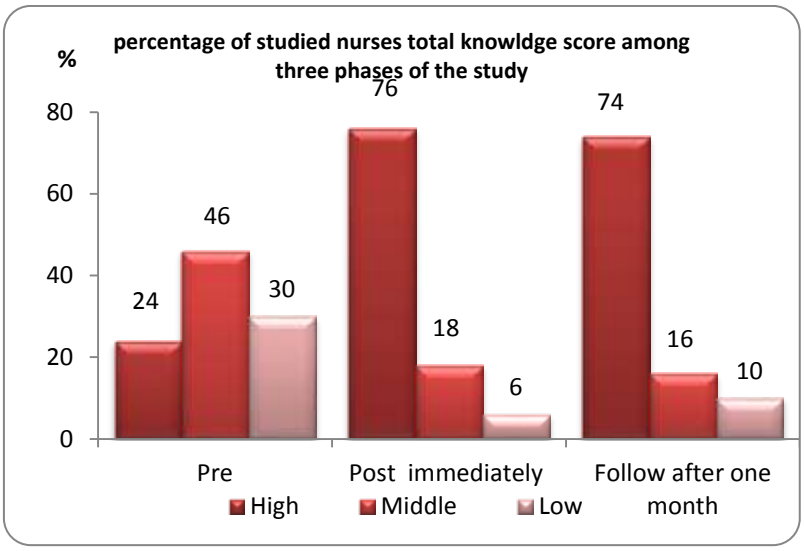

Fig (2): the percentage distribution of the studied nurses' according to their compliance level

performance	Pre		immediately post		Follow up post-one-month	
	r	P-value	r	P-value	r	P-value
Total perfor	0.806	<0.001*	0.482	<0.001*	0.375	0.002*

mance						
Total compliance	0.425	<0.001*	0.433	<0.001*	0.230	0.004*

Table 3: Correlation between the Total performance of the studied nurses and their total knowledge score and total complianc

Discussion:

Patient falls are the most common adverse event in the intensive care unit, occurring from accidental events when derived from extrinsic factors, such as environmental considerations or anticipated physiologic falls when derived from intrinsic physiologic factors, such as confusion and unanticipated physiologic falls when derived from unexpected intrinsic events, such as a new onset syncopal event or a major intrinsic event such as stroke, resulting in devastating physical, psychological and financial consequences and without a doubt. It is considered one of the biggest risks of hospital care and results in severe complications. Therefore, the emphasis on fall assessment and prevention is a key priority[20]. Concerning socio-demographic characteristics of the studied nurses, the present study delineated the dominance of females; this high proportion of female nurses is most probably attributes to the fact that the study of BSN in the Egyptian universities was exclusive for females only till a few years ago, so the profession of nursing in Egypt was mostly feminine. Especially in the age group reflecting young adulthood most of them (96%) range from (31-40) years old. In this regard, this finding is justified by graduate nurses who were appointed to work in the neurological center because young and adulthood are considered the healthiest lifetime. It also considered the effective time to learn and modify their practice through training and education to improve the sense of identity and develop successful intimate relations. These findings are merely in agreement with that of Khalifa (2018) [21]andTaha (2014) [22], and This finding also was matched with Faltas (2018) [23] who conducted a quasi-experimental study about the effect of the nursing guideline on Performance of nurses regarding Prevention of Patients' Fall in Intensive Care Units and showed that the majority of

the studied nurses were in the young adult. This finding was matched with Kalisch (2011) [24] who conducted a cross-sectional, descriptive design about Do staffing levels predict missed nursing care that showed that the majority of staff were female (90%). Concerning their years of experience, it was noticed that less than half (46%) of the studied group were 5-10 years. This result was in agreement with Eunjoo Lee, (2018). [25]Who conducted a descriptive study about Use of the Nursing Outcomes Classification for Falls and Fall Prevention by nurses in South Korea and showed that most nurses had about 4 to 7 years of experience.

Regarding training courses the findings of the present study clarified that the majority of the studied nurses didn't receive any training courses, this result can be explained by the lack of administrative support, increasing workload in a clinical area, and lack of motivation This finding was matched with Souza [26], who conducted a descriptive study about nursing competence in the prevention of fall who conducted cleared that about two-third 60% of the nurses did not have the training. Concerning educational level, the result of the current study showed that near half of the studied nurses had nursing bachelor, few nurses had a master degree, less than half had technician, no had diploma, This finding is contradicted with Taha (2014) [22] who said that the majority of the educational level of the studied sample was secondary school graduates followed by technical school graduates and finally baccalaureate degree graduates. Also In contrast according to Khalifa (2018) [21] who said that about half of nurse participants had technical nursing diploma degrees. This finding is contradicted with Taha (2014) [22] who said that the majority of the educational level of the studied sample was secondary school graduates followed by technical school graduates and finally baccalaureate degree graduates. And also Octavini (2015)[27]find that majority of nurses had a diploma.

Concerning the acquisition of knowledge, the result of the current study revealed that the nurses' had a poor level of knowledge about fall prevention before program implementation. This might be related to lack of availability of manual booklets, nurses abandon reading, work overload and most of the nurses did not attend training programs about management for patient fall prevention This may be attributed to lack of orientation program before work as well lacks nursing care conference during work, invariability of procedure, and books especially in this area which help nurses to get the required knowledge whenever they need.

These results were matched with several studies conducted by Laing (2014) [28] and

Soones (2014) [29] knowledge among nurses about fall prevention was generally at a low level. In contrast, previous studies conducted by Prabowo(2014) [30]and Johnson (2014) [31] revealed that falls knowledge among nurses was at a high level.

Additionally, implementation of the educational program led to significant improvements in nurses' knowledge with a good level of knowledge immediately and one-month post-program implementation in the studied group. This improvement might be related to the majority of nurses who are enthusiastic to learn and have a highly expressed need to learn more about patient fall prevention.Also, this finding shows that the educational program had a good impact on improving nurses' knowledge, which could be due to the concise presentation of each session using simple language, clear educational methods, instructional media, and the availability of researchers in the field for more clarification, and frequent repetition to fix the knowledge.

These results were congruent with several studies regarding Indonesian nurses‟ fall-knowledge have been conducted in Indonesia Prabowo(2014)[32],Susanti(2015)[32]andOktaviani[28]. A descriptive correlation study conducted by Prabowo (2014) [30] revealed that nurses fall-knowledge at a high level, and similar with a study conducted by Susanti (2015) [32] revealed that nurses fall-knowledge at a high level after receiving an educational program rather than before the implementation of the program. The moderate level of nurse fall-knowledge among nurses in Surakarta was found in the study conducted by Oktaviani (2015) [27] element of the intervention which was effective in improving the nurses' practice, providing the nurse with a colored booklet, using audiovisual aids, proper communication, and demonstration. This is on the same line with the study done by Merom(2015) [33] entitled" Prevalence and correlates of participation in fall prevention exercise/physical activity by older adults "who stated that the significant improvement in nurses' knowledge after using learning programs strengthen their skills and update their knowledge and improve quality of care provided to the hospital clients.

Concerning nurses' compliance, the current study indicated that the percentage distribution of the studied nurses' according to their compliance level it was noticed that one quarter had satisfactory compliance level pre-program implementation, which enhanced to the majority of the studied group immediately post and one-month post-program implementation. This finding was about

Nurses' compliance with a fall risk assessment from twelve journals systematic review, five studies were conducted inwards, one study in an emergency room and six studies did not specifically mention the place. From all of these studies, the nurses are getting better in compliance with fall risk assessment the systematic review done by Purwadinata (2014)[34] showed a minority of the nurses had bad compliance, less than half had adequate compliance, and about had good compliance. The nurses who had bad compliance were related to their knowledge of a risk of falling.

The study was done by Dwi (2014)[35] and the study conducted in Santo Barromeus Hospital in Bandung done by Setyarini[36] concluded that more than half of the nurses had good compliance with writing assessment results on the whiteboard at the nurse station and had bad compliance.

This finding was matched with Evaluis (2015) [37] fifty of the nurses had good compliance with fall risk assessment, and more than two-thirds of the nurses implemented fall prevention in patients. A study was done by Schwendiman(2006) [38] showed that a management program for risk of falling, which includes fall risk assessment, could lower fall incidence by 15.3% in one year observation period. Study done by Ariyati (2016) [39] showed about half had good compliance with fall risk assessment and less than half had not.

Regarding the acquisition of skill performance, the current study shows that most of the studied nurses had unsatisfactory practice before the application of the nursing educational program. This may be attributed to the poor knowledge level, shortage of nursing staff, increasing work overload, lack of nurses' evaluation against the standards of nursing practice by the nursing supervisor and head nurses for detecting the strength and weaknesses point to work on it and refusal of some nurses to improve their practice.

On the other hand, most studied nurses had satisfactory practice level immediately and one-month post-program implementation than a pre-program implementation with significant improvement.

This improvement may be attributed to a combination of the theoretical part and the practical training element of the intervention which was effective in improving the nurses' practice, providing the nurse with a colored booklet, using audiovisual aids, proper communication, and demonstration.

Related to the nurses' practices at the pre-implementation of the program the nursing practice before the program was unsatisfied. On other hand, the practice of nurses' post-program regarding fall prevention immediately after and one

month after the program was satisfied. The improvement of nurses' practice is a result of implementing an educational program as well.

Comparison between total level of nurses' practice regarding applying patients' fall prevention in intensive care units pre, immediate, and post 3 months guidelines implementation was clear. shows that there was a significant improvement in general practice from unsatisfactory to satisfactory level post guidelines as regards to pre-post 3 months; from (32%) to (90%), (86%) respectively. Comparison between the total satisfactory level of nurses' practice regarding applying patients' fall prevention in neurological care units pre, immediate and post 3 months guidelines, there is a statistically significant difference between the total satisfactory level of nurses' practice in all items of practice as it improved post implementing program.

Regarding nurses' performance for fall elimination, staff orientation, Communicate with the care team, pharmacist the result of the present study showed that the studied group had a highly significant improvement immediately and one-month post-program implementation.

Regarding nurses' performance for fall risk assessment, the findings of the present study clarified that; nurses had unsatisfactory practice regarding patient assessment pre-program implementation, physical assessment is an integral part of nursing and a key learning outcome in nurse education programs.

This finding agreement with Sinuraya[40](2015)who conducted a study about fall prevention practices for the hospitalized elderly consists of a fall risk assessment, interventions to prevent falls, and post-fall analysis and management. The scores of each domain are categorized into three levels; high, moderate, and low. The study findings revealed that the average score of nurses' fall prevention practices was high level (M=12.63, SD= 2.37)), including a fall risk assessment and interventions to prevent falls. However, the level of nurse's‟ fall prevention practices for hospitalized elderly regarding the post-fall analysis and management was at a low level.

In addition, comparison between the total level of nurses' practice regarding applying patients' fall prevention in intensive care units pre, immediate, and post 3 months guidelines implementation. shows that there were significant improvements in general practice from unsatisfactory to satisfactory level post guidelines as regards to pre-post 3 months; from (56%) to (86.8%) respectively ($X2 = 20.269$ at $P<0.001$).

Regarding Comparison between the total satisfactory level of nurses' practice regarding applying patients' fall prevention

in intensive care units pre, immediate and post 3 months guidelines implementation, there is a statistically significant difference between the total satisfactory level of nurses' practice in all items of practice as it improved post implementing guidelines. The findings in this study were similar to a study conducted by Thirumalai, A Menzel, (2010)[41]. The researcher argued that the high level of nurses‟ fall prevention practices of fall risk assessment and interventions to prevent falls was because the nurse participants were registered nurse (RNs) and licensed practical nurses (LPN) Thirumalai andMenzel(2010) [41].

Similarly, almost all the nurses in this study are RNs and LPNs. According to Potter (2011)[42], an LPN is a nurse who has finished a practical nursing program and passed a licensure examination and an RNs is a nurse who possesses a significant total education. After completing the professional education program, In conclusion, the respondents are licensed and have passed the Examination for Registered Nurses. The questions regarding falls are included in the patient safety section of the examination for RNs Silvestri(2014) [43] and LPNs Silvestri(2010)[44].

In addition, according to Williams (2011)[45]education programs and fall awareness were found effective in fall reduction in an acute care setting. The background knowledge regarding falls derived from their undergrad nursing study, from both theory and practice courses, provided a basis for them to construct or integrate and apply the background knowledge of fall risk assessment and interventions to prevent falls and allocate care for hospitalized elderly.

Regarding, correlation between total knowledge, total performance, and their total compliance score pre, immediately post, and one-month post-program implementation. It was found that a positive correlation relationship between the total knowledge score, total performance, and total compliance score of the studied nurses .these results may be attributed to the effect of the application of the educational programand gaining of knowledge thatleads to a more comprehensive understanding for the nurses about fall, its risks and the importance of maintaining patients safety which impacted their behavior patterns and positively affected their performance and their compliance these findings was in agreement with Oktaviani (2015) [27], who found a correlation positive relationshipbetween the nurses‟‟ knowledge and nurses‟‟ compliance to theimplementation of the standard operating procedures nurses' patient fall risk prevention. Also, a study conducted by

Susanti (2015) [32] andPrabowoandKhoiriyati(2014)[30]they found a correlation positive relationship between nurses' knowledge and compliance to implementation of the standard operating procedure the risk of a fall injury.

Conclusion and recommendation Based on the findings of the current study, it can be concluded that: Application of nursing educational program was effective on nurses' performance regarding fall prevention amongneurological patients for patient fall prevention and played a vital role in upgrading and improvement of staff nurses' knowledge and their compliance.Based on these findings it was recommended that provision of a continuous in-service educational program and regular demonstration should be provided for nursing staff to keep them updating with evidence-based practices and improving their performance and compliance regarding fall prevention.

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Effect of Organizational and Personal Characteristics on Nurses' Innovation Behavior

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Background: Innovation is being considered by health organizations as an essential approach for effectiveness and competitiveness. Many factors have been displayed to be basis for supporting an organizational innovative behavior as organizational and personal characteristics. A**im:** To determine the effect of organizational and personal characteristics on nurses' innovation behavior**. Subjects and Method**: **Design:** A descriptive correlational design was used. **Tools**: Threetools were used for data collection**;** Organizational characteristics scale, personal characteristics scale, and nurses' innovation behavior scale. **Subject:** Convenient nurses' sample (N=175) who work in ICUs, medical, surgical and orthopedic departments at Main Assiut University Hospital. **Results**: Showed that the highest mean score in organizational characteristics subscales was related to work discretion (**6.48 ±17.41**) while lowest was related to rewards/reinforcement (**3.77± 9.57**). The highest mean score in personal characteristics subscales was related to proactivity (**7.63±20.87**). There were highly statistically significance positive correlations between nurses'innovation behavior and organizational andpersonal characteristics subscales. There were statistically significance positive correlations between age and time availability, management support, and rewards/ reinforcement. Also, a highly statistically significance positive correlations between years of experience and time availability and creative efficacy and between work settings and rewards/reinforcement and innovation behavior **Conclusion**: more than two third of studied nurses perceived their personal characteristics and innovation behavior as unsatisfactory level,

and slightly less than half of them perceived their organizational characteristics as satisfactory level. **Recommendations:** Nursing Managers should develop strategies to create the organizational culture for increasing innovation behavior among nurses particularly in enhancing management support for innovation, policy makers should support innovation as a job requirement, and develop polices for improvement nurses knowledge through; continuing education and training professional development.

Keywords: ***Organizational. Personal, Characteristics, Nurse Innovation Behavior***

Introduction

Innovation has become the base of growth and competitiveness in the global. Nurses face extraordinary challenges in the present-day health care environment. They are essential component of the health care setting and have the capability to deliver innovative solutions to improve quality of patients care. As a result of fast paced changes in health care, and the challenges that face professional nurses, innovation is required for the progress of nursing practice and organizational success. So encouraging innovation and creativity behaviors among nurses in health care setting is essential for improving health care [1, 2 and 3]**.**

Innovation is highly required for nursing practice in promoting health, reducing risk factors for health conditions, avoiding diseases, refining attitudes toward the healthy life, and enhancing the treatment strategies and procedures economy**,** it contains; the transformation of knowledge and ideas into a benefit which may be for profitable or for the public good; the benefit may be new or improved processes or services**.** Innovation in healthcare defined as new something or perceived new by the population experiencing the innovation that has the potential to create change and redefine healthcare's economic and social potential. This definition provides groundwork to study nursing innovation among nurses [4, 5, and 6].

Personalscharacteristics are those abilities which be present in human beings and which differentiate them from others. It is a psychological process that affects personal in obtaining, consuming and receiving goods and services as well as experience. Every person has diverse characteristics which renders its personality and which supports him toward several features of human behavior including; learning, performance and innovation.Also every person has different type of behavior and he acts according to his own awareness, perception and shows behavior which he takes for himself. It is keep changing and it can be learned at any time and any place**.**It includes**proactivity and creative efficacy**; ***proactivity*** is the

comparatively steady leaning for a person to take action to influence his or her environment and create change**.**And ***creative efficacy*** is the self-awareness of one's capability to be creative. Efficaciously creative people have a strong self-efficacy level for their creative potential [7, 8, and 9]**.**

Personal work behavior is the behavior of personal that aims to accomplish of the initiation of new and useful ideas, processes, and services or procedures related to their work. It also refers to performing tasks beyond organizational routines that have been comprised by the members of an organization**.**Nurses' innovation behavior (NIB) defined as behavior from nursestoward developing new services, developing new marketplaces, and improving the methods of providing services in their nursing organization. Innovative initiatives are extensively contribute to organizational success**.** Innovation behavior as everything from changing routines or making use of new preparations, to simplifying labor, to refining the service provided to being able to provide the recent new offers based on foregoing research in innovation behavior. NIB will be used as an outcome measure to examine the innovation behavior of nurses and how innovation behavior relates to organizational and personal characteristics [10, 11, and 12]**.**

Organizational characteristics are features initiating from the management model implemented by the Organization, through its arrangement and it is values expresses in the nature of its membership and relations**.** Organization not only chart representation and job descriptions and instead, refers to the "complex pattern of communication and relationships in a group of employees". The acquirement of knowledge in the organization widely based on its structure, knowledge storage on its membership attribute, knowledge diffusion on its relationship pattern, and knowledge application on its policy [13, 14]**.**

Organizational characteristics linked with innovation includes four categories' ***Management support****;* is the readiness to simplify and support innovation behavior including the encouraging of innovative ideas and providing the resources necessary to take innovative actions. ***Work discretion****;* is the managers' obligation to tolerate failure, offer decision-making without unnecessary oversight, and to delegate authority and responsibility. ***Rewards and reinforcement***mean developing and using systems that reward according to performance, highlight important accomplishments, and motivate pursuit of challenging work and ***time availability***is assessing jobsto make sure that individuals and groups have the time necessary to pursue innovation and that

their works are structured in ways that support efforts to attain short and long-term organizational goals [15, 16].

Significance of the study

Innovation has the potential to enhance nurses' performance; the vital role of personal and organizational characteristics can increase the capability of organization nurses' to innovate. Also, possession of positive personal and organizational characteristics provides the organization with the essential components to innovation. Personal' and organizational characteristics can encourage or discourage a diversity of behaviors and decisions, including those linked to innovation. So, the researchers conducted this study in an attempt to determine the effect of organizational and personal characteristics on NIB**.**

Aim of the study

To determine the effect of organizational and personal characteristics on NIB**.**

Specific objectives

1. To determine nurses' perception levels regarding personal and organizational characteristics and their innovation behavior.
2. Explore relationship between nurses' perception regarding to organizational and personal characteristics and their innovation behavior.

Research Questions

1. What are nurses' perceptions levels regarding to organizational and personal characteristics and their innovation behavior?
2. Are there relations between nurses' perception regarding to personal and organizational characteristics and their innovation behavior?

Subjects and Method

I-Technical design

Study design: A descriptive, correlational study design was used**.**

Setting: The study was carried out at Main Assiut University Hospital in intensive care units, medical, surgical and orthopedic departments.

Study Duration: The present study took about one year from June 2020 until May 2021.

Subjects: A convenient sample of (175) staff nurses from the previously selected study setting was used. The following groups have been established: (42) nursing secondary school diploma, (89) nursing technical institute, (38) Bachelor of nursing, and (6) Master of nursing; (40) of them work in ICUs, (28) in Medical Departments, (63) in Surgical Departments, and (44) in Orthopedic Departments

Tools: Three tools were used for data collection.

First **tool**: This scale measure only organizational characteristics, adapted with

due acknowledgement from ***Paula (2011)*** [17]**,** it contained 19 items and four subscales; work discretion (7) items, time availability (4) items, management support (5) items and rewards/reinforcement (3) items. The responses were rated using a five point Likert Scale, " were 1 = strongly disagree and went up to 5 = strongly agree". The sums of the scores in the four subscales were combined to create organizational characteristics.

Second tool: personal characteristics scale developed by ***Seibert et al.*** [18]**,** it contained 10 items and two subscales; creative efficacy (3) items, centered on nurses' views that they can be creative in their work roles. Proactivity (7) items, A 5-point Likert Scale was used to set up the replies, scoring rated from strongly disagree to strongly agree". Scoring accordingly from one to five respectively. The sums of the scores in the two subscales were combined to create personals characteristics.

Third Tool: The NIB scale was established by ***Yesil & Sozbilir*** [19]**,** it contained 12 items and was used to assess NIB. It was 5- Likert Scale, (never, rarely, neutral, occasionally and always) scoring accordingly from one to five respectively.

The scores of each scale were summed up and then converted into a percent score. A score of 60% or higher was considered as "satisfactory" and low if less than 60% and considered "un satisfactory"

In addition to the socio demographic characteristics of studied nurses was selected by the researchers. It mainly reflected the individual differences amongst the studied nurses. Such as, (age, gender, marital status, educational level, years of experience, andwork settings)

Validity the studytools

The study tools were assessed by seven experts from faculty of nursing representative (three professors, one assistant professor and three lecturers) in the field of education from administration departments at Assiut and Quena Universities (face validity through a jury).

II-Administrative Design

An formal approval to carry out the study was obtained from the responsible authorities. The researchers met departments' managers to clarify the aim of the study, to gain their approval and support, as well as organizing and arranging the participants based on their work on each department.

III-Operational Design

It includes preparatory phase, pilotstudy, and data collection.

Preparatory phase: Started at the beginning of June 2020 to the end of July 2020. It includes reviewing related national and international literatures. Tools were translated into Arabic and retranslated into English for correctness.

-Pilot study

A pilot study were conducted on a sample of 10 % of study participants that included (18 nurse) before starting actual data collection to test the applicability and the simplicity of thestudy tools and to estimate the time necessary to response it. This ranged between about 20–30 min. It also assisted to test the feasibility and suitability of the study settings. Data gained from the pilot study were analyzed; no alterations were done so the nurses' participated in the pilot study were included in the study sample.

Reliability: It evaluated in a pilot study by measuring their internal consistency using Cronbach'salpha were (α= 0.876) for organizational characteristics questionnaire, (α= 0.805) for personal characteristics questionnaire and (α = 0. 0.869) for NIB, thus demonstrating a high degree of reliability.

Data collection

After warranting the applicability and the clarity of the study tools:

1- Data collection took about two months (started in August 2020 and ended in September 2020)
2- The researchers met with participants and explained to them the purpose of the study and they were requested for oral consent to share in this study; then,
3- The researchers distributed the questionnaire form to them individually, and in groups, with directives about how to fill them.
4- One of the researchers existed all the time with studied nurses for any clarification.
5- Data were collected in different shifts according to work schedule of each unit.
6- The filled questionnaire were collected in time and reviewed to check their totality to avoid any missing data.

Ethical consideration: Research proposal was approved by the nursing administration department and ethical committee in the Faculty of Nursing at Assiut University, Egypt, there is no risk for the study subjects during application of the research**.** Oral agreement was taken from studied nurses. Confidentiality of collected information and privacy of the participants was assured and participants have the right to reject to share or drawing from the study without any rational at any time.

Statistical design

Data were gathered, and fed into computer for analysis and presentation. Date entry and data analysis were done using SPSS version 18 Program (Statistical Package for Social Science). Data were presented using descriptive statistics in the form of frequencies and percentages. Also minimum, maximum, mean, standard deviation and Alpha for scales was calculated. Correlation between variables (spearman correlation) were used statistical

significance was considered at P-value ≤0.05 and highly statistical significance was considered at P-value ≤0.01.

Results

Table (1): Demonstrates distribution of studied nurses according to their socio demographic characteristics: The data in this table illustrated that the studied nurses were 175, about **(57.7)** of them had their age from 20 to30 years. More than two third of them **(72.0)** were females. More than half of them **(59.4)** were married, about **(59.4)** of them have had children, slightly more than half of them **(50.9)** have had nursing technical institute, slightly more than half of them **(52.0)** had more than 10 years of experience in nursing and about (**36.0**) of them were working in surgical units.

Figure: (1): Reveals nurses perceptions levels regarding to organizational and personal characteristics and NIB. The figure showed that more than two third of the studied nurses perceived their personal characteristics and innovation behavior as unsatisfactory level (88.0%, 86.3%) respectively. It was observed that, slightly less than half (45.1%) of them perceived their organizational characteristics as satisfactory level and about (86.3%) of them perceived their innovation behavior as unsatisfactory level.

Table (2): Explores mean scores andstandard deviation of studied nurses' perception regarding organizational and personal characteristics and NIB scale and subscales. In relation to **organizational characteristics subscales**. It was observedthat the highest mean score was related to work discretion (**17.4114**) ±**6.47913**) while lowest was related to rewards/reinforcement (**9.5657**)± **3.77301**). It was observed that in relation to **personalcharacteristics** the highest mean scorewas related to proactivity (**20.8743**) ±**7.63282)**.

Table (3): Displays the correlation between nurse's perceptions of organizational and personal characteristics and NIB. It was observed that there were a highly statistically significant positive correlationsbetweenNIB and work discretion,time availability**,** rewards/reinforcement, total organizational characteristics, creative efficacy and proactivity with P value=000 for all and (R= .**356****, .**346****, .**270****,.421**,**.332**** and.**433****) respectively. Also there was statistically significance positive correlation betweenNIB and management support with (P value=.030and R=**.164*)**.

Table (4): The correlations between organizational and personal characteristics, NIB and socio demographic characteristics of studied nurses.It was foundthat there were statistically significance positive correlationsbetween age andtime availability,management support, and rewards/reinforcement with (P value= **0.048***, **0.047*** and **0.029***) respectively, between NIB and work settings and between creative efficacy and years of experience with (P value= **0.031*** and **0.032*)** respectively**.** Also there were

highly statistically significance positive correlationsbetweenyears of experience and time availability with (P value= **0.003****) and between rewards/reinforcement and work settings with **(P value= 0.001**).** The data in table also showed that there were no statistically significance correlationsbetween organizational characteristics, personal characteristics and NIB and gender or education level.

Table (1): Distribution of Studied Nurses According to their Socio Demographic characteristics (n=175)

Variable	No.(n=175)	%
▪ **Age group**		
20-30 years	101	**57.7**
31-40 years	52	29.7
> 40 years	22	12.6
▪ **Gender**		
Male	49	28.0
Female	126	**72.0**
▪ **Marital Status**		
Not married	71	40.6
Married	104	**59.4**
If you married, did you have children?		
Yes	104	**59.4**
No	71	40.6
▪ **Education level**		
Secondary school of Nursing **d**iploma	42	24.0
Nursing Technical Institute	89	**50.9**
Bachelor of Nursing	38	21.7
Master in Nursing	6	3.4
▪ **Years of experience**		
< 5	52	29.7
5 – 10	32	18.3
> 10	91	**52.0**
▪ **Work settings**		
ICUs	40	22.9
Medical	28	16.0
Surgical	63	**36.0**
Orthopedic	44	25.1

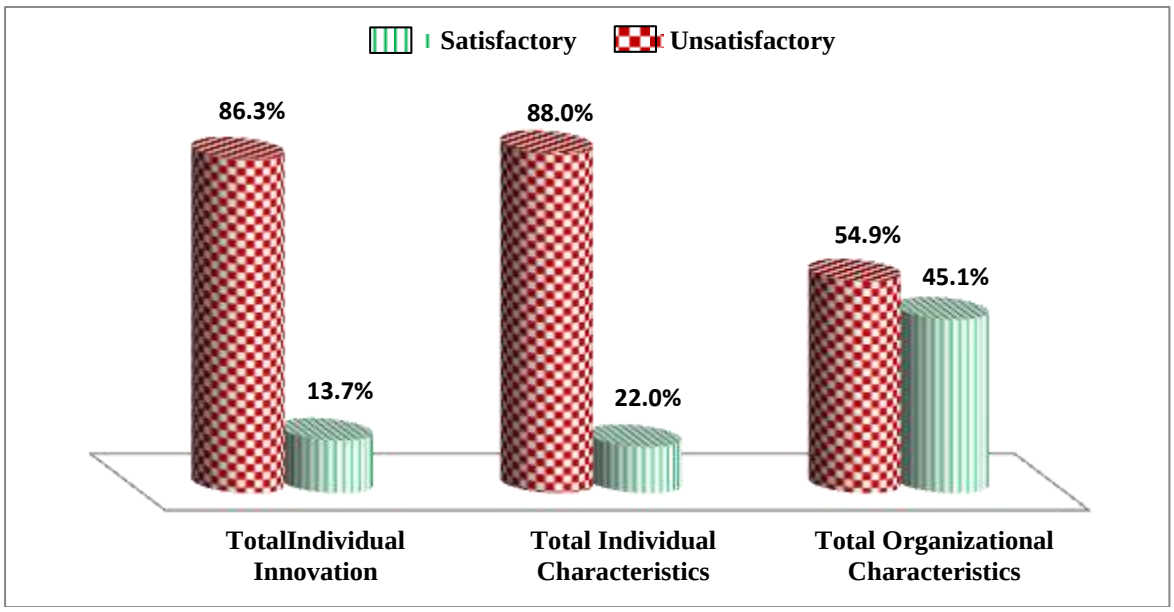

Figure: (1): Nurses perceptions levels regarding to organizational and personal characteristics and NIB **(n =175)**.

Table (2): Mean Scores and Standard Deviation of Studied Nurses' Perception Regarding Organizational and Personal Characteristics and thier Innovation Behavior Scale and Subscales(n=175).

Item	N	Minimum	Maximum	Mean	Std. Deviation
Organizationalcharacteristics					
Work discretion (7) item	175	7.00	35.00	**17.4114**	**6.47913**
Time availability (4) item	175	4.00	19.00	10.7600	3.81160
Management support (5) item	175	5.00	25.00	15.6457	5.04579
Rewards/reinforcement(3) item	175	3.00	15.00	**9.5657**	**3.77301**
Total	175	19.00	87.00	53.38	13.27
Personalscharacteristics					
Creative efficacy (3) item	175	3.00	15.00	5.7486	3.10259
Proactivity scale (10) item	175	10.00	41.00	**20.8743**	**7.63282**
Total	175	13	54	26.62	9.60
Innovation means (12) item	175	12	52	25.16	9.47

Table (3): The Correlation between Nurses Perceptions of Organizational and PersonalCharacteristics and NIB **(n = (175)**

Items	NursesInnovation Behavior	
Organizational characteristics		
Work discretion	Pearson Correlation	**.356****
	Sig. (2-tailed)	.000
Time availability	Pearson Correlation	**.346****
	Sig. (2-tailed)	.000
Management support	Pearson Correlation	**.164***
	Sig. (2-tailed)	.030
Rewards/reinforcement	Pearson Correlation	**.270****
	Sig. (2-tailed)	.000
Total	Pearson Correlation	.421**
	Sig. (2-tailed)	.000
Personalcharacteristics		
Creative efficacy	Pearson Correlation	**.332****
	Sig. (2-tailed)	.000
Proactivity	Pearson Correlation	**.433****
	Sig. (2-tailed)	.000
Total	Pearson Correlation	.451
	Sig. (2-tailed)	.000

*Correlation is significant at P-value ≤ 0.05 (2-tailed).
**Correlation is highly statistical significance at P-value≤0.01 (2-tailed).

Table (4): The Correlations betweenOrganizationaland Personal Characteristics, NIB and sociodemographic Characteristics of the StudiedNurses (n = (175)

Variable	Organizational characteristics												Personalcharacteristics						Nurses innovation behavior		
	Work discretion			Time availability			Management support			Rewards/Reinforcement			Creative efficacy			Proactivity					
	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD
Age (years)																					
20-30 years	**17.91**	±	**6.47**	**11.35**	±	**3.83**	**15.92**	±	**4.55**	**9.78**	±	**3.45**	**5.66**	±	**2.76**	**20.56**	±	**7.09**	**26.19**	±	**8.59**
31-40 years	**17.29**	±	**6.58**	**10.13**	±	**3.55**	**16.15**	±	**5.40**	**9.98**	±	**4.11**	**6.08**	±	**3.52**	**21.69**	±	**8.74**	**24.69**	±	**10.37**
> 40 years	**15.41**	±	**6.12**	**9.55**	±	**3.98**	**13.18**	±	**5.84**	**7.59**	±	**3.92**	**5.36**	±	**3.59**	**20.36**	±	**7.44**	**21.59**	±	**10.55**
F statistics --- p-value	**1.365 ---- 0.258**			**3.099 --- 0.048***			**3.111 --- 0.047***			**3.602 ----- 0.029***			**0.011 ---- 0.988**			**0.429 ---- 0.651**			**2.257 --- 0.108**		
Gender																					
Male	**16.04**	±	**6.42**	**10.76**	±	**4.03**	**15.94**	±	**5.22**	**9.06**	±	**3.91**	**5.08**	±	**3.13**	**19.16**	±	**7.76**	**22.37**	±	**7.96**
Female	**17.94**	±	**6.45**	**10.76**	±	**3.73**	**15.53**	±	**4.99**	**9.76**	±	**3.71**	**6.01**	±	**3.06**	**21.54**	±	**7.51**	**26.25**	±	**9.81**
T-test ---p-value	**1.01 ---0.998**			**1.167 ---- 0.493**			**4.99 ----- 0.680**			**1.11 ---- 0.635**			**6.01 ---- 0.822**			**1.067 ---- 0.757**			**1.519 ---- 0.101**		
Education level																					
Nursing secondary school Diploma	**17.76**	±	**7.54**	**9.90**	±	**3.91**	**14.19**	±	**5.72**	**9.07**	±	**4.31**	**5.78**	±	**3.25**	**21.07**	±	**7.58**	**23.31**	±	**9.50**
Nursing Technical Institute	**17.21**	±	**6.16**	**10.92**	±	**3.90**	**16.40**	±	**4.79**	**10.0**	±	**3.63**	**5.90**	±	**3.11**	**19.94**	±	**7.11**	**25.30**	±	**8.37**
Bachelor of Nursing	**17.45**	±	**6.33**	**11.50**	±	**3.52**	**15.76**	±	**4.37**	**8.97**	±	**3.44**	**5.63**	±	**2.72**	**21.73**	±	**8.18**	**25.68**	±	**10.63**
Master or higher in Nursing	**17.67**	±	**5.35**	**9.67**	±	**3.08**	**13.83**	±	**6.40**	**10.33**	±	**3.78**	**8.50**	±	**3.73**	**27.83**	±	**9.60**	**32.83**	±	**14.34**

F statistics --- p-value	**0.071 ---0.975**			**1.380 ---- 0.250**			**2.134 ---0.098**			**1.034 ---0.378**			**1.539 --- 0.206**			**2.325 -- 0.077**			**1.924 ----0.128**		
Years of experience																					
< 5	**17.92**	**±**	**5.56**	**12.15**	**±**	**3.51**	**15.77**	**±**	**4.85**	**9.81**	**±**	**3.33**	**5.23**	**±**	**2.45**	**20.5**	**±**	**6.03**	**26.9**	**±**	**8.37**
5 – 10	**17.63**	**±**	**7.2**	**9.38**	**±**	**4.05**	**15.88**	**±**	**4.45**	**10.38**	**±**	**3.68**	**7.0**	**±**	**3.82**	**22.13**	**±**	**9.5**	**25.16**	**±**	**9.65**
> 10	**17.04**	**±**	**6.74**	**10.45**	**±**	**3.69**	**15.49**	**±**	**5.39**	**9.14**	**±**	**4.02**	**5.60**	**±**	**3.08**	**20.65**	**±**	**7.76**	**24.18**	**±**	**9.94**
F statistics --- p-value	**0.326 ---0.723**			**6.195 --0.003****			**0.092 --- 0.912**			**1.439 --- 0.240**			**3.526 --- 0.032***			**0.532 --- 0.588**			**1.371 ---- 0.256**		
Work settings																					
ICUs	**16.5**	**±**	**6.88**	**10.3**	**±**	**3.79**	**15.15**	**±**	**5.31**	**5.38**	**±**	**3.94**	**5.43**	**±**	**2.93**	**20.48**	**±**	**7.25**	**24.98**	**±**	**9.7**
Medical units	**19.18**	**±**	**6.68**	**11.89**	**±**	**3.80**	**16.32**	**±**	**4.8**	**9.64**	**±**	**3.0**	**6.11**	**±**	**2.71**	**21.93**	**±**	**7.65**	**29.93**	**±**	**9.64**
urgical units	**16.9**	**±**	**5.52**	**10.78**	**±**	**3.7**	**15.38**	**±**	**5.54**	**9.59**	**±**	**4.0**	**5.8**	**±**	**3.24**	**21.56**	**±**	**8.04**	**24.1**	**±**	**9.51**
Orthopedic	**17.84**	**±**	**7.18**	**10.43**	**±**	**3.97**	**16.05**	**±**	**4.23**	**9.39**	**±**	**3.86**	**5.73**	**±**	**3.36**	**19.59**	**±**	**7.4**	**23.84**	**±**	**8.39**
F statistics --- p-value	**1.158 --- 0.327**			**1.129 ---0.339**			**0.444 ---0.722**			**11.667 – 0.001****			**0.269 --- 0.847**			**.796 ---0.497**			**3.024 ---0.031***		

*Significant at P-value ≤ 0.05. **Highly statistically significance at P-value≤0.01.

Discussion

Based on the perspective that the organizational and personal characteristics of the workforce have influence for attitudes and innovative behaviors at the individual and group levels ***Danilo et al., (2018)*** [20]**.** In this descriptive study we have focused upon determine the effect of organizational and personal characteristics on NIB. The subjects of study were 175 staff nurses from ICUs units, medical, surgical and orthopedic departments at Main Assiut University Hospital. Data was collected using organizational characteristics, personal characteristics, and NIB and socio demographic characteristics of studied nurses.

According to result in Figure 1 the majority of studied muses perceived their personal characteristics and their innovation behavior as unsatisfactory level, and slightly less than half of them perceived their organizational characteristics as satisfactory level. This in contrast with ***Xerri, (2013)*** [21] mentioned that nurses have the ability to bring about innovative changes, and they have an influence on the success of their organizations innovation but, the development of internal climate supportive of muses innovation, a helpful director, honesty to new ideas, and the recompensing of respectable work are consider the key retention strategies for innovation.

In relation to mean scores and standard deviation of studied nurses' perception regarding to organizational characteristics was positive and proved that studied nurses perceived that their organization own the characteristics that support innovation behavior **(table 2).** This confirmed by ***Afsar and Badir., (2017)*** [22]**,** whostated that organizational characteristics have an essential influence on the extent of innovation in an organization.In the same context ***Tang*****(, *(2017)***[23]mentioned that innovation is affected by factors both external to and internal to organizations characteristics and asserted that organizations having sustainable innovation ability are those that have a better understanding the environmental driving forces, and are able to target their innovative efforts more effectively.

The results in **table (2)** showed that the work discretion had the highest mean score. This may due to that the nursing management at Main Assiut University Hospital, provide support for nurses and reinforce them. In agreement with this study result ***Chen et al.., (2018)*** [24]**,** found that studied nurses rated work discretion as positive.

As declared by the study results that the rewards/reinforcement had the lowest

mean score **(table 2).** This may due to those nurses at Main Assiut University Hospital perceived that reward in their work place unfair and not commensurate with their responsibility. In contrast ***Malik. Butt, (2015)*** [25]**,** emphasized that the rewards/reinforcement and motivating nurses are essential to raise new ideas and to develop their creativity behavior at part with national and international requirements. Also ***Lukes and Stephan,(2015*** [26] mentioned that the innovator needs to support his/ her idea as the innovation goes along with changes and opposition to change and the developer of the innovation will have to generate obligation for the innovation and often build unions.

Regarding to mean scores and standard deviation of studied nurses' perception regarding to personal characteristics was positive **(table 2)**, these results proven that personal characteristics contributing to NIB. This result was supported by ***Chombunchoo,(2016)*** [27]**,** who stated that personal characteristics influence the innovation and consider one of the essential components of the innovation process.

As regard to mean scores and standard deviation of personal characteristics subscale the study results discovered that the highest mean score was related to proactivity **(table 2)**. This result was agreed with***Crant*** [28]***,(2018***) who found that proactivity was significantly linked to greater levels of innovation and it is the utmost important forecaster of innovation and creativity**.**

The result of the present study revealed that there were highly statistically significance positive correlationsbetweenNIB and organizational characteristicsscaleandsubscales; work discretion,time availability andrewards/reinforcement **(Table 3**). These study result was confirmed by ***Steiber and Alange, (2018***) [29]**,** who found that there were positively relationship between management support, work discretion, and rewards/reinforcement to the level of corporate innovation within the organizations. Also, ***Fawzia & Mervat, (2018***) [30] concluded that there was a significant association between nurses' awareness related to organization values and their innovative work behavior.

According to, Zammuto and Griffith, (2016) [31]**,** organizational characteristics of management support and rewards/reinforcement are important to encouraging nurses' innovation and that innovators must find ways to sell the uniqueness and importance of new ideas to prevent negative responses or conflicts.

Also, ***Baumann. and Stieglitz,(2014)*** [32] asserted that natural rewards can help people to build pleasant and enjoyable features into individual daily activities. Moreover, ***Ivana et al,(2016)*** [33]asserted that rewards play an important role to moderate the relationship between personal characteristics and NIB.

As depicted by study results there were statistically significance positive correlations betweenNIB and management support **(Table 3**). This result agrees with, ***Scott and Bruce, (2017)*** [34]**,** they found that there was statistically significance positive correlation betweensupport for innovation from management and it is expectations for innovation with personal innovative behavior. In the same line ***Bjornali et al,(2012***) [35 pointed that to involve nurses in innovative behavior;, awareness about innovation, and nurses managers support are considered as one of the significant potential impacts on innovation behavior and it is crucial to generating a supportive environment and providing sufficient resources

Also***,Akram et al,(2017)*** [36]found that lack of leader support will decrease a new ideas approval to others, and, getting political support from leaders is important to idea promotion and innovations and co-workers are influenced to validate, accept and use them, and leaders are influenced to approve them. In addition ***Zhang,(2020)***[37] asserted that the better understanding of the innovation process within organizations by nurse manager will generate the necessary knowledge to direct management interventions for the effective and efficient use of available resources for health care delivery.

Result in **(Table 5**) stated that there were highly statistically significance positive correlations between NIB and personal characteristics subscales, creative efficacy and proactivity. This finding was in accordance with***Madjar et al.(2011)*** [(38),emphasized that innovation is the effective application of creative ideas within an organization and stated that creativity by employees and groups is the initial point for innovation, In addition, ***Parker and Collins(2014)***([39]emphasized that proactive trait that brings positive consequences for people and organization includes innovative behavior among the nurses such as taking responsibility and voice. Proactive personality is important in confirming the innovativeness of the nurses as an individual. NIB was considered as proactive work behavior enabling proactive action to make a difference especially when it comes to idea accomplishment.

In addition,***Antoncic,(2013)*** [40]examined the relationship among proactive personality, demographic data and entrepreneurial intention. His results

showed that a proactive personality was the highest and an important forecaster of innovative intention and proactivity was positively linked to nurses' innovation and innovation has a positive influence on career progression and ***Manam, (2016)***[41]found that there were positive correlation between proactive personality and innovation behavior.

Based on the results of the present study it was found that there were statistically significance positive correlations between age and time availability, management support, and rewards/reinforcement **(Table 4**).This my explained by the fact that older nurses have more understanding of work and life, they able to better time management, anticipating and solving problems quickly through their experience and proficient ability set consequent in the awareness of more time availability and they have more rewards and management support. This result in contrast with ***Paula(2011)*** [17]found that no statistically significance relation between organizational characteristics and nurses' years of experience in work setting, and age.

There were highly statistically significance positive correlations between years of experience and time availability and creative efficacy **(Table 4**). This may be due to that nurses when have more years of experience have more knowledge and skills and become able to generate new idea that support innovation behavior. This finding consistent with ***Bayus, (2016)*** [42]who stated that innovation is the produce of creative ideas and increase creativity among employees is crucial for institution to be able to foster innovation behaviors and emphasized that innovation increase with experience

Lastly, there were statistically significance positive correlation between work settings and rewards/reinforcement and NIB**.** This result supported by ***Kim and Shin, (2015)*** [43]**,** who found that employees were to respond more innovatively when they perceived their efforts were equally rewarded by the institution, and emphasized that workplace environment has an influence on innovation. ***Also, Bos-Nehles,(2017) and Tastan., (2019)*** [44, 45] emphasized that an innovative values could lead to crucial interest in the nursing practice by nontraditional candidates who are involved to innovation opportunities and attracting and retaining high performing nurses is more probable when institution support them in applying creative, innovative ideas.

Conclusion

Based on the results of the study findings, it was concluded that

-More than two third of studied nurses perceived their personal characteristics and innovation behavior as unsatisfactory level and slightly less than half of them perceived their organizational characteristics as satisfactory level.

-The highest mean score in organizational characteristics was related to work discretion while**,** lowest was related to rewards/reinforcement. The highest mean score in individual characteristics subscales was related to proactivity.

- There was highly statistically significance positive correlations between NIB and organizational characteristics subscales; work discretion, time availability, management support; and rewards/reinforcement. There was statistically significance positive correlation between NIB and management support.
- There were highly statistically significance positive correlations between NIB and personal characteristics subscales; creative efficacy and proactivity
- There were statistically significance positive correlations between age and time availability, management support, and rewards/reinforcement in organizational characteristics

-There were highly statistically significance positive correlations between years of experience and time availability and creative efficacy- and between work settings and rewards/reinforcement and NIB.

-Work discretion, time availability, management support, rewards/reinforcement, creative efficacy, proactivity, work settings, age and years of experience were factors significantly associated with NIB while, gender and education level did not significantly associate with perceived innovation behavior.

- The study declared the relationship between individual characteristics, organizational characteristics, and NIB among nurses.

Recommendations

1. Policy makers at Main Assuit University Hospital should support innovation as a job requirement and developing the internal positive work environment to support muses innovation, to encouraging new ideas and to reward good work
2. Authorities personnel at Main Assuit University Hospital should develop polices for improvement of nurse's knowledge and creativity through; continuing education and training professional development.
3. Nurse Managers should respond completely and support innovative effort of nurses through, providing then

with time and resources to conduct innovative ideas.

4. Nurse Managers should develop strategies to create the organizational culture for growing innovation behaviors among nurses and improve management support for innovation.
5. Forthcoming studies can be directed to analysis the relationship between personal and organizational characteristics and nurses' innovation behavior.

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Effect of Late Pregnancy Self-Perineal Massage on the Perineal State of the Primi-parturients

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Abstract

Perineal massage helpt to stretch the vaginal opening and surrounding perineal muscles through applying of external manual pressure, It increases the flexibility of the perineal muscles, thereby reducing muscle resistance, causing the perineum to stretch during labor without rupture and no need for an episiotomy**. Aim**: This study aimed to assess the effect of late pregnancy self-perineal massage on the perineal state of the primi-parturients.**Methods:** Quasi experimental design was used to conduct this study at a private hospital of obstetrics and gynecology specialty at El- Mahalla El –Kobra city, Gharbia Governorate, Egypt. A non-probability purposive sample of 68 pregnant women were invited to participate in the study and were divided into two groups (n=34 per each group); the intervention group (underwent late pregnancy self-perineal massage) and control group (underwent conventional hospital protocol of care). Two tools were used to collect the data; the first tool was a structured interview schedule to assess participants' basic characteristics. The second tool was assessment sheet to assess the duration of labor, perineal state and neonatal outcomes after delivery. **Results:** Post intervention, there was statistical significant difference between the studied groups regarding perineal trauma in which 82.4% of the subjects in the perineal massage group had intact perineum compared to 64.7% of the control group. The mean duration of second stage of labor was shorter in the perineal massage group compared to control group (54.411 ± 3.105 & 57.176 ± 2.989, respectively). **Conclusion:** The current study findings highlighted those primi-parturient women who performlate pregnancy self-perineal massage exhibits shorter duration of labor and experiences lower perineal trauma as well as reports lower postpartal perineal pain.This study **recommended** that late pregnancy self-perineal massage technique should be considered as a part of the routine perinatal care to reduce the incidence of perineal trauma.

Keywords: late pregnancy, perineal massage, perineal state&Primi-parturients.

1. Introduction

Trauma of the perineum during labor is a common health problem most likely for primiparous women [(1)]. It can be defined as any injuryof the genitalia during labor which occurs either naturally as a laceration or intentionally as episiotomy [(2)].The incidence of perineal trauma is relatively high as it reaches to eighty five percent and approximately sixty to seventy percent needssuturing [(3, 4)].

Numerous factors can lead to perineal injury including both the mother and fetusas null parity, maternal obesity, fetal macrosomia, mal-presentation and malposition[(5)].Other risk factors include operative vaginal deliveries, precipitous labor, and fundal pressure [(6,7)].Indeed, women who have suffered severe perineal trauma throughout their labor may have short or long term effects because the damaged perineum may result in post-partum hemorrhage, weakness of the pelvic floor muscle, persistent post-partum perineal pain that affect sexual function due to dyspareunia, frustration which affect the mother's ability to care of her baby and negatively affect maternal child bonding [(3, 8, 9)].

Generally, maternity nurses' primary goal of care focuses on the preservation of the perineum to be intact during delivery in order to reduce unnecessary perineal trauma, which may lead to negative birth experience [(10)]. They are responsible for looking for new strategies that can reduce the perineal tears and improves postpartum perineal outcomes as pelvic floor muscle training and perineal massageduring pregnancy [(2, 11)].

Perineal massage is known as a therapeutic technique that promotes muscle relaxation, vasodilation of blood vessels, and increases the perineal stretch ability upon increased blood circulation [(12)]. When perineal massage is provided by the woman herself it is called Self-Perineal Massage (SPM) which aims to enhance perineal muscles flexibility, thus reducing muscle resistance, allowing the perineum to stretch during labor without tearing and without the need for episiotomy.SPM also works on the reduction of perineal pain, reducing burning sensation during laborand reducing labor duration especially the 2nd stage[(2, 13)]. However the evidence about the effectiveness of SPMis not strong enough to recommend it universally.Meanwhile, few studies have indicated that SPM in the late weeks of pregnancy had a significant impact on

keeping perineal integrity, reducing the incidence of perineal trauma [13, 14].

1.1 Significance of the study

In spite of effort exerted on practical issues of perineal trauma, it remains present and is stillgrowing because most of primiparous women suffer from child birth morbidity from episiotomy and or perineal trauma. Perineal trauma occurs in 85% of all women who experience vaginal delivery [9].Only one out of four women came through labor and delivery with an intact perineum [1]. Meanwhile, the incidence of perineal trauma among Egyptian women is relatively high,***Mosad et al. (2017)***[15]reported that, 70,8 % of their subjects had perineal trauma, in which 36.3% of them had episiotomy and 34.5% of them had perineal tear with 46.2% had 2nddegree of perineal tears.

SPM in later weeks of pregnancy has been introduced as a technique for reducing perineal trauma [16]. Despite the advantages of SPM and recommendations that pregnant women should perform it, doubts have been raised about its efficacy and its use remains controversial[17]. In Egypt there is limited research addressing the effect of SPM on the incidence of perineal trauma. This shows the need for conducting this study to assess the effect of late pregnancy self-perineal massage on the perineal state of the primi-parturients.

1.2 Operational definitions:

- **Latepregnancy:**refers to the later weeks of pregnancy begins at 34 weeks until birth.
- **Perineal trauma:** refers to any damage of the area between the vagina and the anus during delivery of a baby including spontaneous perineal laceration and episiotomy.
- **Perineal state:**is the assessment of perineal outcomes after delivery including the incidence of perineal trauma and postpartal perineal painlevel.
- **Perineal Massage:** involves insertion of one or two lubricated fingers approximately three to five cm into the vagina with a constant static pressure exerted along the lower lateral areas of the perineum.
- **Self-Perineal Massage (SPM):** when perineal massage is provided by the woman herself, it is called self-perineal massage.

1.3 Aim of the study:

This study aimed to assess the effect of late pregnancy self-perineal massage on the perineal state of the primi-parturients.

1.4 Hypotheses of the study:

To achieve the study aim, three hypotheses were tested:

- Primi-parturient women who perform late pregnancy self-perineal massage exhibit shorter duration of labor than those who do not.

- Primi-parturient women who perform late pregnancy self-perineal massage experiencelower perineal trauma than those who do not.
- Primi-parturient women who perform late pregnancy self-perineal massage rate lower postpartal perineal pain than those who do not.

2. Subjects and Method:

2.1 Research design:

A quasi-experimental research design was utilized to achieve the aim of the study; where the effect of the independent variable (i.e., late pregnancy self-perineal massage) on the dependent variables (perineal state i.e., the incidence of perineal trauma, postpartal perineal pain and the duration of labor) were assessed in this study.

2.2 Study Setting:

The study sample was recruited from the Obstetrics and Gynecology outpatient clinic at El- Mahalla El –Kobra city, Gharbia Governorate, Egypt and followed up until delivery. Two sites in the hospital were involved; the Obstetrics and Gynecology outpatient clinic where the study sample was recruited from and provided with the instructions about perineal massage (consisted of reception, patient's waiting-area, laboratory lab, and three examination rooms for 4D ultrasound and routine examination) and the labor and delivery unit where the studiedsubjectswere delivered and assessed for study outcomes (consisted of three operating theaters for normal and caesarian section deliveries, gynecological operations and recovery rooms). The rational for selecting this setting is the higher utilization of their services by pregnant and parturient women.

2.3 Sampling

A non-probability purposive sample of 68 pregnant women was invited to participate in the study during the period from the first of November 2020 till the end of April 2021. Women who joined this study have to fulfill the following inclusion criteria: primiparous women, gestational age of 35 weeks, expected to deliver normally, had single viable fetus with normal position and presentation, free from genital infection (e.g. genital herbs, genital warts, ulcers and yeast infection)as well as had good pelvic-floor muscle contraction (i.e. brink score of 10-12).

2.4 Sample size:

Sample size was calculated using G power program version 3.1.9.4 by the aid of using the following data: the mean difference between two independent groups, effect size 0.80, α error prop 0.05, and a power (1-β err prop) 90 % using in dependent t test to detect mean between two equal

groups, two tails. Sample size is 68 participants (34 each group).

2.5 Recruitment of the sample:

One hundred and seven primigravida were screened for fulfilling the inclusion criteria; 39 out of the 107 did not fit the criteria for participation thus, excluded. Data were collected from the intervention group then from the control group, (n=34 per each group). During the study period, nine women dropped from the intervention group because they did not do the massage and three women in the control group were missed during the follow-up. The dropped number (n=12) were replaced with the next potential subjects. The statistical analysis was done on 68 participants. The flowchart of the study sample indicated in Figure (1).

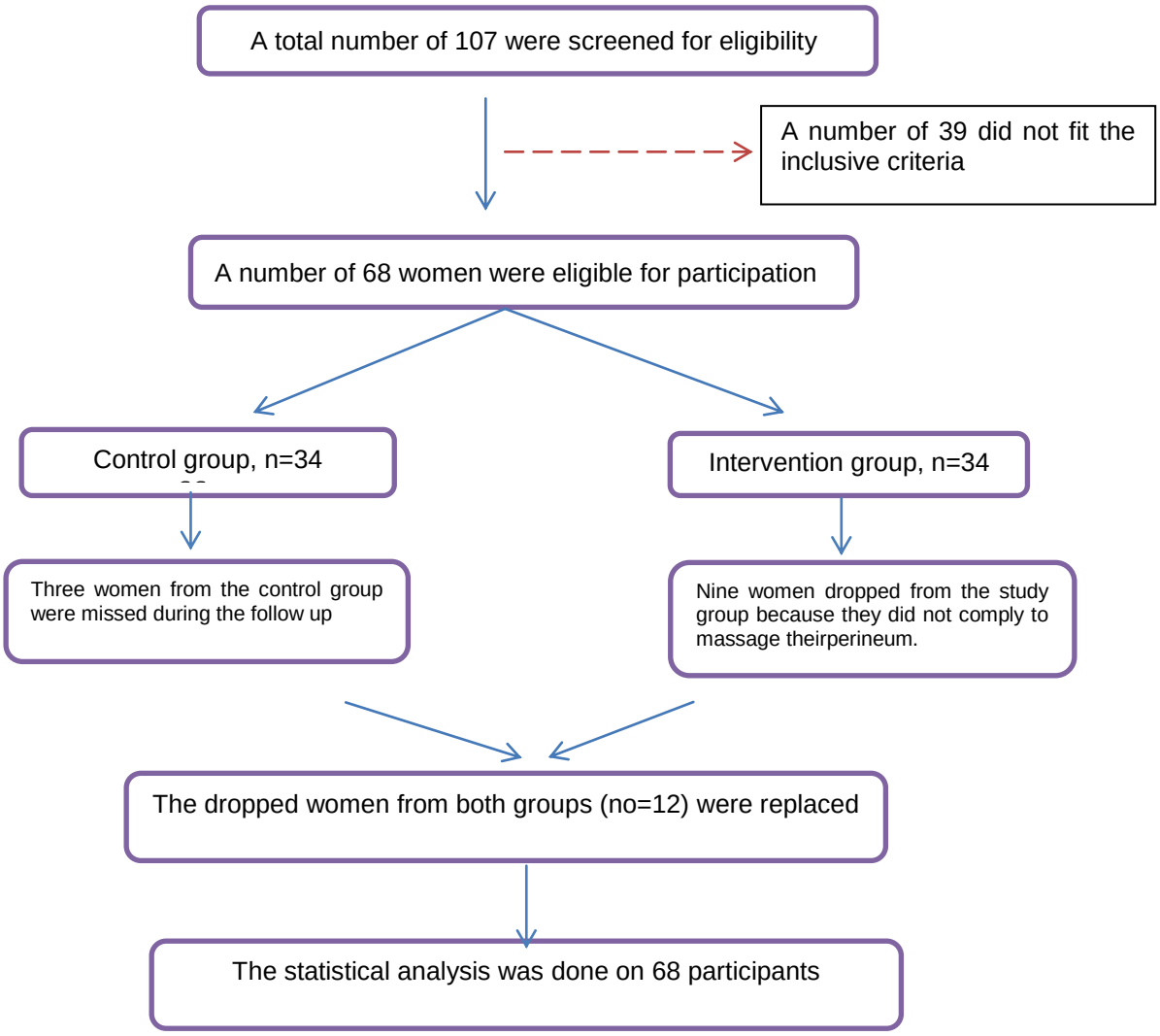

figure 1 Flow chart of the participants.

2.6 Tools of data collection:

To achieve the aim of this study, two tools were utilized to collect data; the first tool was developed by the researchers after reviewing related literature, while second tool was adopted from ***Chung et al. (2013)*** **[18]** **and*****Owais & Kalsoom (2015)*** **[19]**. Then, the required data collected through an individual interview between the researcher and each participant woman.

Tool I: Structured interview Schedule

It was developed to assess pregnant women' general characteristics as maternal age, educational level, body mass index, pre pregnancy weight, gestational age, andevaluating the strength of pelvic-floor muscle usingbrink scale.

Brink scale compromisedthree subscales for evaluating pelvic-floor muscle contractionincluding the squeezing pressure around the examiner's fingers, the duration and vertical displacement of the examiner's fingers. Each subscale is rated separately on a four-point categorical scale and the ratings are then added together to give a composite rating from three to twelve. The lowest score was three to six whereas the moderate score was seven to nine and the highest score was ten to twelve on ordinal scale, the higher score indicates better muscle function **[20]**.

Tool II: Assessment Sheet:

It entails three parts: **part one;**included details about the current delivery (e.g., labor onset and duration of labor. **Part two;** concerned with perineal state which incorporated perineal condition after labor (e.g. intactness of perineum, episiotomy, degree of perineal tears). Also, this part was concerned with the assessment of postpartal perineal pain using Numeric Pain Intensity Scale (NPIS).NPISis a horizontal line numbered from zero to ten, where zero interpreted as "no pain", one to three as "mild pain", four to six as "moderate pain" and seven to ten as "severe pain" **[18]**.

Part three; to assess neonatal condition afterdeliveryby Apgar scoring, it is an observer scale adapted from ***Owais & Kalsoom., (2015)*** **[19]**andis used to assess neonatal' conditions, in which each neonate was observed by the researcher at the 1st & 5^{th} minutes after delivery for skin color, heart rate, reflexes, muscle tone &breathing rate and effort. Each one of the five items scored as zero, one, or two. The minimum score is zero and a maximum score is ten (the baby who scored eight or more points was considered good, while a baby who scored less than eight points was considered low).

2.7 Validity of the tools

The content of the developed questionnaire was validated and confirmed by a panel of three specialistsin maternity nursing and obstetrics before it was presented to pregnant women. Their views on the consistency, accuracy and relevancy of the tools, thus, nomodifications were needed.

2.8 Reliability of the tools

Tool two was assessed by using Cronbach‘s Alpha coefficient test. It consisted of relatively homogeneous items as indicated by the high reliability, where its internal consistency was 0.81.

2.9 Pilot study:

Before the beginning of data collection, a pilot study was carried out on 10% (7 subjects) of the total sample size according to the selection criteria to test the clarity; effectiveness and applicability of the tools. Subjects from the pilot study were omitted from the study sample.

2.10 Ethical considerations:

Ethical consent was gained from the Research Ethics Committee of the Faculty of Nursing at the University of Mansoura. Written agreement was obtained from each participant involved in the study after clarifying its goal and approach. Privacy was protected by providing the perineal massage training and collecting the required data through an individual face to face interview in a single private room. Confidentiality of data was maintained as the collected data were stored on a password-protected file on the main investigator's personal computer and data were permanently deleted after statistical analysis. Also, the collected data did not touch the moral and religious aspects of the enrolled clients.

2.11 Field work:

Three phases were followed to accomplish the study includingpreparatory, implementation phases and outcome evaluation.

A. Preparatory phase:

Literature reviewing were done to identify the effect of applying late pregnancy self-perineal massage on perineal state and the duration of labor (using the available periodicals, books and internet resources) to get acquainted with the various aspects of the study problem and to prepare the necessary tools for data collection. Then, the pilot study was performed to test the clarity and applicability of the tools.

B. Implementation phase

The initial assessment:

At this phase, subjects were interviewed by one of the researchers to explain the aim of the study, insure eligibility, and take their consent to participate in the study. After that, the researcher completed the data of interviewing schedule and brink scale. The subjects were interviewed two days/week (Sunday and Wednesday), at the study

setting, each interview took about 20 to 30 minutes with each subject.

Intervention:

Control group:subjects in the control group received routine antenatal care as dictated by the hospital policy (booking, complete physical examination and routine laboratory tests)

Intervention group:the subjects in the intervention group provided both routine antenatal care and instructions about late pregnancy self-perineal massage. Each pregnant woman was instructed to do perineal massage as follows[21, 22];

a) Empty the bladder and wash hands to be free from germs.
b) Find a private room to relax in then sits and widely openthe legs withbended knees, using a mirrorto easily visualizing vaginal opening and the perineum.
c) Apply a hypoallergenic lubricant on the thumb as KY jelly.
d) Gently insert the lubricated thumb about three to five cm into the vagina, pushing it towards the anus and the sides of the vagina at the same time to stretch the opening for a minute or two or until slight burningis felt (this is normal and decreases over time).Massage withthe thumbs upward and outward then back again in a U-shaped movement.
e) Perform the massage with a slow, deep breathand repeat two times / week.
f) In case of feeling uncomfortable or having abnormalsigns (vaginal discharge or itching), stop doing the massage.

Meanwhile, during the study period, the researcher was in contact with the participants by telephone to answer their questions and follow them to ensure that they were doing the massage procedure.

Outcome evaluation

At the time of delivery, each participant was assessed through the 2nd tool (assessment sheets) to estimate the primary labor outcomes as onset and duration of labor. Also, neonatal outcomes were assessed after completion of delivery using Apgar score. Likewise, perinealstatewasassessed for episiotomy, perineal tears and postpartal perineal pain level (after the first 24 hours of labor and at the 10thpostpartal day via phone). Accordingly, a comparison was done to assess the differences between the control and intervention groups related to the effect of late pregnancy self-perineal massage on the perineal state of the subjects.

2.12 Statistical analysis

All data were analyzed using the SPSS package version 20.0 under windows. Variables continuing continuous data

showed normal distribution and described as arithmetic mean ±standard deviation (SD). Frequency and percentage were used to describe variables containing categorical data. Means were compared by Independent variable Student's t test. Frequencies were compared using Chi-square test. P value <0.05 indicates statistical significance.

2.13 Limitation of the study

The limitation for the current study was the timewasted on convincing the subject's to do per-vaginal examination before recruitment toevaluate the strength of pelvic-floor muscle andinsure eligibility for the study. Another limitation was that necessary national references were lacking; thus, the researcher had difficulties in discussing the research topic

Results

Table (1)shows no statistically significant difference observed between the studied groups regarding their socio- demographic characteristics. Both groups were to some extent similar based on maternal age, educational level, the mean Body Mass Index (BMI), andbrink scale score. The current study findings revealed that, more than one third (38.2% & 41.2%) of the study and the control groups, respectively, were 26-30 years oldand more than the half (58.8%) of the intervention group were university graduates compared to only 32.4% of the control group. It was clarified that the mean BMI was 21.764 ± 2.075 and 21.264 ± 1.943 for both massage and control groups, respectively, while, the mean for brink scale score was 10.882 ± 0.91311.058 ± 0.850 and11.058 ± 0.850 among the perineal massage and the control groups, respectively.

Table (2)sheds light on the distribution of the subjects according to their labor event. It was noticed that more than three quarters (79.4%) of the perineal massagegroup had spontaneous labor compared to 58.8% of the control group. More than one half of both the perineal massageand the control groups (57.2% & 57.1% respectively) where inducted by oxytocin. There was a significant difference observed between both the study and the control groups, respectively, regarding the mean of the second stage duration where (p=0.000).

Table (3) exhibits the distribution of the parturients according to their perineal state. It was noticed that, more than three quarters (76.5%) of massage group delivered without episiotomy compared to nearly 55.9% in the control group. Also, about 82.4% of the study group had intact perineum compared to only 64.7% of the control group, astatistical significant difference was noticedbetween both groups (p= 0.017).

Figure (2) shows that the perineal massagegroup reported milder postpartal perineal pain than the control group 24 hours after delivery. Furthermore, it was observed that the majority (85.3%) of subjects inperineal massage group experienced no pain at the 10th postpartum day compared to 58.8% in the control group. There was a significant difference between both the study and the control groups, respectively, regarding their pain level at the 10th postpartum day where MCP=0.014.

Figure (3) clarifies the comparison of neonatal Apgar scores at the 1stand the 5thminutes after birth. The study findings revealed that, the mean neonatal Apgar score at the 1st minute of birth was7.735 ± 0.665 and 7.235 ± 0.430 in perineal massage and control groups, respectively, while it was 9.147 ± 0.359 and8.882 ± 0.537 at the 5thminute. Apgar scoreswas statistically significant difference between both groups at the1st (P=0.000) and the 5th (P=0.020) minutes of birth.

Table 1: Distribution of the parturients according to their general characteristics

Variables	Study group		Control group		Significance test
	No (34)	%	No (34)	%	
Age group					
▪ 20- 25 years	12	35.3	9	26.5	p= 0.717
▪ 26 – 30 years	13	38.2	14	41.2	X^2 = 0.666
▪ 31 – 35 years	9	26.5	11	32.4	
Educational level					
▪ Can't read or write	2	5.9	7	20.6	p=0.181
▪ Primary/ Secondary	12	35.3	16	47.1	X^2 =3.423
▪ University	20	58,8	11	32.4	
Mean pre pregnancy weight	69.852 ± 8.064		67.205 ± 7.725		p= 0.172 t= 1.382
Body Mass Index (BMI)					
▪ < 25 kg/m2, n (%)	6 17.6		12 35.3		p= 0.309
▪ ≥25 kg/m2, n (%)	28 82.4		22 64.7		t= 1.025
Mean BMI	21.764 ± 2.075		21.264 ± 1.943		
Mean gestational age (wks.)	38.941 ± 0.776		39.058 ± 0.693		p= 0.883 t= -0.147
Mean perineal length(cm)	3.926 ± 0.0827		3.923 ± 0.0818		p= 0.309 t= 1.025
Mean Brink Scale score	10.882 ± 0.913		11.058 ± 0.850		p= 0.413 t= -0.824

X^2= Chi square test, significance considered if *p* value less than 0.05*, t= Independent t test, significance considered if *p* value less than 0.05*

Table 2: Distributionof the parturients according to their labor event

Variables	Study group		Control group		Significance test
	No (34)	%	No (34)	%	
Labor onset					
▪ Spontaneous	27	79.4	20	58.8	p= 0.0.050*
▪ Induced	7	20.6	14	41.2	X^2 = 3.376
Type of induction	**No =7**		**No =14**		
▪ Oxytocin	4	57.2	8	57.1	p= 0.249
▪ Artificial rupture of membranes	3	42.8	6	42.9	X^2 = 1.187
Mean 2nd stage duration (min)	54.411 ± 3.105		57.176 ± 2.989		p=0.000** t =-3.740

X^2= Chi square test, significance considered if *p* value less than 0.05*, t= Independent t test, significance considered if *p* value less than 0.05*

Table 3: Distribution of the parturients according to their perineal state

Variables	Study group		Control group		Significance test
	No (34)	%	No (34)	%	
Intactness of perineum					
▪ Intact perineum	28	82.4	19	64.7	p= 0.017*
▪ Perineal tear	6	17.6	15	35.5	X^2 = 5.581
Degree of perineal tear	**No=6**		**No=15**		
▪ First	4	66.7	6	40	p= 0.417
▪ Second	2	33.3	5	26.7	X^2 = 1.750
▪ Third	0	0	2	13.3	
▪ Fourth	0	0	2	13.3	
Episiotomy					
▪ With episiotomy	8	23.5	15	44.1	p= 0.062
▪ Without episiotomy	26	76.5	19	55.9	X^2 = 3.219

X^2= Chi square test, significance considered if *p* value less than 0.05*, t= Independent t test, significance considered if *p* value less than 0.05*, $\chi 2$: Chi square test MC: Monte Carlo

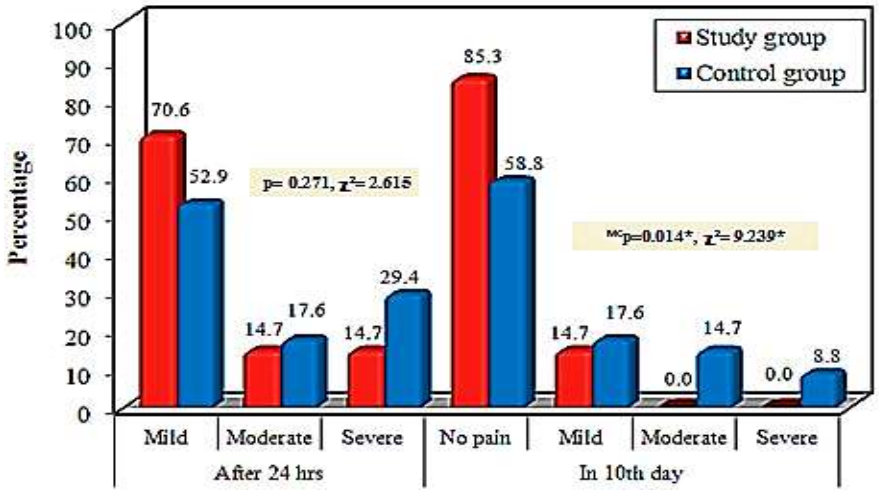

Figure (2) Comparison of postpartal perineal pain level among parturients at the first 24 hours after delivery and at the 10th postnatal day

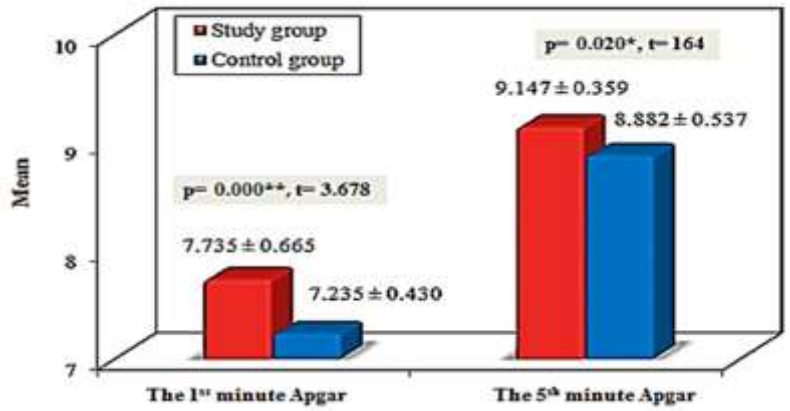

Figure (3) Comparison of neonatal Apgar score at the firstand the fifth minutes after birth

Discussion

Perineal trauma is common in childbirth, especially among the first-time mothers [(23)]. Stress incontinence, fecal incontinence, delayed wound healing, infection; postpartum dyspareunia, recto-vaginal fistulas are all linked to perineal injuries, which cause the most morbidity. All these morbidities can adversely affect postpartum recovery and maternal bonding with their neonates[(24, 25)].In addition, episiotomy is not recommended as a routine procedure due to a lack of objective evidence-based data that support its usage andit is not effective in preventing serious perineal injuries; on the contrary, episiotomy may increase the incidence of perineal trauma and delays its healing [(26, 27)]. Self-perineal massage in late pregnancy is among the interventions proposed to improve postpartum perineal outcomes [(2, 28)].

The presentstudy aimed to assess the effect of late pregnancy self-perineal massage on the perineal state of the primi-parturients, this aim was achieved. The results of the current study showed that theaverage duration of the 2nd stage of labor in the perineal massage group was much shorter than the control group. Consequently, the first study hypothesis"primi-parturient women who perform late pregnancy self-perineal massage exhibit shorter duration of labor than those who do not" isaccepted. This findingsare in line with ***Abdelhakim, et al (2020)***[(2)] and ***Oglak &OBU (2020)***[(29)],reported that the duration of the 2nd stage of labor was significantly lower in the perineal massage group than control group.

Again the current findings are matched with***Raja, et al (2019)***[(30)]reported that, the mean duration of 2nd stage of labor in the massage group was significantly shorter than in the control group. Furthermore, ***Elsebeiy et al (2018)***[(31)]in Egypt

conducted randomized controlled trial, reported a highly statistically significant reduction the average duration of the 2nd stage of labor in the perineal massage and kegel exercise group compared to the control group. These results can be attributed to the fact that perineal massage stimulates both tissue rehabilitation and muscle elasticity. Also, it has a good impact on vaginal delivery due to its effects on vaginal tissues and muscles of the perineal area, encouraging perineal relaxation, and enhancing tissue circulation. All of these cumulative effects make it easier for the parturient to "push her baby out".Consequently, enhance labor progress and reduce its duration **(32)**.

In contrast, ***Dieb, et al (2019)*****(33)**, didn't found significant difference in the duration of the 2nd stage of laborbetween perineal massage and control groups.The differences in the findings may be related to the fact that the length of the second stage of labor in multiparous women shorter than in primiparous women**(34,35)**. However,***Dieb, et al (2019)*****(33)**,had performed perineal massage on multiparous women, while, the present study was performed on primi-parturients.

The current study showed that the incidence of perineal tears& episiotomywas considerably lower in the perineal massage group than in the control group. So, the second study hypothesis "primi-parturient women who perform late pregnancy self-perineal massage experience lower perineal trauma than those who do not"is accepted. This finding is somewhat consistent with ***Dieb, et al, (2020)*****(33)**, stated that the perineal massage group had a lower incidence of a perineal tears than the control group. Another study by ***Ugwu, et al (2018)*****(36)**, concluded that approximately one half of the subjects in the massage group suffered perineal injuries compared to more than two thirds of the those in control group.

Similarly, a study by ***Oglak & OBU (2020)*****(29)**,proved that perineal trauma rates were significantly lower in the perinealmassage group than in the control group. Such finding may be attributed to the beneficial effects of perineal massage when performed through the last four weeks before the due date.It promotes perinealtissueblood flow, decreases tissue restriction and improves flexibility of perineal muscle.Consequently perineum's integrityis maintained during labor and the perineum isallowed to be stretched during labor without tearing or without the need for episiotomy as well as reducing the severity of potential perineal lacerations **(37)**.

In contrast,***Stamp, et al, 2001*** **(38)**,did not find any significant difference between perineal massage group and control group

in terms of the frequency of episiotomy and intactness of the perineum. The differences in the findings may be related to that the positive effect of perineal massage was most obvious when it was done during pregnancy at least four weeks before delivery date for greater elasticity of tissues during labor[13, 39] However, ***Stamp, et al, 2001*** [38],had performed perineal massage during the second stage of labor, while, the present study was performed in the later weeks of pregnancy.

According to the results of the current study, the rate of the 1st and the 2nd degree perineal tears was much higher in the massage group than in the control group, while the rate of 3rd and 4th degree tears was only noticed in the control group. It can be stated that the findings of this study is somewhat in harmony with other several studies: the first one by ***Dieb, et al (2020)***[33], showed that the massage group had a greater rate of the 1st degree perineal tears, while the 2nd,3rd, and 4th degree perineal tears were higher in the control group.Likewise, a study by***Oglak & OBU(2020)***[29], stated that the rate of 1st and 2nd degree perineal tears was higher in the massage group than in the control group.In addition, none of the subjects in the massage group developed 3rd and 4th degree perineal tears.

The current study results still in the same line with the findings of***Abdelhakim, et al (2020)*** [2]and***Shahoei, et al (*2017*)*** [9]found that massaging of perineum during pregnancy decreases the incidence of the 3rd andthe 4thdegree of perineal tears. Authors of the present study back these findings to the fact that perineal massage is supposed to improve perineal outcomes by enhancing tissue circulation, promoting perineal relaxation and flexibility, thus, making it easily for vaginal and perineal tissues to be easily extended during labor and reducing the risk of the perineum and vaginal injuries [40].

Regarding postpartal perineal pain, the current study findings showed that the subjects in the massage group reported milder pain than those in the control group within the 1st24 hours after delivery. But, after the 10th postpartal day, no pain was reported in the majority of the intervention group compared to less than three quarters of the control group.Accordingly, the third study hypothesis "primi-parturient women who perform late pregnancy self-perineal massage rate lower perineal pain than those who do not" is accepted. These findings are congruent with ***Dieb, et al (2019)***[33], reported that the majority of themassage grouphad mild pain in the 1st 24 hours and after the 10th day of postpartum period no pain was reported.

Likewise findings by ***Beckmann (2013)*** **(13)**, reported that, perineal pain was observed to be reduced by perineal massagein the 1st 24 hours and after the 10th dayof vaginal delivery.Authors of the present study, attribute evidenced pain reduction in subjects of the intervention group to that massaging of the perineum can be helpful in a vaginal delivery as it reducesperineal tissue rigidity and flexibility, improves perineal blood flow, decreases the risk of tearing and surgical cutting as well as promotingperineal repair. Consequently, perineal massage helps desensitize women to feel perineal burning and/or pain during labor and postpartum period**(37)**.

Thefindings of the study revealed that the neonates in the perineal massagegroup had a significantly higher Apgar scoresin both the 1st and the 5thminutes after delivery than those in the control group. This is in coherence with the findings of previous studies by***Abdelhakim, et al (2020)*****(2)*****, Dieb, et al (2020)*****(33)*****&Elsebeiy, et al(2018)*****(31)**concluded that massage groups had higher statistical significance difference in terms of the mean 1st and 5th minutes Apgar scores than those in control groups. The amelioration in Apgar scores following antenatal perineal massage can be attributed tothat, the better perineal elasticity, the shorter second stage of labor and less difficult delivery thusreduced the risk offetal hypoxia during labor.

Nursing implications for practice

Generally, self-perineal massage in the latter weeks of pregnancyappears to be safe, simple, low-cost, and effective technique that can be utilized by maternity nurses as one of the nursing strategies that promotes perineal elasticity, reducesthe perineal damage during delivery and shorten the duration of labor as well as decreases postpartal perineal pain.

Conclusion

In conclusion, primi-parturient women who perform self-perineal massage in the latter weeks of pregnancyexhibits shorter duration of labor and experience lower perineal trauma as well as reports lower postpartal perineal pain, accordingly, the current study hypotheses was accepted.

Recommendations

In light of the study finding, the following recommendations are suggested:

- Late pregnancy self-perineal massage technique should be considered as a part of the routine perinatal care to reduce the incidence of perineal trauma.
- Further studies are needed to assess parturients' satisfaction regarding the use of the late pregnancy self-perineal massage. Also,the current study should be conducted on a wide range of

sample in multicenter settings to be generalized.

Acknowledgments

The authors would like to thank and appreciate the respected personnel staff of El- Mahalla El –Kobra hospital and the pregnant women who accepted to participate in the study for their invaluable assistance during the study.

Conflicts of interest disclosure

The authors have no conflict of interest to declare.

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The Relation between Menopausal Symptoms among Rural Women and Their Quality of Life

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Abstract

Background: Menopause is a normal physiological process of cessation of menses in women. During menopausal period women can experience many symptoms. These symptoms can be severe enough to affect their quality of life (QOL). The characteristics of rural women can affect the manifestations and treatment of their health problems. **Aim of the study:** to assess the relation between menopausal symptoms among rural women and their quality of life. **Subjects and Method: Design:** A descriptive cross- sectional study design**. Setting:** The Rural Health Unit of Ceberbay rural village in Tanta city. **Subjects:** A convenient sample of 400 menopausal women who experienced stop of menstrual cycle for at least 12 months and free from chronic diseases. **Tools of the study:** Three tools were used by to obtain the necessary data for this study. **Tool I:** A structured interview schedule:which included two parts:Part (1): Socio demographic characteristics of menopausal women, Part (2): Obstetrical history of menopausal women. **Tool II:** Menopause Rating Scale (MRS) questionnaire. **Tool III:** World Health Organization Quality of Life Questionnaire (WHOQOL BREF). **Results**: Less than half (48%) of rural menopausal women had a moderate menopausal symptom and more than one-quarter (27.3%) of them had a mild symptom. About one-quarter (24.7%) of them had a severe symptom. More than half (52.0%) of the studied menopausal ruralwomen had a good quality of life and less than one-half (47.4%) of them had fair level of quality of

life. **Conclusion**:TheQOL of menopausal rural women is affected by their menopausal symptoms where a negative high significant correlation was found between the total score of menopausal rating scale of the studied menopausal rural women and the total score of their QOL. **Recommendations**: Develop specific health educational programs aimed to improving the quality of life of menopausal rural women and management of their problems and complains.

***Key words*:** Menopausal Symptoms, Rural Women, Quality of Life

Introduction

Menopause is a normal physiological process which is characterized by the permanent cessation of menses in women as a result of reduced ovarian hormone secretion usually between the ages of 45 and 55 years. This process is accompanied by many biological and psychosocial changes [(1)]. As a widest range, women usually reach menopause between the ages of 40–58 years. In Egypt the mean age at menopause was 46. 7 years [(2, 3)].

During menopausal period women can experience many symptoms including hot flashes, night sweats, sleep and mood disorders, impaired memory, lack of concentration, nervousness, depression, insomnia, bone and joint complaints, and reduction of muscle mass [(1, 4)]. The prevalence of these symptoms varies widely not only between women in the same population but also between different populations. As well, there is great diversity in nature of symptoms and frequencies across countries, even in the same cultures. Also, some women may become symptomatic in months, others may take years to develop symptoms and some may never develop any symptoms [(4, 5)].

The health of rural women is important in all stages of their life.They reside in rural areas that are diverse in their geography, economic base, demographics, and development. There are common elements throughout rural life: low population density; geographical distance from large metropolitan areas; isolation; dense social networks; a culture ofself-sufficiency; and fewer economic and manpower resources. These characteristics affect the manifestations and treatment of the health problems of rural women [(6, 7).]

The post-menopausal symptoms not only affect the women's health and well-being but also can affect the other aspects of their life as woman's behavior, social consequences and psychological and

emotional well-being. These symptoms can be severe enough to affect the normal daily life activities of menopausal women which ultimately affect their quality of life (QOL) [8, 9].

Studying the QOL in the post-menopausal women has become an essential component in clinical practices. Quality of life is a critically important part of the care of symptomatic post-menopausal women. According to the World Health Organization (WHO), quality of life is "individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns". The menopausal women tend to have high levels of physical and psychological health problems, which need more attention and effective health care for these health problems [8, 10, 11].

Community health nurse (CHN) is a key player in assessing menopausal changes in the women. She can help in creating awareness about the possible changes and problems which are caused by menopause. This could be achieved through providing a good listening to menopausal women because many of them derive comfort from simply talking about their physical and psychological issues with health care provider [3, 9].

The community health nurse should also serve as an important role in motivating and promoting healthy behaviors for those women to adopt healthier lifestyles by participating suitable exercise as walking, introducing weight loss initiatives, periodical physical and laboratory examination and stopping smoking [12].

The community health nurse is in an ideal position to provide the necessary support for exploring solutions to embarrassing problems of menopausal women such as pain when having sex or urinary incontinence. She also assesses whether menopausal symptoms are being effectively controlled by the prescribed therapyand if there are any nuisance side effects for this therapy [13, 14]. Therefore, the significance of the present study was to assess the relation between menopausal changes among rural women and theirquality of life.

Aim of the study:

The aim of the study wasto assess the relation between menopausal symptoms among rural women and their quality of life.

Subjects and Method

Study design:

A descriptive cross – sectional study design was used in this study

Study setting:

The study was conducted in the Rural Health Unit of Ceberbay rural village in Tanta city. This unit was selected because

it had the highest rate of attendance of rural women.

Study subjects:

A convenient sample of 400 menopausal women wasselected from the previous setting. Study subjects included any women attended the mentioned setting for any of the following reasons: giving immunization for the children of their dependents, seeking medical care and dental care through the study period (six months). The women had the following criteria:

The inclusion criteria included women who experienced stop of menstrual cycle for at least 12 months and free from chronic diseases.

The exclusion criteria included women who had either ovariectomy or hysterectomy for duration of five years.

Tools of the study

Three tools were used by the researchers based on relevant literatures in order to obtain the necessary data for this study.

Tool I:A structured interview schedule:

A structured interview schedule was developed by the researcher according to the literature review. It consisted of the following parts:

Part (1): Socio-demographic characteristics of menopausal women such as: age, marital status, level of education, occupation, family income, number of children and type of family.

Part (2):Obstetrical history of menopausal women which included data about: age of menarche, history of regulatory of menses,symptoms of menstruation, type of previous delivery, frequency of abortion, age of menopause, history of taking hormonal therapy and physician checkup for menopause.

Tool II:Menopause Rating Scale (MRS) questionnaire:

It was developed by Heinemenn et al. (2004) [(15)]. It was used for the purpose of assessing menopausal symptoms. The MRS is composed of 11 items which divided into three subscales:

(a) Somatic symptoms: It included four items (hot flushes, heart problems, sleeping problems and muscles and joints' problems).

(b) Psychological symptoms: It included four items (depressive mood, nervous and feeling aggressive, inner restlessness and feeling panicky and physical and mental exhaustion) and

(c) Urogenital symptoms: It included three items (sexual problems, bladder problems and dryness of the vagina.

Scoring system:

The score of Menopause Rating Scale was calculated according to the answer of menopausal women and her complaints which was ranged from 0 **(**not present) to 4

(very severe) as following: Women who selected (not present) had a score (0), (mild) had a score (1), (moderate) was scored (2), (severe) was scored (3) and (very severe) was scored (4).

The total score was calculated and the degrees of severity of menopausal symptoms were classified as following:

Degree of severity of menopausal symptoms

Severity of menopausal symptoms	**Description of menopausal symptoms**	**WHO standards for menopause**	**Actual Scores (0-44)**
No problems	None, absent	0 – 4%	0-<2
Mild problems	Slight, low	5 – 24%	2-<11
Moderate problems	Medium, fair	25 – 49%	11-<22
Severe problems	High, extreme	50 -<95%	22-<42
Very severe problems	Total	95 – 100%	42-44

Tool III: World Health Organization Quality of Life Questionnaire (WHOQOL BREF) [16].

This tool was used to assess the quality of life of menopausal women. The WHOQOL-BREF was consisted of 26 standard items. The 26 – item standard contained two generic items (1&2) which included overall QOL and general health, and the remaining 24 items were classified into 4 domains: **physical domain:** It had 7 items about woman's perception regarding her physical condition, **psychological domain:** It had 6 items about woman's perception regarding her affective and cognitive condition, **social relationships:** It had 3 items about woman's perception regarding social relations and social roles adopted in her life and **environmental domain:** It had8 itemsabout woman's perception regardingdiverse aspects related to the environment in which she lives.

These facets were scored using 5-point Likert Scale which ranged from 1 to 5. It

was scored and classified according the meaning of each question either: (1= very poor, 2= poor, 3= neither poor or good, 4= good, and 5= very good); **or** (1=very satisfied, 2= dissatisfied, 3= neither dissatisfied or satisfied, 4= satisfied and 5= very satisfied); **or** (1= not at all, 2= a little, 3= a moderate amount, 4= very much and 5= extremely); **or** (1= never, 2= seldom, 3= quite often, 4= very often and 5= always). The negative items had reversed score. Thus, the total score ranged from 26 (The worst possible QOL) to 130 (The best possible QOL). It classified according to the following degrees:

The Scoring system was modified by the researchers to be: -

Poor quality of life: (20% - < 40%)

Fair quality of life: (40% - < 60%)

Good quality of life: (60% - < 80%)

Excellent quality of life: (80% - 100%)

Method

The steps which had been followed in this study were as following:

1- Obtaining approvals:

- An official permission to conduct the study was obtained from the Dean of Faculty of Nursing to the director of Health Affairs of Gharbia governorate and then to the director of the Rural Health Unit in Ceberbay village.
- The director of Rural Health Unit was informed about the study objectives to facilitate the process of data collection.
- Meeting had been done with nursing manager of Ceberbay Rural Health unit to obtain her cooperation to conduct the study. The purpose and importance of the study was explained to her.

2- Ethical and legal considerations:

Ethical and legal considerations were considered all over the study as the following: -

- Every menopausal woman was informed about the purpose and benefit of the study at the beginning of the interview.
- An informed consent was obtained from the women to participate in the study.
- The menopausal women were informed about their right to terminate participation at any time.
- Women were assured that the nature of study does not cause any harm or pain for them.
- Privacy and confidentiality of collected data were assured for the studied women. The researchers explained that the collected data was used only for the study purpose only.

3- Developing the tools:

- The tool I was developed by the researchers based on literature review.
- The tool II and III were translated into Arabic.
- The study tools were tested for face and content validity by a jury of five professors in the field of Community Health Nursing and Obstetrical and Gynecological nursing before conducting the study. The necessary modifications were done according to the jury opinions.
- The reliability was done for the Arabic copy of the study tools by using Cronbach's alpha test. Reliability for tool II (MRS) was **0.881**, the reliability for tool III (WHO QOL Bref.) was **0.841**, and the reliability for the total sheet was **0.889.**

4-The pilot study:

A pilot study was carried out on (10%) of the total number of menopausal women to test the tools for its clarity, applicability and identifying obstacles that may be encountered during the data collection. As well as to determine the length of time needed to collect the data from each menopausal woman. Accordingly, the necessary modifications were done. These menopausal women were excluded from the study sample.

5- Actual study:

- Collection of the data continued during a period of six months started from July to December 2019.
- The researchers attended the rural health unit two days weekly (Saturday and Wednesday) to collect the data needed for this study.
- The researchers interviewed the women individually in the waiting area which was the suitable place in the selected rural health unit.
- The average time needed to complete the questionnaire from each menopausal woman was approximately 15 to 20 minutes.
- The numbers of menopausal women the researchers can interview each day were ranged from 7-10 women.

Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 23. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test($\chi 2$).

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

P<0.01 for interpretation the results of tests of significance (**).

Results

Table (I): presents the distribution of the studied rural women according to their socio- demographic characteristic. The table shows that more than half (54.3%) of the studied women their age was ranged from 50-< 60 years old and the age of nearly about one-quarter (24.3%) of them was ranged from 60-< 70 years with the mean age 59.88 ± 7.408 years. Regarding marital status of the studied women, more than one- third (43.3% and 36.2% respectively) of them were married and widow. Concerning to educational level, more than one-third (38.0%) of the studied women were illiterate and more than one-quarter (27.5%) of them were read and write. Nearly about three-quarters of them (73.8%) were house wives and more than one- half (54.2%) of them had enough family income. The table also reveals that the number of the women's children was ranged from 0-9 child. More than one-third of studied women (35.6% and 34.2%) their family type was nucleus and extended family respectively and it was step parent for 30.2% of them.

Table (II): presents the distribution of the studied rural women according to their obstetrical history. It shows that the age at menarche of the studied women was ranged from 11-16 years with the mean age 12.93±1.161years. Slightly less than two-thirds (65.3%) of them had regular menstruation while more than one-third (34.7%) of them had irregular menstruation. Regarding symptoms of menstruation, more than one-half (60.3% and 56.8%) of the studied women had lower back pain and lower abdominal pain respectively and only 14.5% of them had nausea and vomiting.

As regard the type of delivery, more than one half (57.7%) of the studied women had normal delivery and only 11.0% of them had caesarian delivery and one-quarter (25%) of them had both types of delivery (normal and caesarian). The number of normal deliveries was ranged from 0-8, the number of caesarian deliveries was ranged from 0-5 and the number of frequencies of abortion was ranged from 0-4. The age of women's menopause was ranged from 40-59 years with mean age 50.19±3.027years. The majority of the studied women (96.0 % and 88.0%) didn't take hormonal replacement therapy and didn't follow-up with a doctor during their menopause respectively.

Table (III): presents the distribution of the studied rural women according to the items of menopausal rating scale (MRS)**.** The table shows that the hot flushness and seating as somatic symptoms were mild for

38.5% of the studied menopausal women and it was severe for nearly one quarter (24.5%) of them. The unusual awareness of heart beat and tightness were mild for more than one-third (42.8%) of the studied menopausal women and it was moderate for less than one-quarter (23.0%) of them.Difficulty in sleep and weak up early were mild for more than one-third (36.3%) of the studied menopausal women and it was moderate for nearly one-third (33.0%) of them.Joint and muscles pain were moderate for more than one-third (37.3%) of the studied menopausal women and it was mild and severe for more than one-quarter (28.8% and 28.5%) of them respectively.

Concerning psychological symptoms, the table shows that the sense of sad and depression was mild for 30.0% of the studied menopausal women and severe for 17.3% of them.Feeling nervous and feeling aggressive were not present for more than one-half (50.5%) of the studied menopausal women and it was mild for more than one-quarter (28.3%) of them.Inner restlessness and feeling panicky not present for 41.2% of the studied menopausal women but it was mild for more than one third (36.5%) of them.Physical and mental exhaustion were moderate for more than one-third (38.0%) of the studied menopausal women and it was mild and severe for more than one-quarter(28.0% and 28.8%) of them respectively.

Regarding urogenital symptoms, the table shows that the change in sexual desire, activity and satisfaction were moderate for more than one -third (38.0%) of the studied menopausal women, it was mild for31.5% and it was not present for 18.0% of them. Difficulty in urination, incontinence and increase need to urination were mild for more than one-third (35.3%) of the studied women, it was moderate for more than one-quarter(25.3%) of them and it was severe for about fifth (20.5%) of them. Sense of dryness, burning in vagina and difficulty with intercourse were mild for more than one-third (40.8%) of the studied menopausal women, it was moderate for less than one-quarter (23.8%) of them and it was severe for the rest (19.8%) of them.

Figure (1): presents the distribution of the studied menopausal rural women according to their severity level of menopausal symptoms. The table shows that less than one-half (48%) of rural menopausal women had moderate menopausal symptoms and more than one-quarter (27.3%) of them had mild symptoms. About one-quarter (24.7%) of them had severe symptoms.

Table (IV): presents the total mean scores of the domain of quality of life (QOL) among the studied menopausal rural women. This table illustrates that the highest mean score was related to environmental domain (23. 94 ± 3.982), followed by physical domain (21. 46 ± 4.945) and psychological domain (18.27 ± 2.485) then social relationship (9.00 ±1. 986) and finally, over all QOL and general health (5.35 ± 1.663). The total score of

QOL was ranged from (51-104) with the total mean score (78.02 ±10. 551).

Figure (2): presents the distribution of the studied menopausal rural women according to their level of quality of life (QOL). This figure shows that more than half (52.0%) of the studied menopausal ruralwomen had a good quality of life and less than one-half (47.4%) of them had fair level of quality of life.

Table (V): presents the relation and correlation between levels and total score of menopausal rating scale (MRS) of the studied menopausal rural women and their quality of life. This table shows that there was negative high significant correlation between total score of menopausal rating scale of the studied menopausal rural women and the total score of their quality of life (r = -0.427 and p = 0.00). It was found that the majority (82.6%) the studied menopausal rural women who had mild menopausal problems had a good quality of life. And more than half (53.1% and 69.7% respectively) of them had either moderate or severe menopausal problems respectively had a fair quality of life.

Table (I): Distribution of the studied rural women according to their socio-demographic characteristics

Socio-demographic characteristics	The studied rural women (n =400)	
	No	%
Age (in years)		
▪ <50 years	23	5.7
▪ 50-<60 years	217	**54.3**
▪ 60-<70 years	97	**24.3**
▪ ≥70 years	63	15.7
Range	**(47-77)**	
Mean ± SD	**59.88±7.408**	
Marital status		
▪ Single	23	5.8
▪ Married	174	**43.5**
▪ Divorced	58	14.5
▪ Widow	145	**36.2**
Educational level		
▪ Illiterate	152	**38.0**
▪ Read and write	110	27.5
▪ Elementary school	31	7.8
▪ Secondary school	75	18.7
▪ University/post graduate	32	8.0
Work		

▪ Working	105	26.2
▪ Housewife	295	**73.8**
Family income		
▪ Not enough	105	26.3
▪ Enough	217	**54.2**
▪ Enough and save	78	19.5
Children number **Range**	**(0-9)**	
Type of family		
▪ Nucleus	142	**35.6**
▪ Step parent	121	**30.2**
▪ Extended	137	**34.2**

Table (II): Distribution of the studied rural women according to their obstetrical history

History of pregnancy and childbirth	The studied rural women (n =400)	
	N	%
Age at menarche (in years) **Range** **Mean ± SD**	**(11-16)** **12.93±1.161**	
Regularity of menstruation		
▪ Yes	261	**65.3**
▪ No	139	**34.7**
# Symptoms of menstruation		
▪ Lower back pain	241	**60.3**
▪ Lower abdominal pain	227	**56.8**
▪ Nausea and vomiting	58	**14.5**
▪ Edema in the body	24	6.0
▪ Change in bowel habit	21	5.3
▪ Chest pain	15	3.8
▪ Abdominal distention	8	2.0
Type of delivery		
▪ No delivery	25	6.3

▪ Normal **Range (0-8)**	231	**57.7**
▪ Caesarian **Range (0-5)**	44	**11.0**
▪ Both	100	**25.0**
Frequency of abortion **Range**	**(0-4)**	
Age of menopause **Range** **Mean ± SD**	**(40-59)** **50.19 ± 3.027**	
Taking hormonal replacement therapy		
▪ Yes	16	4.0
▪ No	384	**96.0**
Medical follow up with doctor during menopause		
▪ Yes	48	12.0
▪ No	352	**88.0**

 # More than one answer was allowed

Table (III): Distribution of the studied rural women according to theitems of Menopausal Rating Scale (MRS)

Items of Menopausal Rating Scale (MRS)	The studied rural women (n=400)									
	Menopausal Rating Scale (MRS)									
	Not Present		Mild		Moderate		Severe		Very Severe	
	No	%	No	%	No	%	No	%	No	%
a. Somatic symptoms										
• Hot flushness and sweating	75	18.8	154	38.5	71	17.8	98	24.5	2	0.5
• Unusual awareness of heart beat and tightness	86	21.5	171	42.8	92	23.0	51	12.8	0	0.0
• Difficulty in sleep and weak up early	45	11.3	145	36.3	132	33.0	77	19.3	1	0.3
• Joint and muscles pain	9	2.3	115	28.8	149	37.3	114	28.5	13	3.3
b. Psychological symptoms										
• Sense of sad and depression	142	35.5	120	30.0	60	15.0	69	17.3	9	2.3

• Feeling nervous and feeling aggressive	202	50.5	113	28.3	39	9.8	43	10.8	3	0.8
• Inner restlessness and feeling panicky	165	41.2	146	36.5	66	16.5	23	5.8	0	0.0
• Physical and mental exhaustion	19	4.8	112	28.0	152	38.0	115	28.8	2	0.5
c. Urogenital symptoms										
• Change in sexual desire, activity and satisfaction	72	18.0	126	31.5	152	38.0	46	11.5	4	1.0
• Difficulty in urination, incontinence and increase need to urination	64	16.0	141	35.3	101	25.3	82	20.5	12	3.0
• Sense of dryness, burning in vagina and difficulty with intercourse	61	15.3	163	40.8	95	23.8	79	19.8	2	0.5

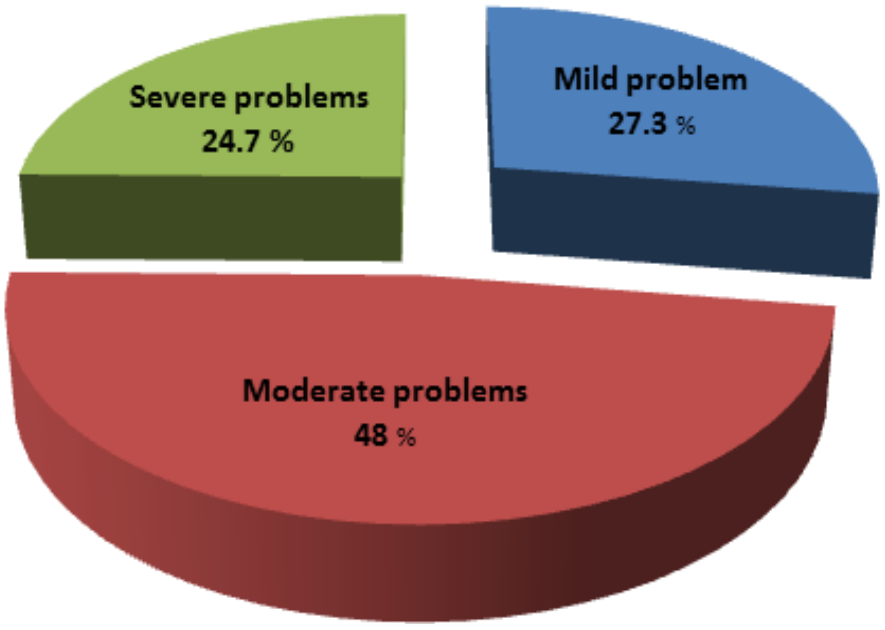

Figure (1): Distribution of the studied menopausal rural women according to their severity level of menopausal symptoms

Table (IV): Total mean scores of domains of quality of life (QOL) among the studied rural women

QOL domains	The studied menopausal rural women (n=400)	
	Range	**Mean ± SD**
a. Overall QOL and general health	(2-9)	5.35±1.663
b. Physical domain	(10-32)	21.46±4.945
c. Psychological domain	(10-24)	18.27±2.485
d. Social relationships	(5-15)	9.00±1.986
e. Environmental domain	(15-32)	23.94±3.982
Total score of QOL	**(51-104)**	**78.02±10.551**

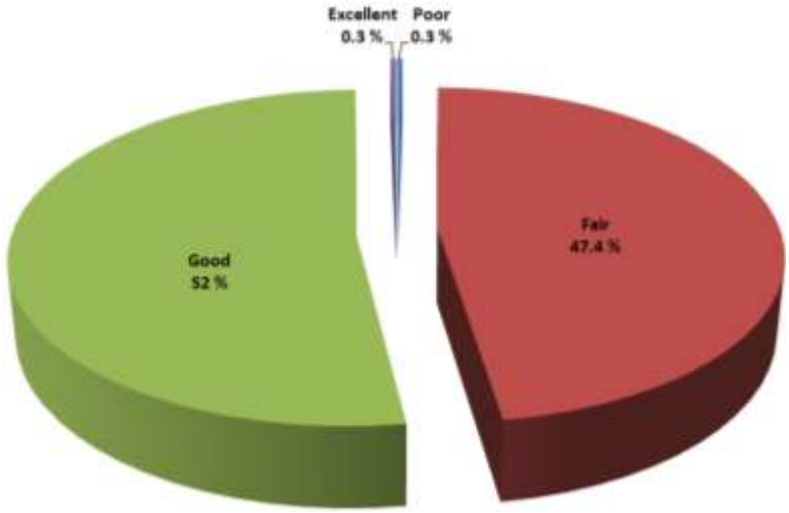

Figure (2): Distribution of the studied menopausal rural women according to their level of quality of Life (QOL)

Table (V): Relation and correlation between levels and total score of menopausal rating scale (MRS) of the studied menopausal rural women and their quality of life

Levels of QOL	The studied menopausal rural women (n=400)

	Levels of MRS						χ^2 P
	Mild Problem (n=109)		Moderate Problems (n=192)		Severe Problems (n=99)		
	No	%	No	%	No	%	
▪ **Poor**	-	-	-	-	1	1.0	
▪ **Fair**	19	17.4	102	**53.1**	69	**69.7**	**67.00**
▪ **Good**	90	**82.6**	89	**46.4**	29	29.3	**0.00***
▪ **Excellent**	-	-	1	0.5	-	-	
r , P	**-0.427 , 0.00****						

* Significant at P < 0.05 ** High significant at P < 0.01

Discussion

Many women experience menopausal symptoms during their post-reproductive years. This natural phenomenon often results in various psychological, somatic, vasomotor, and urinary symptoms, which impair the overall quality of life of women [17]. So, this study aimed to assess the relation between menopausal changes among rural women and their quality of life.

In the current study, the age of the studied menopausal women was ranged from (47-77) years with the mean age 59.88±7.408 years. This high mean age could be related to the presence of high percent (40%) of the studied women whose age was equal or more than 60 years old. This result is nearly in the same line with**Nirmala Rathnayake et al., (2019)** who revealed that the mean age of postmenopausal women, was 55.8 years [8].While **El Hajj et al., (2020)** reported that the mean age of their participants was 49.53 ± 5.74 years old [3]. As well, **Jang et al., (2021)** resulted in the average age at menopause in India, is 46.6 years which significantly lower than the age in some developed countries [18].

In the present study, more than one- third of the studied menopausal women were found to be married and widow. While, **Masjoudi et al., (2017)**reported that the mean age ± SD of menopausal women

was 50.7± 4.6 years. And 89% of them were married [9].This difference in marriage percent may be attributed to the difference in the mean age in the two studies.

Several studies have been conducted to determine the symptoms and signs associated with menopause. Frequency and intensity of symptoms vary in different cultures and also according to stage of menopause situation [8, 19]. Regarding the severity level of menopausal symptoms of the studied women, the results of the present study reported that less than half of rural menopausal women had a moderate menopausal symptom, more than one-quarter of them had a mild symptom and about one-quarter of them had a severe symptom. These results could be explained that the nature of the studied rural women as they are mostly work hard either in their houses or farm works which can decrease their experience of feeling of menopausal symptoms.

On the other hand, **Gupta and Kumari (2021**) revealed that the majority of women in their study suffer from severe menopausal symptoms [17]. As well, **Mohammed and Mohammed (2018)** indicated that nearly half of the studied sample (49%) had severe menopausal symptom [20]. While, **Masjoudi et al. (2017)** reported that the severity of menopausal symptoms according to Menopause Rating Scale (MRS), 55.2% of women had mild to moderate symptoms, 43.8% had no symptoms and only 1% had severe to very severe symptoms [9].

In the current study, menopausal symptoms were presented according to the Menopausal Rating Scale (MRS) which consisted of somatic symptoms, psychological symptoms and urogenital symptoms.It was observed that the highest percents of the mentioned menopausal symptoms' categories were found to be as mild degree. This is nearly in the same line with **Mohammed and Mohammed (2018)** who indicated that 68% of the studied sample had mild to moderate somatic symptoms, 54% had mild to moderate psychological symptoms, and more than half (58%) of the studied sample had severe urogenital symptoms [20].

Concerning somatic symptoms, joint and muscles pain were moderate for more than one-third of the studied menopausal women and it was mild and severe for more than one- quarter of them respectively. This could be explained that more than one-third of studied women their family type was nucleus and it was step parent for 30.2% of them. Nearly about three-quarters of them were house wives. And the number of the women's children was ranged from 0-9 child. All

these factors can increase the burden on the women to care for their home and children for several years which have an effect on their joints and muscles in addition to the menopausal effect.

In the same context, **Masjoudi et al., (2017)** reported that 82.7% of the women had muscle and joint problem as one of the physical symptoms of menopausal problems [(9)]. **Nie et al., (2017)** presented that from the most common symptoms in Chinese menopausal symptomatic women were "aching in muscle and joints" (89.4%), "low backache" (86.9%), "decrease in physical strength" (86.6%), "aches in back of neck or head" (86.2%) [(21)].

In the present study, hot flushness and seating as somatic symptoms were mild for more than one- third of the studied menopausal women and it was severe for nearly one quarter of them. According to**Rathnayake et al. (2019)** hot flushes represented one of the most frequently reported menopausal symptoms in postmenopausal women which was (42.2%) [(8)]. **Nie et al., (2017),** reported that the majority 80.7% of menopausal symptomatic women had hot flash [(21)]. And **Masjoudi et al., (2017)** revealed that 76.1% of women had hot flushes andsweating [(9)].

The unusual awareness of heart beat and tightness in the current study were mild for more than one-third of the studied menopausal women and it was moderate for less than one-quarter of them.This may be revealed to sympathetic reactivityas mentioned by **Manda et al., (2020**), who revealed that females with menopause symptoms did not have an exaggerated BP and sympathetic reactivity to a stressor. They had elevated resting sympathetic activity which was associated with severity of physical menopausal symptoms. [(4)]. **Masjoudi et al., (2017)** reported that50.9 % of the women had heart discomfort [(9)].

The results of the present study reveal that difficulty in sleep and weak up early were mild for more than one-third of the studied menopausal women in this study and it was moderate for nearly one-third of them. While**, Nie et al., (2017)** found that 83.6% of the menopausal symptomatic women had difficulty sleeping [(21)].

Concerning psychological symptoms of menopausal women in the present study, it was observed as a general that the higher percent of women either had mild psychological symptoms or had no symptoms. This could be attributed to religious factors and faith of the studied rural Egyptian women which help them in accepting and adjusting the experienced problems especially psychological types.

In more details, it was found in the current study, that the sense of sad and depression

was mild for about one – third of the studied menopausal women and severe for about one-fifth of them. This is supported by **Ensiyeh et al., (2021**) who resulted in that there is an association between depression and menopausal symptoms [(22)]. This result was nearly in the same line with **Rathnayake et al., (2019)** who reported that 43.4% of thepostmenopausal women had depressive mood [(8)]. Also, **Masjoudi et al., (2017)** revealed that 53.8% of menopausal women had depressive mood [(9)].

Furthermore**, Kling et al., (2019)** found thatdepressed mood, anxiety, and a decreased sense of well-being are common during the menopausal transition. Additionally, women who have a history of mood disorders or stressful early childhood life events experience a greater incidence of more severe psychological symptoms during menopause [(23)].

Regarding inner restlessness and feeling panicky, it was mild for more than one-third (36.5%) of the studied menopausal women in this study and it was moderate for 16.5% of them**.** In this context, **Rathnayake et al., (2019)** found that 48.2% of postmenopausal women had irritability [(8).] As well, **Masjoudi et al., (2017)** revealed that54.9% of menopausal women had irritability and 69.5% of them had anxiety [(9).]

The physical and mental exhaustion of the studied women were moderate for more than one-third of the studied menopausal women and it was mild and severe for more than one-quarterof them respectively. While, **Rathnayake et al., (2019)** reported that physical and mental exhaustion were experienced by 53% of the studied menopausal women [(8)]. Also, **Nie et al., (2017)** revealed that the most common symptoms in Chinese menopausal symptomatic women were "experiencing poor memory" (94.4%), "feeling tired or worn out" (93.8%), "accomplishing less than I used to" (83.4%), and "feeling a lack of energy" (83.3%) [(21)].

Genitourinary syndrome of menopause (GSM) is a highly prevalent and progressive condition of postmenopausal women that has significant negative effects on vulvovaginal health, sexual health, and overall quality of life [(14)]. Concerning urogenital symptoms, this study resulted in that the change in sexual desire, activity and satisfaction were moderate for more than one-third of the studied menopausal women, it was mild for31.5% and it was not present for 18.0% of them. This mostly could be attributed to the changes in hormones and genital system of the menopausal women especially dryness in the vaginal secretions.

This result is nearly in accordance with**Nie et al., (2017)** who reported that 81% of menopausal symptomatic women complained of change in sexual desire [21]. This also supported by **Masjoudi et al., (2017)** who revealed that menopausal women who had uro-genital symptoms as following: 41.1% had sexual problem, 40.3% had bladder problem and 44.1% had dryness of vagina [9]. As well, in the current study, difficulty in urination, incontinence and increase need to urination were mild for more than one-third of the studied women, it was moderate for more than one-quarterof them and it was severe for about fifth of them. Regarding sense of dryness, burning in vagina and difficulty with intercourse, it was mild for more than one-third of the studied menopausal women, it was moderate for less than one-quarter of them and it was severe for the rest of them.

Menopausal symptoms mostly contributed to the poorer Quality of life (QOL). Quality of life was significantly impaired among postmenopausal women [8]. In the present study, it was found that less than one-half of the studied menopausal ruralwomen had fair level of quality of life. Furthermore, it was found that there was negative high significant correlation between total score of menopausal rating scale of the studied menopausal rural women and the total score of their quality of life. This result is in accordance with **Gupta and Kumari (2021**) who concluded that menopausal women have poor health related quality of life [17].While, **Calvo-Pérez and Campillo-Artero (2013)** revealed that a weak association was detected between being menopausal and QoL [24].

The difference in the mentioned results which found either strong or weak association between menopausal symptoms and quality of life may be attributed to the level of spiritual wellbeing of menopausal women which have direct reflex on their all-life dimensions. This is supported by **Tarrah**i **et al.,** (**2021**) who evidenced by the obtained results, that spiritual wellbeing and its components are important variables affecting the quality of life of postmenopausal women [25].

In addition, the difference in the previous results could be related to the degree of marital satisfaction of menopausal women. This is supported by **Caico (2013)** who reported that women who experienced greater marital satisfaction have been shown to have less severe menopausal symptoms and negative moods [26]. While **Roesch et al., (2021**) found that no significant difference was found between the mean ENRICH Marital Satisfaction score for women who report that they are in menopause and not in menopause [27].

Regarding the total mean scores of the domains of quality of life (QOL) among the studied menopausal rural women, it was found that the highest mean score was related to environmental domain, followed by physical domain and psychological domain then social relationship. This may be explained that environmental factors can be managed easily by menopausalwomen more than other personal factors as physical or psychological one. On the other hand, **El Hajj et al., (2020)** found that the highest mean scores of Menopause-Specific Quality of Life (MENQoL) were found in the physical and psychosocial domains [(3)].

Conclusion

TheQOL of menopausal rural women is affected by their menopausal symptoms where a negative high significant correlation was found between the total score of menopausal rating scale of the studied menopausal rural women and the total score of their QOL.

Recommendations

1- Enhance the awareness of rural women about the early identification of the common menopausal symptoms.
2- There is a need to establish a special clinic in each rural health unit to concern the management of problems and complains of menopausal rural women.
3- Develop specific health educational programs aimed to improving the quality of life of postmenopausal women and promoting their life styles.
4- Stress on providing the needed medical and social services to the menopausal rural women to help them in overcoming their health problems.

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Effect of Care Bundle Strategies on Nurses' PerformanceRegardingPrevention of Ventilator Associated Pneumonia at Neonatal Intensive Care Units

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Abstract

Background: Ventilator-Associated Pneumoniais considereda severe health care-associated infection that results in severe morbidity and increase mortality rate. Moreover, it alsolengthens hospital staying and increase hospital expenses. The study aims to evaluate the effect of care bundle strategies on nurses' performanceregardingprevention of ventilator associated pneumonia at neonatal intensive care Units. **Design:**Quasi-experimental, pre- and post- intervention study.**Subjects:**All nurses(65) in neonatal intensive care units at 10th of Ramadan Charity Hospital and Aga Central Hospital.**Tools:**Two tools were used; 1st tool; sociodemographic data and predesigned questionnaire for nurses' knowledge and 2nd tool;

observational checklist to assess nurses' performance regarding ventilator-associated pneumonia. **Results:**shows a significant improvement of nurses' knowledge regarding ventilator-associated pneumonia care bundle immediately after and at follow up in relation to neonates' positioning, oral care and ventilator care measures and the majority of them had a competent level of performance regarding observed ventilator-associated pneumonia care bundle before, immediately after and three months after program application. **Conclusion:**The application of care bundle strategies for the nurses had improved their level of knowledge and performance regarding prevention of ventilator-associated pneumonia with highly significant difference between mean score of total nurses' knowledge and performance.**Recommendations:**Continuous up to date guided protocols should focus on enhancing nurses' performance regarding ventilator-associated pneumonia care bundle.

Key words: Care bundle, Neonatal ventilator associated pneumonia**,** Nurses' performance.

Introduction

Ventilator-associated pneumonia (VAP), a hospital acquired pneumonia that occurs more than 48 hours after mechanical ventilation, is a common problem of mechanical ventilation with a higher communal infectious disorders in critical care unitswith increasing mortality rate[(1)]. Extendedintubation duration on mechanical ventilation was the commonpredisposing factor[(2)].VAP is a serious complication in neonates set on mechanical ventilator and it takes a percentage from 6.8% to 32.2% of health-care associated infections among neonates. Also, it takes from9% to 13% of the total neonatal deaths with mechanically ventilated devices.Furthermore, the problem of VAP in neonatal intensive care units (NICUs) is significantly serious in developing countries than in developed countries with greatinfluence on neonatal morbidity, survival, hospital costs and long durationof NICU stay[(3)].

Factors that predispose the neonates for acquiring VAP include pre-existing diseases of respiratory system such as chronic obstructive pulmonary disease, coma, head trauma and multi-organ system failure[(4)]. Other risk factors include previous taken antibiotic drugs, conditions that increase the risk of aspiration, and

disorders that impair defence mechanisms, such as malnutrition and diabetes. Premature infants, with low birth weight (LBW) and extremely low birth weight (ELBW) are further predisposed to the development of VAP [(5)].

Ventilator Associated Pneumonia is a dangerous complication for infants at present in acutely and critically condition and can results in lung tissue damage, increase oxygen demand, and more liable to complications such as lung abscess, empyema, due to bacteremia & sepsis, and bronchopulmonary dysplasia[(6)].Seriously ill neonate has increased the vulnerability and mortality fromVAP. Also, immaturity of the preterm immune system bringsthem at high potential for hospitalassociated infections (HAIs)[(5)].

Evidence-based guidelines toprevent VAP and improvethe quality of careare mainlyimplemented by the care bundle, whichconsists ofsimultaneous application of evidence-based preventive approaches which, applied together to attain a better infant outcomes [(7-9)]. In Egypt and developing countries, researchers reports few successfully VAP intervention strategies, mainly among premature infants. Furthermore, the bundle involvedapproaches to reducemicrobial infection of the oropharynx, stomach& sinuses and ways to avoid aspiration of infected secretions. Ventilator-associated pneumonia rate decreased from 5.6 to 0.3 infections per 1,000 ventilator days one time the bundle have applied during theyear progress[(10-12)].

Nowadays, Neonatal nurses are in a keyposition as a main caregiver and one of interprofessional health care team to identify neonatal problems and apply preventive interventions to avoid VAP through "VAP Care bundle approach"[(13)].These several interventions includeoral care using chlorhexidinegluconate oral rinse; maintaining the head-of-bed at 15-30 degrees and promoting the correct position; daily sedation interruption andassessment of readiness for weaning; Ventilator management; Suction care, pressure ulcer prophylaxis; use of orogastric tubes; avoid over distending of the stomach and avoid unnecessary tracheal suctioning[(14)].

Declinein nurses' knowledge and performanceisanobstacle to accomplish evidenced- based strategies for preventionof VAP; these nurses mustbe aware of the problem and its threat as well as knowledge on preventive measures to be compliant with its performance to improve the quality of health care for the neonates. Skilful and knowledgeable nurses arereally needed to createproper decisions in

neonatal care and reduce the threat to their life [15].

Significance of the study:

Ventilator associated pneumonia is one of the most common disorders which could be greatly affected the nurses' outcome caring for critically ill neonates. All neonates on mechanical ventilation have the potential to develop VAP becausethe placement of the endotracheal tube (ETT) prevents the natural defence against respiratory infections and increases the risk of microorganisms in the lower airway[16].Ventilator associated pneumonia has been associated with greater morbidity, mortality, increase duration at NICU and increased the hospitalfinancial cost. The developing countries reported a higher VAP rates than developed countries. Moreover, the studies that monitoring VAP rates and success of implemented techniques in Egyptian NICUs are few[17,18]. Hence,it was emergent toapply care bundle program forimproving nurses' performance regarding prevention of ventilator associated pneumonia at neonatal intensive care units.

Aimof the study:

This study aims to evaluate the effect of care bundle strategies on nurses' performance regarding prevention of ventilator associated pneumonia at neonatal intensive care unit.

Research hypothesis:

Application of care bundle strategies for nurses may improvetheir performance include knowledge and practice regarding prevention of VAP.

Subjects andMethod

Research design:

A quasi-experimental (pre/post- test) research design.

Setting:

This study was carried out at Neonatal Intensive Care Units at 10th of Ramadan Charity Hospital (17 nurses) and Aga Central Hospital (48 nurses).

Subjects:all nurses (65) working at the above mentioned study setting.

Tools of data collection:

Tool I:A structured questionnaire sheet (pre/post & follow up -test) was developed by researchers after reviewing the related literature[19][7]. It included two parts as the following:

1) **Demographic data for nurses include** age, education level, years of experience andprevious attendance of VAP Bundle training program.
2) **A predesigned questionnaire** (pre, post and follow up) was used to assess nurses' knowledge aboutbundle carefor ventilator associated pneumonia in NICUs.It consisted of 29 multiple choice questions. It involved; 7 questionsabout(definition of VAP, risk factors related to intubated neonates& causes of VAP,signs&symptomsof

VAP), knowledge questions regarding VAP care bundle covered VAP prevention guidelines pre/post and after follow-up as (positioning 2 questions, 2 questions for hand hygiene, 1 question for oral care, 4 questions for ventilator care measures, 10 questions for suctioning from the ETT, 1 question for peptic ulcer prophylaxis and 2 questions for extubation and weaning trials).

Scoring system of nurses' knowledge:a correct answer give one score while, incorrect answer give zero score. The nurses' knowledge level was categorized as follows: good knowledge if the score was≥ 80, average knowledge from 60 - < 80% and poor if the score was <60% **(20)**.

Tool II: Ventilator associated pneumonia observationalchecklist. It was adapted fromCDC, (2016)**(7).** The tool was used to assessthe nurses' performancein areas (infection control measures, patient positioning, ventilator care measures, suctioning from the ETT/tracheotomy, oral care, peptic ulcer prophylaxis, extubation and weaning trials, frequency of oral swabbing, frequency of coat lips with petroleum jelly).

The scoring system for the observational checklistwas developed; each correct step of the procedure scored on the bases of "done", scored (1) and "Not done", scored (0). The scoring system for these observation checklists sheets were classified into: Competent who gets 85% and Incompetent who gets less than 85%**(21).**

Method

Validity and reliability:

Content validitywas assessed byfive experts inpediatricnursingfield who revised the tools for clarity, relevance, applicability and comprehensiveness. Regarding reliability of internal consistency by using coefficient Cronbach's alpha was as follow; for tool I (Knowledge sheet: 0.752), for tool II (Performance sheet: 0.96), Total reliability for two tools was assessed by using coefficient alpha was 0.946.

Ethical considerations:

Ethical approval to conduct this research study wasobtained from the Research Ethical Committee at Faculty of Nursing, Mansoura University. An official permission was obtained fromthe director of 10thof Ramadan Charity Hospital, Aga Central Hospitaland thehead of the NICUs.Oral consent was obtained from the nursesafter explaining of the aim, tools, duration and the benefits of this study. The researchers confirmed them that participation in the study is voluntary, the secrecy and the confidentiality of their responses were assured.

Pilot study:

It was conducted on 6 subjects representing 10% of the sample size to ascertain the viability, clarity, replication of questions. It also helped to approximate time needed to complete interview prior to data collection. Required modifications were done by exclusion of some items consequently; so excluded from main study.

Field of work:

Data collection extended over a period oversix months from the beginning of September 2019 to the end of February 2020. The researchers were available in the study settings 3 days per week from 9 A.m. to 12 p.m. Each nurse was individually interviewed using the previously mentioned study tools. The questionnaire and the answers were marked by the nurses after the researcherswere explained how they were answered it; 20 minutes was needed to complete the questionnaire. The study nurses were divided into small groups; (11 in each group).

Data collection was carried out in 3 stages at the NICUs in the above mentioned settings; first stage assessment was done before starting VAP care strategies "pre-test". Second stage: implementation of VAP care bundle,and third stage; evaluation immediate and three months follow up after implementation of VAP care bundleto evaluate intervention outcomes' post-test'. The reasons for selecting these intervals were to assess the point of maximum benefits from intervention immediately after, the nurses were assumed to follow the learning process by observation stages (attention, retention, and motivation). Also, the second assessment post intervention (three months later) aimed to assess nurses' ability to retain the acquired learning knowledge and performance over a short period of time and assess the effect of VAP care bundle at follow up.

Stage 1. Assessment of the nurses' knowledge about bundle care strategies for ventilator associated pneumonia in NICU pre/post and at follow-up after program implementation includes definition of VAP, risk factors for VAP related to intubated neonates & causes, signs & symptoms of VAP; knowledge questions about VAP care bundle using the above tools. A brief introduction about the questionnaire was given by the researchers to help the nurses understand how to complete the questionnaire.

Stage 2. The application of VAP care bundle program was aimed to improve the nurses' performance regarding prevention of ventilator associated pneumonia at NICUs through six sessions; three theoretical and three practical sessions (around 45-60 minutes for each) including

ten minutes for open discussion and take feedback from nurses.

Three theoretical sessions about VAP care bundle include (1st session about definition of VAP, risk factors, causes, signs & symptoms of VAP; 2nd& 3rd session about VAP care bundle guidelines about positioning, hand hygiene, oral care, ventilator care measures, suctioning from the ETT, extubation and weaning trials).The other three practical sessions include; first practical demonstration sessionaboutinfection control measures, neonatal positioning,ventilator care measures; second practical session about suctioning from the ETT/tracheotomy, oral care, peptic ulcer prophylaxis; third one includes; extubation and weaning trials, frequency of oral swabbing, frequency of coat lips with petroleum jelly.The researchers started every session with summary related previous sessions and the objectives of new session, reinforcement of teaching were accomplished related to nurses` needs to confirm their understanding.Many teaching methods were used such as group discussion, lectures, practical demonstration and re-demonstration, also teaching media in the form of power point, educational handout about VAP care bundle elements and videos were used.

Stage3. Performanceof the nurses were evaluated pre / immediate post and at follow-up later 3 months after application of VAP care bundle program using the previously mentioned study tools.Comparison between pre/post and at follow-up results was done to evaluate the effectof application of VAP care bundle intervention on nurses' performance.

Statistical analysis:

Data was sorted, coded, organized, categorized and then transferred into especially designed formats. Analysis performed using SPSS (Stands for Statistical Product and Service Solutions) version 21. Data were described using number and percent or mean ± SD. Repeated measured analysis of variance (RM-ANOVA) was used to compare means of three times (pre, immediately post and at follow up). A statistical test with a p value ≤ 0.05 was considered statistically significant and highly significant if <0.01.

Results:

Table (1) revealed that, mean age of studied nurses was 29.58 ± 11.80 and 41.5% of them had nursing diploma. According to experience, near half of them (49.2%) were having from one year experience to less than five years, with mean score 6.81 ± 7.34 years.

Figure (1) showed that three quarters of participants (75%) were not previously attended (VAP) training program, while one quarter of them attended previous training program.

Table (2) revealed that there were a highly significant differences between mean score for meaning of VAP pre, immediate post training and follow up (1.50+0.61, 1.7+0.55and1.6+0.60) respectively, with significant difference at p value <0.05. Also, there were increase in mean knowledge score about signs & symptoms of VAP (0.15±0.36, 0.93±0.24&0.93±0.24) respectively pre, immediate post and follow up with highly significant difference at p value <0.01.

Table (3) revealed that there was an improvement in mean score of ventilator care measures pre training, immediate post and follow up (1.83±1.03, 2.53±0.96 & 2.83±1.02) respectively with highly significant difference with p value <0.01. Furthermore, there was an improvement in mean score of extubation and weaning trials pre training, immediate post and follow up (0.58±0.74, 1.52±0.70 & 1.49±0.73) respectively with highly significant difference with p value <0.01.

Table (4) showed that there was improvement in mean values of infection control measures pre, immediately post and at follow up (3.09 ± 2.70, 7.07 ± 1.24 & 5.69 ±1.75) respectively with highly significant difference at p value <0.01. Also, there was improvement in mean values of suctioning from the ETT/ tracheostomy pre, immediate post and at follow up(9.55 ± 5.38, 19.16±1.05 &16.73 ± 2.74) respectively with highly statistically significant difference at p value <0.01.

Figure (2) showed that 80% of nurses had poor knowledge pre training program compared to only (12.3%) of them immediately post the training program and (18.5%) of them at follow up. In the contrary more than three quarters of them (76.9%) have good knowledge immediately post the training program compared to only (10.8%) of them pre training program.

Figure (3) revealed that about 81.5% of nurses were incompetent pre the training program compared to only 3.1% of them immediately post the training program. While, 18.5% of them were competent before the training program compared to (96.9%), immediately post the training program.

Table (5) detected that **t**here was a highly significant difference between mean score of total nurses' knowledge regarding VAP (2.84±1.32, 5.09±1.07 & 4.75±1.25) respectively at p value <0.01. Moreover, there were improvement in total mean score of nurses' total practice regarding

VAP care bundle pre, immediately post and at follow up at p value<0.01.

Table (1): Characteristic of thestudied nurses (n=65)

Variables	**No.**	%
Age in years		
<20ys	19	29.2
20-<30ys	21	32.4
30-<40ys	9	13.8
≥40ys	16	24.6
Mean ± SD	**29.58 ± 11.80**	
Educational level		
Nursing Diploma	27	41.5
Nursing Institutes	22	33.9
Bachelor of nursing science	16	24.6
Years of experience		
1- < 5 yrs	32	49.2
5- < 10 yrs	14	21.5
≥ 10 yrs	19	29.3
Mean ± SD	**6.81 ± 7.34**	

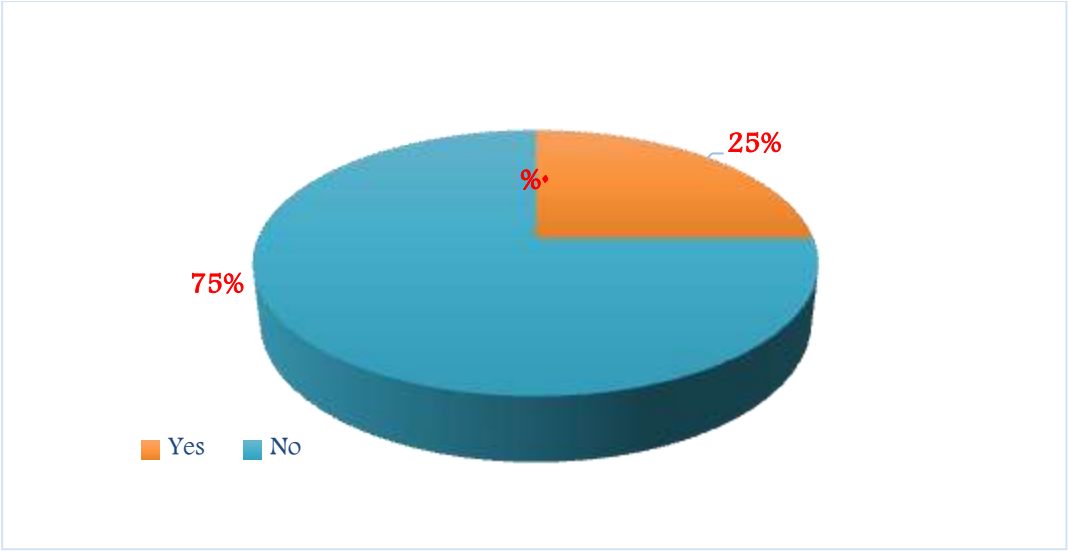

Figure 1. Distribution of nurses about previous attendance of training program about VAP bundle (No.=65)

Table (2): Mean values of nurses' knowledge concerning VAP pre, immediately post and at follow up of the program implementation(n= 65)

Nurses' Knowledge	Pre	Immediate Post	Follow up	F	P. value
	Mean ±SD	Mean ±SD	Mean ±SD		
- Meaning of VAP	1.50±0.61	1.7±0.55	1.6±0.60	3.607	0.03*
- Risk factors for VAP related to intubated neonates	1.18±1.02	1.92±0.98	1.87±0.99	21.65	0.000**
- Signs and symptoms of VAP	0.15±0.36	0.93±0.24	0.93±0.24	197.23	0.000**

Highly significant at P<0.001

Table (3): Mean values of nurses' knowledge regarding VAP care bundle pre, immediately post and at follow upof the program implementation (n =65)

Nurses' Knowledge	**Pre** Mean ±SD	**Immediately Post-** Mean ±SD	**Follow up** Mean ±SD	**F**	**P. value**
- Positioning	1.00±0.93	1.87±0.48	1.81±0.52	45.11	0.000**
- Hand Hygiene	1.26±0.75	1.66±0.71	1.58±0.74	8.24	0.000**
- Oral Care	0.35±0.48	0.75±0.43	0.72±0.45	20.38	0.000**
- Ventilator care measures	1.83±1.03	2.53±0.96	2.83±1.02	12.00	0.000**
- Suctioning from the ETT	3.83±1.50	6.96±2.1	6.76±2.17	85.63	0.000**
-Extubation and Weaning trials	0.58±0.74	1.52±0.70	1.49±0.73	48.22	0.000**

Highly significant at P<0.001

Table (4): Mean values of nurses' performance about VAP care bundle pre, immediately post and at follow up of the program implementation (n =65)

Nurses' Performance	**Pre** Mean ±SD	**Immediately Post** Mean ±SD	**Follow up** Mean ±SD	**F**	**P. value**
- Infection control measures	09 ± 2.70	07 ± 1.24	69 ±1.75	63.28	0.000**
- Neonate position	0.35 ± 0.48	0.92 ±0.26	1.00±0.00	83.1	0.000**
- Ventilator care measures	3.35 ± 2.25	6.64 ± 0.54	6.13 ± 0.68	101.75	0.000**
- Suctioning from the ETT/tracheostomy	9.55 ± 5.38	19.16±1.05	16.73 ± 2.74	129.52	0.000**
- Oral care	0.61±1.16	2.90 ±0.29	1.96 ± 1.01	99.22	0.000**
- Peptic ulcer prophylaxis	1.76 ± 1.04	2.98 ± 0.12	2.21±0.97	35.93	0.000**
- Extubation and Weaning trials	1.16 ± 0.62	1.93 ± 0.30	1.86 ± 0.34	58.94	0.000**

Highly significant at P<0.001

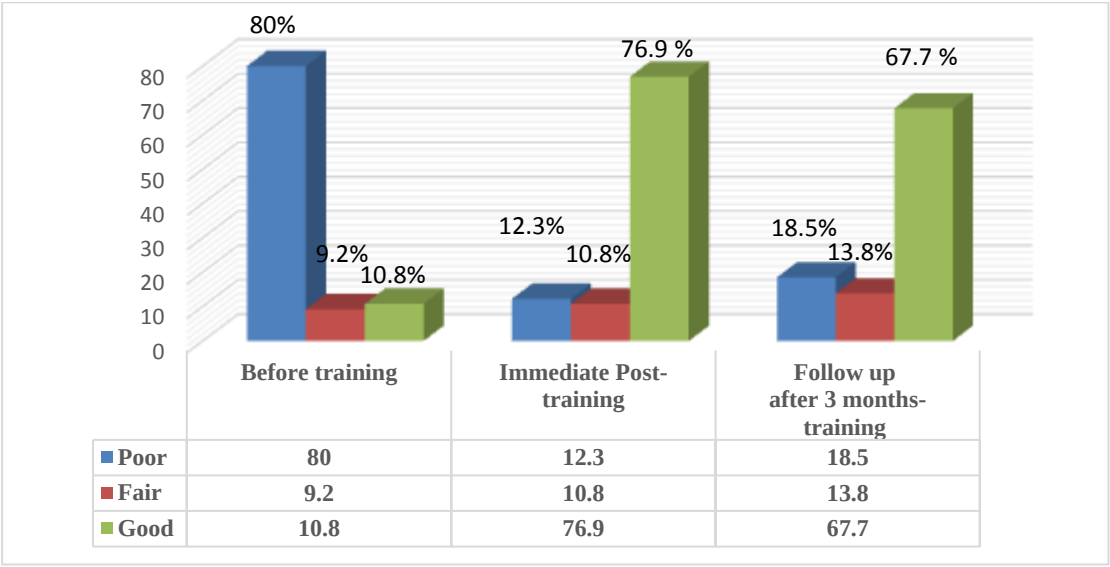

Figure 2: Distribution of nurses regarding their total knowledge about VAP care bundle pre, immediately post and at follow up of the program implementation (n=65)

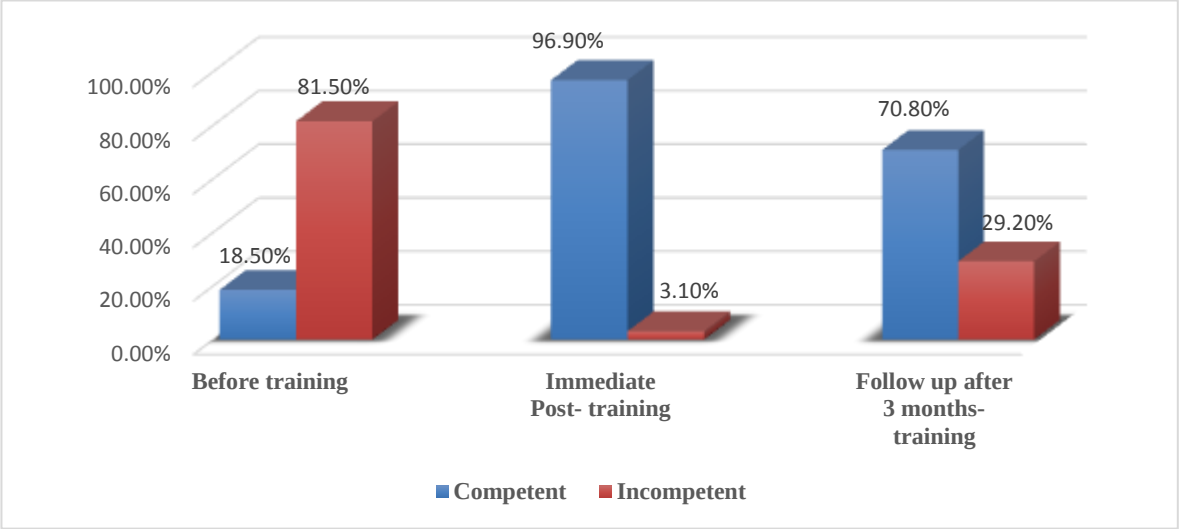

Figure 3: Distribution of nurses related to their total performance about observed VAP care bundle pre, immediately post and at follow up of the program implementation (n=65).

Table (5): Mean score of total nurses' knowledge and practice regarding VAP care bundlepre, immediately post and at follow up of the program implementation (n=65).

Items	Pre	Immediately post	at follow up	F	P. value

- Nurses' Knowledge regarding VAP	2.84±1.32	5.09±1.07	4.75±1.25	67.77	0.000**
- Nurses' Knowledge regarding VAP care bundle	9.50±3.56	14.38±3.43	12.93±3.31	48.53	0.000**
- Nurses' total practice regarding VAP care bundle	20.04 ±12.40	43.3 ± 1.98	37.15 ± 4.7	149.16	0.000**

Highly significant at P<0.001

Discussion

Ventilator Associated Pneumonia is the second most major serious complications of mechanical ventilation and the primary cause of morbidity and mortality. Incidence of VAP in NICU vary significantly around the world (between 1 to 63 episodes per 1000 ventilator days) reflecting different burden of disease but also differences in diagnostic process **(22).** The implementation of educational measures to increase adherence of health professionals to VAP prevention measures, which will reverberate in the improvement of neonate-related outcomes and quality of nursing care provided to them **(23,24)**.So, this study aims to evaluate the effect of care bundle strategies on nurses' performance regarding prevention of VAP at neonatal intensive care unit.

Related nurses' characteristicsthe current study findings illustrated that 61.6% of studied nurses' age ranged from 20-< 30years which represents the highest percentage of study sample. Thisresult comes in agreement with **Abou Zed &Mohammed (2019)(21),**who reported that, 74.3% of studied sample, their age ranged between 20 to less than 30 years with mean age of 26.63 ± 4.25. Regarding to educational level, the current results showed that, 41.5% of studied nurses had diploma degree this congruent with

Elbilgahy et al.,(2015)[15] who reported that more than one third of studied nurses had a diploma certificate. Regarding the nurses' experience,the present study showed that 49.2% of nurses were have 1-< 5 years. Three quarters (75%) of nurses did not attend any previous training program related to VAP care bundle, this finding is consistence with **Abou Zed & Mohammed (2019)**[21] who reported thatless than half of studied nurses had less than 5 years of experience and less than two thirds(65%) of the study subjects didn't attended preceding training programs concerning preventive measuresabout neonatal VAP.

The current study revealed that nurses' mean knowledge score regarding VAP were improved at post and at follow up in relation to meaning, risk factors and signs and symptoms of VAP related to intubated neonates. Theseresults wereat same line with **Abou Zed & Mohammed (2019)**[21] who found that there were highly significant differences between the mean scores of nurses' knowledge before and after the intervention. Also, congruent with **Sanders-Thompson (2020)**[22] who represented that the nurses had a high level of knowledge following teaching (11.43±0.775) compared to nurses prior to teaching (9.55, ±0.976), $p < .001$. These results explained as the majority of the studied nurses were diploma and nursing institutes. That reflected that nursing VAP care bundle training program had backbone in improvement the nurses' knowledge about preventive measuresabout neonatalVAP.

The current studyrevealed a significant improvement of nurses' knowledge regarding VAP care bundle immediately post and at follow up in relation to neonates' positioning, oral care and ventilator care measures. This improvement due to effect of teaching program on nurses' knowledge related to the care of critically ill neonates. These results are consistent with the study conducted by **Hussien(2017)**[25]who stated that there were significant improvement in mean knowledge score between pre and post training program regarding VAP prevention bundle. This study accordance with **Madhuvuet al.,(2020)**[26] who reported that most of the study participants had poor knowledge about evidence-based guidelines for the prevention of VAP. They mentioned that nurse's lack of knowledge about VAP preventive care bundle and appropriateintervention may become barrier to prevent VAP. Nevertheless, numerous studies have shown that, training programs and applying nursing strategies for bundle care for VAP result in significant declineincidence of VAP [27].

In relation to total nurses' knowledge about neonatal VAP care bundle, this study represented that more than three quarter of nurses had a poor score of knowledge pre-program, which improved to good level of knowledge immediately postand at follow up ofthe program. This finding is in the same line with**Chithra&Raju (2017)**[28]who revealed that more than half of nurses had poor knowledge pre-program intervention. Meanwhile, in post educational program, the majority of studied nurses have a good knowledge level. Thus the designed training sessions was efficient in enhancing the knowledge of critical care nurses regarding prevention of VAP. This finding is congruent with **Aklet al.,(2020)**[19]who showed that there was marked improvement regarding the subject total knowledge level to prevent ventilator-associated pneumonia (VAP) post-application of VAP care bundle. In contrary the current results are inconsistent with previous findings by **Musvosvi (2013)**[29] who reported that both the experimental group and the control group possessed very good baseline knowledge.

The results of the present studypointed out that the mean score of nurses' performanceabout neonatal VAP carebundle inthe current study was significantly improved immediately post program implementation while this improvement decreased at follow up as revealed in this drop of performance may be due to due to unavailability of resources, lack of continuous education and absence of written VAP care bundle protocol in NICU which in turn affect nurses' performance.This improvement in our study is similar to study conducted by **John (2017)**[17] who found that the mean value of nurse's practice with modified neonatal VAP preventive care bundle was to be high on the third day of the program in comparison with the first day and second day. This finding was in contrary to the finding of **Aloush (2017)**[12]who found that teaching in VAP-preventive guidelines was not advance nurses' skillswithout other perplexinginfluences, as their workload are controlled. Inaddition **Gomes et al.,(2020**)[24] found that the adherence to some VAP care bundle measures was not different between groups of patients (with or without VAP) and showed low values of adherence.Also, **Álvarez-Lerma&García (2018)**[30]reported that the reasons for non-compliance in performance of nurses to the proposed approaches were; that they were not in the unit protocols, lack of necessary resources, disagreement with the proposed strategy, cost, the possibility of causing patient discomfort and side effects on the patient.

The existing study illustrated that the majority of studied nurses had a competent skillsconcerning observed VAP care bundle pre, immediately post and at follow up of program implementation. This reflect positive effect of implementation of bundle and nurses were enthusiastic to learn more about how care about neonatal VAP. These results is aligning with**Metwally et al., (2015)**[31]who reported that the more than three quarters of nurses had an unsatisfactory practice level pre-program intervention and post program intervention more than two third of nurses had a satisfactory practice level. Also, congruent with **John (2017)**[17] who reported that all nurses had partial compliance in applying developed neonatal VAP preventive care bundle inthe first and second day while on the third, less than quarter of them were complaint about the performance and more than three quarter were partially complaint. According to the present study findings, improvement in the nurses' knowledge and performance regarding VAP care bundle with a highly significant difference before, immediately after and after three months of program application.The researchers found this finding could be due to the effectiveness of the study intervention. This finding is compatible with **Aklet al.,(2020)**[19]who found that there was a positive association between nurse's knowledge and their practice post intervention. Moreover, the majority of critical care nurses practice was the greatest skillfully related to all VAP care bundle items. This study was incongruent with **Madhuvuet al.,(2020)**[26]who reported that there was no relationship between participants' knowledge and compliance to evidence-based guidelines regarding VAP. While most study participants understood the evidence-based guidelines, they did not necessarily follow it in practice. The differences in compliance practices might be due to specific organization policies, which do not support the practice and the availability of resources.

Conclusion

The application of care bundlestrategies for the nurses had improved theirlevel of performance regarding prevention of ventilator associated pneumoniain the neonatal intensive care units.

Recommendations

1. Continuous up to date guidedprotocols should focus on enhancing nurses' performanceregarding VAP care bundle.
2. Ongoing in-service training must beintroduced into hospitals and NICUs using the updated bundle strategy.
3. Orientation of new NICU nurses should include education on VAP preventive care bundle.

4. Manuals, information booklets and self-instruction module regarding VAP preventive care bundle should be present in every intensive care unit.

Limitation

The small sample size was the most common limitation in this study; we propose that several hospitals may be needed to get higher sample sizes and to evaluate feasibility/cost- effectiveness.

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Quality of Life of Patients with Meniere's Disease in Alexandria - Egypt

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Abstract:

Background: Meniere's disease is a rare disorder of the inner ear that causes dizziness, vertigo and balance problems. Some people have several attacks of Meniere's disease in a short period of time, while other people only have an attack every few months or years. **The aim of this study** was to assess the quality of life of patients with Meniere's disease. **Subjects and Method:Setting:** The study was carried out in ear, nose, and throat (ENT) department at Alexandria Main University Hospital, Egypt. **Subjects**: The study subjects comprised a convenience sample of 100 adults of Meniere's disease' patients. **Tools:** Two tools were used: Tool I: Socio-demographic and Clinical Data Structured Interview Schedule, and Tool II: Health-Related Quality of Life (HRQOL) of

Meniere's disease. Results: The mean age of the studied patient was 43.38±7.45 years. The majority of them were unemployed, coming from rural area and more than half of them had sufficient monthly income (65, 65 & 54%) respectively. Additionally, half of the studied patients (50%) had severe degree of Meniere's disease and the majority of them had overall poor quality of life. Highly statistically significant relations between patient's physical, psychological as well as environmental domains and the severity of disease was detected. Furthermore, there was a statistically significant relation between quality of life domains of the studied patients and all of their socio-demographic characteristics. Conclusion: Meniere's disease had a significant negative impact on the majority of patients 'quality of life. Accordingly, conducting a comprehensive assessment of patients' quality of life among patients with MD is necessary to determine the degree of suffering; this will help the nurses to predict their functional status and the effect of MD on their quality oflife.

Keywords: Meniere's disease, Patient's Quality of Life

Intoduction

Meniere's disease is a chronic, incurable vestibular (inner ear) disorder defined in 2091 by the **Committee on Hearing and Equilibrium of the American Academy of Otolaryngology- Head and Neck Surgery** [(1)] as "the idiopathic syndrome of endolymphatic hydrops. Meniere's disease has been reported as having a significant negative impact on emotional and psychological well-being and quality of life and they can severely disrupt activities of daily living [(2)]. Canadian Hearing Society (2017) [(3)] reported that hearing loss is one of the leading causes of disability in Canada and worldwide, with more than one million Canadians enduring a hearing-related disability. Despite the availability of various interventions, Canadians with hearing loss may endure adiminished quality of life. Meniere's disease (MD) is a condition that is thought to arise from abnormal fluid and ion homeostasis in the inner ear [(4)].

The disease is named for Prospere Meniere, a French physician who was first known victim of this disease. MD is a chronic, intermittent, and rare disorder affecting the inner ear characterized by fluctuating sensorineural hearing loss (SNHL), episodes of vertigo lasting from 20

minutes to hours, tinnitus, aural fullness and disequilibrium [5-8].

Moreover, early in MD, Sensorineural Hearing Loss (SNHL) starts unilateral and fluctuates, primarily affecting low frequencies then high ones. With disease progression, hearing loss starts to stabilize with moderate to severe sensorineural up to profound in advanced cases [9]. Development of the later secondary to bilateral MD is relatively rare but should occur. It was estimated that about 1-6% of patients develop severe to profound bilateral SNHL because of the natural progressive course of MD [10]. These symptoms may lead not only to physical consequences, including imbalance and hearing loss, but also mental and psychological problems, such as depression, anxiety, panic, and cognitive defects, especially in the elderly If left untreated[8].

The prevalence of Meniere's disease (MD) in the United States is estimated to be 190 per 100000. It is more likely to occur in women, and the prevalence increases significantly with aging [11]. Meniere's disease (MD) is a condition that frequently causes hearing loss and may have a large emotional and financial toll on patients, their families, and society that is often underestimated [5].

Impacts of MD on patients' quality of life can be severe, particularly with respect to restrictions in social participation and physical activity, fatigue, and reduced capacity to work [12]. Anxiety and other psychological disorders may result from these restrictions on life, the constant uncertainty of vertigo attacks, and fluctuating SNHL with neuroses and depression affecting 40 to 60% of sufferers of intractable MD [13]. Patients with Meniere disease report significantly impaired quality of life compared to healthy individuals [14].

In the light of this, the health-related quality of life (HRQOL) is a multidimensional concept, which reflects core components of functioning (e.g. physical, psychological/emotional and social functioning) in the context of medical conditions. HRQOL measurements evaluate the impact of MD on subjective well-being[15,16].

Aim of the study

This study aims toassess quality of life of patients with Meniere's disease

Research question:

What is the impact of Meniere's disease on patient's quality of life?

Subjectsand Method

Research design:

A descriptive research design was utilized to meet the aim of the present study.

Setting:

This study was conducted at ear, nose, and throat (ENT) department of Alexandria Main University Hospital. The hospital is affiliated to Alexandria University,Egypt.

Subjects:

A convenience sample of 100 adults of Meniere's disease' patients were included in the study.

The Epi info 7 program was used to estimate sample size according to the following parameters:

- Population size= 220 patients in2018-2019
- Expected frequency=50%.
- Maximum margin of error=10%.
- Confidence coefficient=95%.
- Estimated sample size = 100patients.

Inclusion criteria: Participants were included if they met the following inclusion criteria:

- Age: 20- 60 yearsold.
- Clinical diagnosis of Meniere'sdisease.

Exclusion criteria: Participants were excluded if they had any of the following:

- Uncontrolled hypertension, Diabetes Mellitus, or heartdisease.
- Patient who had any other disorders that affect patient balance and equilibrium as other neurological illness as brain tumoretc…..
- Patient who had any other medical conditions can result in hearing loss as: acoustic neuroma,eardrum rupture, labyrinthitis, neurofibromatosis type 2, otitis externa, otitis media with effusion,shingles,temporal arteritis, or vertebrobasilarinsufficiency.

Tools: Two tools were used to collect the necessary data in the current study:

Tool I: Socio-demographic and clinical data structured interview schedule: It will be developed by the researchers to collect baseline data. It consisted of two parts as follows:

Part I: Patient's Socio-demographic Characteristics: as age, gender, educational level, occupation, marital status, residence area and income.

Part II: Patient's Clinical Data: as family history, duration of disease, and severity of the disease. Severity of the disease was determined by using Meniere's disease Patient-Oriented Symptom Index (MD POSI). This index was developed by Gates (2012)[6] to provide an instrument that would measure the impact of inner ear problem on patients' health and well-being. It includes 20 items

signs/symptom scale concerning the patient's health status during the preceding threemonths.

The items asked about the effect of Meniere's Disease's attacks on hearing, balance, ears, and performing daily activities (4 items), in-between attacks on hearing, balance, mental concentration, performing daily activities, fear of travel, and memory loss (6 items), degree of MD impact on social life, being close to others, general mood, and outlook for the future (4 items), as well as the degree of it affection on employment (6 items). Each item had five response options. The total score was ranged from 20 to 100; the mean percentage of the total score was classified as showed at table(1).

Table (1): Total score and percentage of Meniere's disease severity

Score	Percentage	Items
0 <30	0 <30%	Mild
30 <60	30 <60%	Moderate
60-100	60-100%	Severe

The scale has been tested for internal consistency and reliability by the original authors.Cronbach‟s alpha for the entire instrument was 0.87, and it has a coefficient correlation of 0.85.

Tool II: Health-Related Quality of Life (HRQoL) of Meniere's Disease

It was adopted from Kato et al. (2015)[17]. It is a self-report questionnaire used to assess the effect of Meniere's disease on the patient's quality of life, functioning, and overall well-being. It consisted of a 26- items instrument which included four domains: physical (8 items), psychological (6 items), social (5 items) and environmental health domain (7 items). Each item was rated on a five-point Likert Scale and scored from one to five on a response scale. Total score is ranged from 26 to 130. Answers of the studied patients were

recorded, scored, and then summed together. The total score was converted into percent score as illustrated in table (2):

Table (2): Total score and percentage of patient's quality of life

Score	Percentage	Items
0 < 78	0 < 60%	Poor quality of life
78-130	≥ 60%	Good quality of life

Method

1- An approval from the Ethical Research Committee of the Faculty of Nursing, Alexandria University wasobtained.

2- An official letter was issued from the Faculty of Nursing, Alexandria University to the study setting to obtain their permission to collect necessarydata.

3- An official permission was obtained from the directors and head of the department of the selected hospital setting after explanation the aim of thestudy.

4- A socio-demographic structured interview schedule (tool I part I) was developed by the researchers.

5- Tools I part II and tool II will be translated into Arabic language. All tools were submitted to a jury composed of seven experts in the field of ENT and Medical-Surgical Nursing to test content validity of thescales.

6- A pilot study was initially carried out prior to the actual data collection phase on six patients to check clarity, feasibility and applicability of tools and determine obstacles that may be encountered during period of data collection, accordingly, needed modifications weredone.

7- The reliability of the study tools will be ascertained by measuring the internal consistency of their items using the Cronbach alpha

coefficienttest.

8- Every patient was interviewed individually once for 30-45 minutes, using the two tools to collect data related to quality of life of patients with Meniere'sdisease.

9- Data collection started at the beginning of August 2018 and ended of March2019.

Ethical considerations:

For each recruited subject, the following issues were considered:

- Written permissions from head of department.
- Securing the subject's written informed consent after explanation of researchpurpose.
- Assuring confidentiality of the subject'sdata.
- Anonymity of the study participants wasassured.
- Right to voluntary participation of the studysubjects
- Right to withdraw at anytime.

Statistical analysis of the data:

- After data were collected, they were coded and transferred into specially designed formats, so be suitable for computer feeding. Verification processes were carried out to avoid any errors during dataentry.
- The suitable statistical program was utilized (IBM SPSS software package version23.0)
- (Armonk, NY: IBM Corp) for both data presentation and statistical analysis of results.
- Qualitative data were described using number and percent and Quantitative data were described using range (minimum and maximum), mean and standarddeviation.
- Significance of the obtained results was judged at the 5%level.
- Cronbach's alpha reliability test was used to measure the reliability of all tools. Its maximum value is (α=1.0) and the minimum accepted value is (α= 0.7); below this level the tool would beunreliable.
- Comparisons between different groups regarding categorical variables were tested using the Chi - square test. When more than 20% of the cells had an expected count less than 5, corrections for chi-square were conducted using Monte Carlocorrection.

Results

Table (3) showed frequency and percentage distribution of the studied patients according to their socio-demographic characteristics. It was

found that about more than half of the sample (60%) were among the age group of (40 - 50 years). More than two thirds of studied patients were females, married and had low educational level (70%, 65% and 65%) respectively. Additionally, about two thirds of the studied patients were unemployed, coming from rural area and more than half of them had insufficient monthly income (65, 65 and 54%) respectively.

Table (4) depicted frequency and percentage distribution of patients with Meniere's disease according to their clinical data.The highest percent of patients (80%) had positive family history of Meniere's disease,in addition the majority of them (90%)diagnosed as MD since more than one year. As regards the severity of the disease, one third of sample (35%) had moderate degree of disease severity, whereas half of the studied patients (50%) had severedegree.

Table: (5) denoted relation and correlation between studied patients' quality of life domains and their severity of Meniere's disease. It was evident that, the majority of the studied patients had overall poor quality of life related to physical, psychological, social, environmental domains (81, 68, 68 and 64 %) respectively. Additionally, there were highly statistically significant relations between patient's physical, psychological as well as environmental domains and the severity of disease were all$p<0.001$.

Table (6): portrayed relation and correlation between studied patients' overall quality of life and their socio-demographic characteristics. This table revealed that, the studied patient who had poor quality of life were females, had low educational level, were unemployed, married, rural residents and had insufficient income (representing 34, 44, 29, 64, 60, and 45%) respectively. Furthermore, there was a statistically significant relation between quality of life scores of the studied patients and all of their socio-demographic characteristics except the marital status. ($P = 0.00$).

Table (3): Frequency and percentage distribution of the studied patients according to their socio-demographic characteristics

Socio-demographic characteristics	No	%
Age:		
20-	6	6.0
30-	14	14.0
40-	**60**	**60.0**
50- 60	20	20.0
X ± SD	**43.38±7.45 years**	
Gender:		
Male	30	30.0
Female	**70**	**70.0**
Level of education:		
Illiterate	20	20.0
Low education	**65**	**65.0**
High education	15	15.0
Occupation:		
Administrative work	10	10.0
Manual work	25	25.0
Unemployed	**65**	**65.0**
Marital status:		
Married	**65**	**65.0**
Divorced	5	5.0
Widow	15	15.0
Single	15	15.0
Residence area:		
Rural	**60**	**60.0**
Urban	40	40.0
Income: (From patient's point of view)		
Sufficient	46	46.0
Insufficient	**54**	**54.0**

X ± SD = Mean and standard deviation

Table (4): Frequency and percentage distribution of patients with Meniere's disease according to their clinical data

Clinical data	No	%
Family history:		
No	20	20.0
Yes	**80**	**80.0**
Diagnosed as MD since(years):		
≤ one year	10	10.0
> one year	**90**	**90.0**
Severity of the disease:		
Mild	15	15.0
Moderate	35	35.0
Sever	**50**	**50.0**

Table (5): Relation and correlation between studied patients' quality of life domains and their severity of Meniere's disease

Quality of life domains	Severity of Meniere's disease							
	Mild (n=15)		Moderate (n=35)		Severe (n=50)		X2	P
	No.	%	No.	%	No.	%		
Physical domain:								
• Poor quality	11	11.0	30	30.0	40	40.0	8.518	<0.001*
• Good quality	4	4.0	5	5.0	10	10.0		
Psychological domain:								
• Poorquality	15	15.0	18	18.0	35	35.0	7.681	<0.001*
• Good quality	0	0.0	17	17.0	15	15.0		
Social domain:								
• Poorquality	10	10.0	20	20.0	38	38.0	0.0555	0.960
• Good quality	5	5.0	15	15.0	12	12.0		
Environmental domain:								
• Poorquality	14	14.0	22	22.0	28	28.0		
• Good quality	1	1.0	13	13.0	22	22.0	3.681	<0.001*
Overall quality of life:								
• Poorquality	15	15.0	30	30.0	45	45.0		
• Good quality	0	0.0	5	5.0	5	5.5	12.019	<0.001*

χ^2: Chisquaretest *: Statistically significant at p ≤0.05

Table (6): Relation and correlation between studied patients' overall quality of life and their socio-demographic characteristics

Socio-demographic characteristics		Overall Quality of Life				Test of sig.
		Poor Quality		Good Quality		
		No	%	No	%	
Sex:	Male	30	30.0	0	0.0	χ^2 = 24.107 P =0.00*
	Female	34	34.0	36	36.0	
Level of education:	Illiterate	20	20.0	0	0.0	χ^2 = 38.301 P =0.00*
	Low education	44	44.0	21	21.0	
	High education	0	0.0	15	15.0	
Occupation:	Administrative work	10	10.0	0	0.0	χ^2 = 30.288 P =0.00*
	Manual work	25	25.0	0	0.0	
	Unemployed	29	29.0	36	36.0	
Marital status:	Married	64	64.0	1	1.0	Mc= 0.046 P=0.070
	Divorced	0	0.0	5	5.0	
	Widow	0	0.0	15	15.0	
	Single	0	0.0	15	15.0	
Residence area:	Rural	60	60.0	0	0.0	χ^2 = 84.375 P =0.00*
	Urban	4	4.0	36	36.0	
Income	Sufficient	10	10.0	36	36.0	χ^2 = 66.033 P =0.00*
	Insufficient	54	54.0	0	0.0	

χ^2: Chisquaretest Mc=Montecarlotest *: Statistically significant at p ≤0.05

Discussion

Meniere's disease (MD), a condition that causes hearing loss, has a variable clinical course and often an underestimated emotional and financial toll on patients, their families and society. MD consists of a triad of symptoms, including fluctuating sensorineural hearing loss (SNHL), vertigo attacks, and tinnitus. Quality of life can be dramatically impacted due to reduction in social participation, physical activity, increased fatigue, and diminished work capacity [(4)].

Aging is a significant factor influencing the course of MD; the present study demonstrated that more than half of the sample were among the age group of (40 - < 50 years). This finding was consistent with **Joy (2020)** [(18)] who reported that it is most likely to occur in people in their 40s and 50s. Additionally, **National Institute on Deafness and Other Communication Disorders (NIDCD) (2013)** [(19)] who stated that MD can develop at any age, but it is more likely to happen to adults between 40 and 60 years of age.

In relation to gender, in the current studied patients, the highest percent of them were females; this may be explained by many hormonal effects occur during the premenstrual period and compartmental fluid redistribution within the body may be the most pertinent. Endolymphatic hydrops represents a fluid imbalance within the inner ear and, when combined with an additional fluid shift, may produce symptomatic dysfunction. Case histories demonstrating the correlation of the symptoms of Meniere's disease, and the premenstrual period will be presented along with theoretical mechanisms of pathophysiology [(20)]. This result was congruent with the results of **Teixeira and Cavalcante (2017)** [(21)] who concluded that, females are expected to be diagnosed with MD three times more often thanmales.

The main findings of the current study revealed that, the majority of the studied patients were low educational level, married, unemployed, had rural residence and had insufficient monthly income. These findings were supported by **Lopez-Escamez et al., (2015)**[(7)] who mentioned that The cause of Meniere's disease is unclear but likely involves both genetic and environmental factors. Moreover, these findings were matched with **Haybach et al., (2013)** [(22)] who reported that some people with Meniere's disease find that certain events and situations, sometimes called triggers, can set off attacks. These triggers include stress, overwork, fatigue and emotionaldistress.

As regards family history, the findings of the present study revealed that the majority of the studied patients were had no family history of Meniere's disease. This finding

was congruent with **NIDCD (2013)** [19] who stated that Meniere's disease appears to run in families, and it could also be the result of genetic variations that cause abnormalities in the volume or regulation of endolymph fluid. Furthermore, this result was in the same line with **Martinez et al., (2020)** [23] who studied the genetics of MD and reported that MD is a complex set of rare disorders with a strong genetic contribution.

According to the clinical data of the studied MD patients, the results of current study revealed that, the majority of patients diagnosed as MD since more than one year and half of them had severe degree of disease. These findings were matched with **NIDCD (2013)** [19] who illustrated that, MD is a disorder of the inner ear that causes severe dizziness (vertigo), ringing in the ears (tinnitus), hearing loss, and a feeling of fullness or congestion in the ear. Attacks of dizziness may come on suddenly or after a short period of tinnitus. In addition to some people with Ménière's disease have vertigo so extreme that they lose their balance and fall. These episodes are called "drop attacks." In this context, **American Academy of Family Physicians (2019)** [24] who concluded that, Meniere's disease is a chronic (ongoing)problem.

Concerning the relation and correlation between studied patients' quality of life domains and their severity of Meniere's disease. The current study findings portrayed that there were significant negative impacts of MD on the majority of study patients' quality of life aspects as well as highly statistically significant associations between disease severity and patients' poor QOL. Moreover, the present study revealed that as the degree of disease severity is increased; as the studied patients with MD had poorer QOL in overall quality of life and all of domains including physical, psychological and environmental except the socialdomain.

Similarly, **Söderman et al., (2015)** [14] who found that, the Meniere's patients experienced a worse quality of life than did healthy subjects. Vertigo mainly influenced the physical dimension, whereas tinnitus and hearing loss influenced the psychosocial dimension. Sense of coherence had an impact on the psychosocialdimension.

Also, these findings are in agreement with **Tyrrellet al. (2017)** [25]who explained that each of the main triad of Meniere's symptoms can impact on quality of life. Tinnitus may be associated with sleep disturbance, depression, anxiety, irritability, reduced concentration and auditory difficulties. However, the current study findings differ from their findings in

that, the majority of their studied patients had associations between their poor QOL and social relationships because the hearing loss can result in communication difficulties, which can cause problems in work and social life.

These results could be related to the disease restrictions on physical activity due to dizziness and vertigo which might have led to restrictions on activities [26]. No doubt poor psychological and emotional status might be related to the functional problems, disease chronicity and the loss of hearing which develop fear and lose confidence to have conversations with others or at work, which can contribute to depression or anxiety. In the same context, **Petri et al. (2017)** [27]**, Weidt et al. (2014)** [28]**and Porter and Boothroyd (2015)** [29] who reported that, higher level of dizziness, vertigo, and depression in these patients had a negative effect on QOL of MDpatients.

Furthermore, the present study results revealed that, the studied patient who had poor quality of life were females, had low educational level, were unemployed, married, rural residents and had insufficient income. Moreover, there was a statistically significant relation between quality of life scores of the studied patients and all of their socio-demographic characteristics except the marital status.

These results were in line with **Orji (2014**) [30] in which, their results indicated that 63% of the Meniere's patients showed psychopathology such as anxiety and depression. In considering the duration of the illness, the patients who were longer affected by the disease had significantly more daily stressors, worse physical and social functioning, and more bodily pain. In addition, these findings were congruent with the result of **Söderman et al. (2019)** [31] who concluded that, Being exposed to emotional stress increases the risk of getting an attack of Meniere's disease during the next hour, and the hazard period is possibly extended up to 3 hours.

Conclusion

Based on the findings of the present study, it can be concluded that, the majority of the studied patients with Meniere's Disease had overall poor quality of life related to physical, psychological, social, environmental domains. Furthermore, there was a statistically significant relation between quality of life scores of the studied patients and all of their socio-demographic characteristics except the marital status. So, it can be said that Meniere's disease affect patients quality of life.

Recommendation

Based on the findings of the present study, it can be recommended that:

- More attention should be taken from departments head nurse about nurse's

assessment of patients' quality of life who had Meniere'sdisease.

- Standard of nursing care should be developed to improve the patients' who had Meniere's diseaseQOL.
- Rehabilitation programs are required to enhance patient's with Meniere's disease coping mechanisms.
- More research should be carried out in different areas in Egypt, to acquire more global understanding of the impact of Meniere's disease on patients'QOL.

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Effect of Self-Care Practice Health Educational Program for Patients on Urinary Tract Infection Recurrence

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Abstract

Background: Urinary tract infection is an infection that affects any part of the urinary system. Lack of knowledge and unhealthy behaviors are predisposing factors of recurrent UTI.**Thestudy aimed**to evaluate the effect of a self-care practice health educational program for patients on urinary tract infection recurrence.**Subjects and method:**Design: Quasi-experimental research design was used in this study. **Setting**: The study was conducted in the urology department and the urology outpatient clinic at Tanta University Hospitals.**Subjects**: Aconvenience sampling of 80 adult patients wasdividedinto two equal control and study groups.**Tools:**Four tools were used in thestudy. **Tool (1):**Structured interview schedule includes two parts, patients' socio-demographic data and patients' clinical data. **Tool (II):** Patients' knowledge assessment questionnaire. **Tool (III):**Urinary tract infection assessment toolconsists of three-part; risk assessment urinary tract infection recurrence, urinary tract infection manifestation checklist, and laboratory investigations. **Tool (IV):**Self-Care practice assessment tool. Results: Statistically significant improvements in the total scores of knowledge and self-care practices post-program intervention were found in the study group compared with pre-intervention. The recurrence rate decreased for patients in the study group compared with the control group during follow-up.**Conclusion**: The educationalprogram was effective for improving knowledge,self-care practices related to urinary tract infection which lead to a decrease in the recurrence rate. **Recommendation**: Implementation of a continuous educational program for patient self-care practice and preventive behaviors regarding UTI **in** different geographical areas.

Key Words: Urinary tract infection, recurrence, educational program, self-care practice.

Introduction

Urinary tract infection (UTI) is an infection that affects any part of the urinary system caused by the abnormal growth of pathogens [(1)]. UTI causes significant morbidity, affecting both sexes of all ages however, females are significantly more affected than males [(2)]. UTI is the second most common type of infection, accounting for nearly 25% of all infections [(3)]. About 152 million people developed UTI globally each year with an annual incidence of 12.6% in women and 3% in men [(4, 5)].Nevertheless, it is difficult to accurately assess the incidence of UTI in Egypt, because it is not a reportable disease. About 40% of patients who visit out-patient urology clinics at Tanta University hospitals are complaining of UTI symptoms [(6)].

Recurrent urinary tract infections are common, approximately 25%will develop recurrent infections within 6 months. Recurrent UTIs are defined as at least two documented UTI episodes within 6 months or three episodes within 12 months. The recurrences may be relapses or reinfections [(7,8)]. Escherichia coli are the most pathogen, responsible for more than 80% of community-acquired UTIs and about 50% of hospital-acquired UTI. In addition Klebsiella, Enterobacter, Proteus, Pseudomonas, Enterococcus, Staphylococcus, and others can also cause UTI [(9)].

UTI is classified by its location in the urinary system to lower or upper UTI, the presence of underlying diseases and anatomical or functional abnormalities of the urinary tract as uncomplicated UTI or complicated UTI, and the presence or absence of symptoms as asymptomatic or symptomatic[(10)]. Risk factors for urinary tract infections are alterations to the host's natural defense mechanisms, anatomical and physiological factors, age and sex, obstruction, instrumentation, and behavioral factors [(11)].

The most common complications of UTI are urolithiasis, stricture,Clostridium difficile colitis, renal failure, and sepsis. The diagnosis of UTI depends on clinical symptoms and a positive urine culture, the lower urinary tract symptoms are dysuria, frequency, urgency, hematuria, and suprapubic pain, while pyelonephritis is associated with fever, chills, and flank pain.Proper diagnosis and early treatment of urinary tract infection are crucial to prevent infection recurrence and its complications. [(12,13)].

About 25% of all antibiotic prescriptions are for UTIs and antibiotic resistance is a rising problem worldwide so, the world health organization has issued about prevention of infection before happening and the urgent need for antimicrobial-

sparing strategies to infectious diseases. In this regard, patients with recurrent UTIs are counseled about behavioral approaches before antimicrobial prevention strategies [14-17].

Management of UTIs involves pharmacologic therapy and patient education about the disease, how to deal with the symptoms, and prevent its recurrence. Since UTIs can be reduced with proper hygiene practices and healthy behaviors and prevalence of UTI can be a strong driver for self-care promotion. So providing health education for preventing UTIs is crucial to changing self-care patterns and reducing UTI. On the other hand, people need guidance and training for changing their health behaviors, and these positive changes in behavior can be met by health education [18-21].

Patient education is one of the most important roles for nurses in the health care setting. Nurses teach patients about self-care practices to ensure continuity of care. Implementing educational programs about self-care practices showed positive effects in the prevention of diseases and promotion of health [22].Self-care practices refer to activities and attitudes that individuals perform on their behalf in maintaining life, health, and well-being[23]. UTI-related self-care practices include; practicing careful personal hygiene, increasing fluid intake, urinating regularly, and following the therapeutic regimen [18]. Since the most predisposing factors for recurrence are behavioral risk factors. Therefore, we can reduce UTI recurrence by educating the patients about UTI and empower them for healthy behaviors [24]. Hence there is an urgent need to conduct a study about self-care practice health educational program related to urinary tract infection recurrence.

Significance of the study

Urinary tract infections are serious health problems affecting millions of people each year with a high recurrence rate. These infections have a significant influence on various aspects of the patients' quality of life and are associated with a significant disease burden and cost to patients and healthcare organizations [25, 26]. UTI has serious complications such as stones, stricture, sepsis, and renal failure [18]. Despite the importance of self-care educational actions in health promotion and prevention of UTI recurrence, there are not enough studies about urinary tract infection self-care practice. So this study was conducted to evaluate the effect of a health education program about self-care practices on the reduction of urinary tract infection recurrence.

Aim of the study

Evaluate the effect of self-care practice health education program for the patient on urinary tract infection recurrence.

Research hypothesis:

Post-implementation of the health educational program, the patients in the study group are expected to have higher mean scores and positive effects of self-care practice related to the reduction of urinary tract infection recurrence.

Subjects and Method

Research design:

A quasi-experimental research design was used in the current study .

Setting:

Our study was conducted in the urology department, Tanta University hospitals. It is composed of an out-patient clinic and 22 inpatient wards including 72 beds.

Subjects:

A convenience sampling of eighty adult patients (80) was included in the study according to inclusion and exclusion criteria. The sample size was calculated based on the power analysis using Epi-Info software statistical package version 2003. The included patients were divided into two equal groups (40 patients in each group) as follow:

Group I (study group) who received routine hospital care and health education program about UTI self-care practices implemented by the researcher.

Group II (control group) received routine hospital care only.

Inclusion criteria:

- Adult patients (21 -60 years old) either male or female.
- Newly admitted patients whatever the cause of admission and have not operated yet.
- Alert and able to communicate.

Exclusion criteria:

- Pregnancy.
- Patient with urinary catheterization.
- Patients with urological surgery.
- Diabetes mellitus.

Tools of Data Collection:

Tool I: Structured interview schedule

The interview schedule was developed by the researcher after review the recent related literature [14, 20, 21] to collect the personal data and data concerning urinary tract infection which consists of the following parts:

Part (1): Patient`s socio-demographic data includes: age, sex, marital status, level of education, residence, and occupation.

Part (2): Patient`s clinical data which includes: history that includes previous urinary tract infection, previous urinary operation, previous catheterization, previous hospitalization, and family history of urinary tract infection, In addition to diagnosis, vital signs, the chief complaints, any infection other than the urinary system, the current medications, laboratory investigations, and family planning method for female patients.

Tool II: Patient`s knowledge assessment questionnaire:-

It was developed by the researcher after review the recent related literature [14, 15, 27] to assess patients' knowledge regarding urinary tract infection. It includes (13) multiple choices questions about parts of the urinary tract, definition, causes, classifications, symptoms, and risk factors of urinary tract infection. Furthermore, practices that reduce UTI recurrence, measures that can relieve symptoms of UTI, complications of UTI, the commonly recommended treatment for UTI, and protocol of prescribed antibiotics for UTI. The patient needs to choose one or more correct answers for each question.

Scoring system:

The scoring system for knowledge was determined through:

- The correct and complete answer was scored (2)
- The correct and incomplete answer was scored (1)
- Don't know and wrong was scored(0)

The total scores for patients' knowledge were 26. It was calculated and classified as follows:

-Poor score was < 60% of the total score

-Fair score was from 60% to 75% of the total score

-Good score was > 75% of the total score

Tool III: Urinary tract infection assessment tool:

This tool was used to assess the risk factors and manifestations of UTI it consists of three parts:-

Part (1): Risk assessment urinary tract infection recurrence

This part was adapted from Lotfy [28] and modified by the researcher after reviewing the related literature to determine the risk factors for urinary tract infection recurrence. It was used once for each group and includes (26) close-ended questions about risk factors which were classified to **(a) non-modifiable risk factors** such as anatomical malformation, obstruction, immunosuppression, postmenopausal, and neurological condition. **(b) modifiable and behavioral risk factors** such as deferral of micturition, decreased fluids intake, excessive drinking of soda, tea, and coffee, hygienic practices after bowel habits and sexual activity, In addition to constipation, diarrhea, obesity, smoking, limited activity, contraceptive methods especially using of diaphragms or spermicides, and antibiotics abuse.

Scoring system:

Each item was scored by one for "yes" and zero for "no".

Part (2):- Urinary tract infection manifestation checklist

This part was adapted from Gomaa N. [29] and modified by the researcher to assess urinary tract infection manifestations. It includes close-ended questions about (a)

General manifestations of urinary tract infection (10 items) such as frequency, urgency, dysuria, fever, chills, malaise, tachycardia, nausea& vomiting, urine incontinence, and urinary retention. Also, (b) Local manifestation (10 items) such as suprapubic pain, flank pain, urethral pain, perineal pain, purulent urethral discharge, urethral irritation, inflammation of the perineal area, and change in the character of urine as color, odor, or consistency.

Scoring system:

Each item was scored by one for "yes" and zero for "no".

Part 3: Laboratory investigations

Urine culture was performed to determine the type of micro-organism, and the colonies count, More than 10^3 CFUs per ml in the urine culture is indicated to infection [30,31].

Tool IV: Self –Care practices assessment tool

It was developed by the researcher after reviewing the related literature [20, 21, 27] to collect data related to patient's reported self-care practices that reduce UTI recurrence. It contained (31) items divided into seven domains as follow; 1- practicing careful personnel (9 items), 2- adequate fluid intake (4 items), 3- voiding frequently and regularly (3 items), 4 -nutritional practices (5 items), 5- exercises and daily activities (4 items), 6 - maintain normal body weight (2 items), and 7- following the therapeutic regimen (4 items).

Scoring system:

Each practice item was measured on a five Likert Scale ranging from (0) never, (1) seldom, (2) sometimes, (3) often, and (4) always. The scores of the items were summed up and the total score was divided by the number of the items, giving a mean score for each part. These scores were converted into a percent score.

The practice was considered:-

- Satisfactory ≥ 60% of the total score.
- Unsatisfactory < 60% of the total score.

Ethical considerations:

- Official permission was obtained from the head of the urology department and the director of the Student Hospital at Tanta University after an explanation of the study's aim.
- Informed consent for participation was obtained from every patient after an explanation of the study aim and the patients were informed that the study will not cause any harm or pain to them.
- Patients were assured about the confidentiality of data and anonymity as code number was used instead of names.
- The patients were told about their right to withdraw at any time of data collection.

Method of data collection:

1. The tools of the study were developed and modified after reviewing the related literature and translated into the Arabic language.
2. The tools were validated by five experts; three of them are assistant professors of medical surgical nursing and two assistant professors of the urology department at the Faculty of Medicine, Tanta University. Modifications were carried out accordingly.
3. The reliability of tools was tested using the Cronbach Alpha Coefficient test, Cronbach's Alpha for the sheet in total is 0.847
4. A pilot study was done for 10% of patients (n=8) after the experts' opinion and before starting the actual data collection to test the feasibility and applicability of the tools and to determine any obstacles that may be encountered during the period of data collection, accordingly, needed modification was done. Those patients were excluded from the study.
5. Data were collected for 9 months from September 2019 till the end of May 2020.
6. The present study was conducted through four phases (Assessment, planning, implementation, and evaluation):

1 -Assessment phase:

Assessment of the patient baseline data usingTool I part (1) and part (2), Tool II to assess the patient's knowledge about UTI, Tool III part (1) to assess the risk factors of urinary tract infection recurrence, part (2) to assess urinary tract infection manifestations and part (3) to assess the growth of microorganism in the urine culture and the colony count. Tool IV was used to assess the patient`s self-care practices related to the prevention of urinary tract infection. Those four tools were used for both study and control groups.

2 -Planning phase:

The educational program about urinary tract infections which aims to improve the patient's knowledge and self-care practices, that may lead to the reduction of urinary tract infection recurrence was designed by the researchers based on the related literature [8, 17, 20, 21], and the needs identified during the pre-test assessment while goals and expected outcome were regarded. PowerPoint and an illustrative structured booklet were prepared by the researcher and written in simple Arabic language contained colored pictures for attracting patients and to facilitate patients' understanding as a guide for the study group.

3 -Implementation phase:

An educational program for patients regarding urinary tract infection was developed and implemented by the researcher based on the patient's need, relevant literature, and, expected outcomes. Motivation and encouragement were used to enhance the patient's sharing in this study. The educational program sessions were implemented for 40 patients (the study group) divided into eight groups each group consists of five patients. To implement the educational program, various methods of teaching were used such as lecture, group discussion, demonstration, and re-demonstration, while the educational aids were videos, booklets, and power-point which prepared by the researcher based on literature review. The booklet about urinary tract infection was distributed to the patients, so they can use it as a home reference. The program was covered in five sessions, each session lasts for 20-30 min for five consecutive days. The program included three theoretical sessions and two practice sessions for the study group about urinary tract infection

4 -Evaluation phase:

The effect of the educational program was assessed after the implementation of the educational sessions using tool II to assess the patient's knowledge about UTI for the study group immediately after the program implementation.

Both control and study groups were followed up using Tool III part (2) and (3) to assess urinary tract infection manifestations and urine culture after one month, three months, and six months after the program implementation. Tool IV was used one month after the implementation of the educational program for the study group to assess patients' self-care practices related to the prevention of urinary tract infection. Additionally, the outcomes of the program were compared between the study and control groups before and after the program.

Statistical analysis:

The collected data were organized, tabulated, and statistically analyzed using SPSS software statistical computer package version 26. For comparison between means of variables for two groups, an independent T-test was used. For comparison between means for variables pre and post-intervention in a group, a paired-samples T-test was used. Pearson and Spearman's correlation coefficients were used to assess the correlation between variables.

Results:

Table (1) illustrates the distribution of the patients according to their socio-demographic characteristics. It is found that slightly more than one-third (35%) of the control group were in the age (50- 60) years while in the study group less than one-third (32.5%) are between (40-50) years. Also, less than two-thirds (65%, 62.5%) are males in the control and the study groups respectively and the majority of them (82.5%) are married. In addition, less than two-thirds (60%) of both groups live in rural areas. Also, it is found that slightly more than half (52.5%) of the control group are secondary educated and more than one-quarter (27.5%) of the study group are illiterate. Additionally, more than one-third (35%, 37.5%) of the control and the study group respectively are workers.

Table (2) revealsthat around half (52.5%), (47.5%) in the control and the study group respectively had a history of urinary stone and most patients (70%), (85%) in the control and the study group respectively had a previous UTI. Also, it is found that (40%), (47.5%) in the control and the study group respectively had a previous operation in the urinary tract. Moreover,it reveals that (47.5%), (62.5%) of the control and the study group respectively had a previous hospitalization. Additionally, less than one-third (30%) of the studied patient in both groups had a family history of UTI.

Figure (1): This figure represents that the majority (95%, 90%) of the control group and the study group respectively have a poor level of the total level of knowledge before the educational program, while the total level of knowledge was improved to the good level in the majority (92.5%) of the study group post-program. **.**

Figure (2) illustrates that (22.5%) of the control group and (12.5%) of the study group their urine cultures were sterile (no growth) before the program while improved to (70%,75%,85%) in the study group at 1,3 and 6 months respectively after the program compared with the control group, it was (55%,65%, and 75%) post 1,3 and 6 months.

Figure (3) shows that there was no difference between control and study groups in all self–care practice domains pre-educational program. While there was an improvement in the mean scores of self–care practice domains in the study group post-educational program.

Figure (4) shows that the majority (92.5%, 95%) of the control group and the study group respectively have unsatisfied practices before the program implementation, while the majority (90%) of the study group their practices become satisfactory after program implementation.

Table (3) shows that there is a positive weak non-significant correlation between total knowledge level and total practice

level for both control and study groups preprogram while there is a positive highly statistically significant correlation between total knowledge level and total practice level for the study group post-program (r=0.646, p=0.000).

Table (4) it is observed from this table that there is a positive weak non- significant correlation (r=0.149, p= 0.359 and r=0.194, p= 0.231) between the total knowledge score and the sterility of the urine for both control and study group respectively preprogram while, in the study group post-program there is a positive highly significant correlation as r= 0.585**,** p=0.008. Also, this table shows the negative significant correlations between the total level of knowledge and frequency, urgency, dysuria, and flank pain for the study group post-program implementation where (r= -0.291, p=0.026 , r= -0.325, p=0.037 , r= -0.345, p=0.014 and r=-0.413, p=0.034) respectively.

Table (5) it is observed from this table that there is a positive weak non- significant correlation (r=0.265, p= 0.098 and r=0.060, p= 0.714) between the total practice score and the sterility of the urine for both control and study group respectively preprogram while, in the study group post-program there is a positive highly significant correlation as (r= 0.745**,** p=0.001). Also, this table shows the negative significant correlations between the total practice level and frequency, urgency, dysuria, and flank pain for the study group post-program implementation where (r= -0.251, p=0.049 , r= -0.645, p=0.013 , r= -0.362, p=0.024 and r= -0.524, p=0.032) respectively.

Table (1): Distribution of the studied patients according to their socio-demographic characteristics.

Characteristics	The studied patients (n=80)				χ^2 P
	Control group (n=40)		Study group (n=40)		
	N	%	N	%	
Age (in years)					
▪ (21-< 30)	10	25.0	9	22.5	
▪ (30-< 40)	10	25.0	10	25.0	4.268
▪ (40-< 50)	6	15.0	13	32.5	0.234
▪ (50-60)	14	35.0	8	20.0	
Gender					
▪ Male	26	65.0	25	62.5	FE
▪ Female	14	35.0	15	37.5	1.00
Marital status					
▪ Married	33	82.5	33	82.5	1.077
▪ Single	6	15.0	7	17.5	0.584
▪ Divorced	1	2.5	0	0.0	
Place of residence					
▪ Urban	16	40.0	16	40.0	FE
▪ Rural	24	60.0	24	60.0	1.00
Educational level					
▪ Illiterate	13	32.5	11	27.5	
▪ Read and write	4	10.0	10	25.0	
▪ Basic education	1	2.5	3	7.5	5.01
▪ Secondary education	21	52.5	8	20.0	0.085
▪ Higher education	1	2.5	8	20.0	
Occupation					
▪ Worker/Technician	14	35.0	15	37.5	
▪ Employee	2	5.0	9	22.5	6.735
▪ Housewife	13	32.5	10	25.0	0.081
▪ Not work	11	27.5	6	15.0	

FE: Fisher' Exact test

Table (2): Percentage distribution of studied groups according to their past medical history

# Past medical history	The studied patients (n=80)				χ^2 P
	Control group (n=40)		Study group (n=40)		
	N	%	N	%	
1-Urinary stone	21	52.5	19	47.5	
2-kidney disease	2	5.0	2	5.0	
3-Hypertension	9	22.5	4	10.0	1.107
4-Previous urinary tract infection	28	70.0	34	85.0	0.478
5-Previous urinary operation	**16**	**40.0**	**19**	**47.5**	
Site of the previous operation	**(n=16)**		**(n=19)**		
▪ Kidney	7	43.8	8	42.1	FE
▪ Ureter	9	56.2	11	57.9	1.00
6-Previous urinary catheterization	10	25.0	17	42.5	FE
7-Previous hospitalization	**19**	**47.5**	**25**	**62.5**	0.138
Duration of the previous hospitalization	**(n=19)**		**(n=25)**		
▪ Less than one week	18	94.7	22	88.0	FE
▪ More than one week	1	5.3	3	12.0	0.622
8-Family history of urinary tract infection	12	30.0	12	30.0	0.00 1.00

FE: Fisher's exact test # More than one answer was chosen.

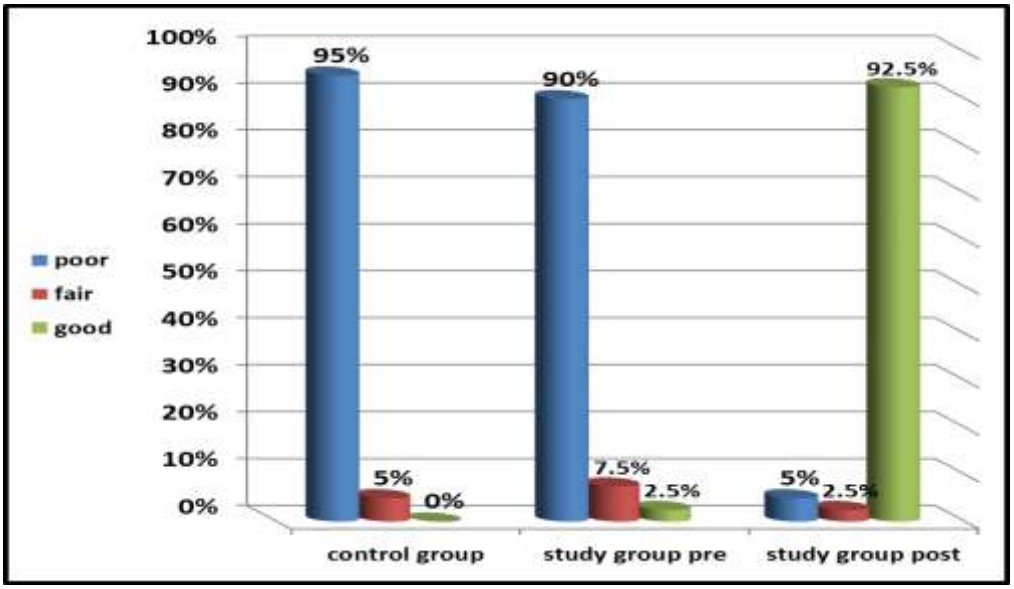

Figure (1): Distribution of the studied groups according to their total knowledge level about urinary tract infectionpre and post-educational program.

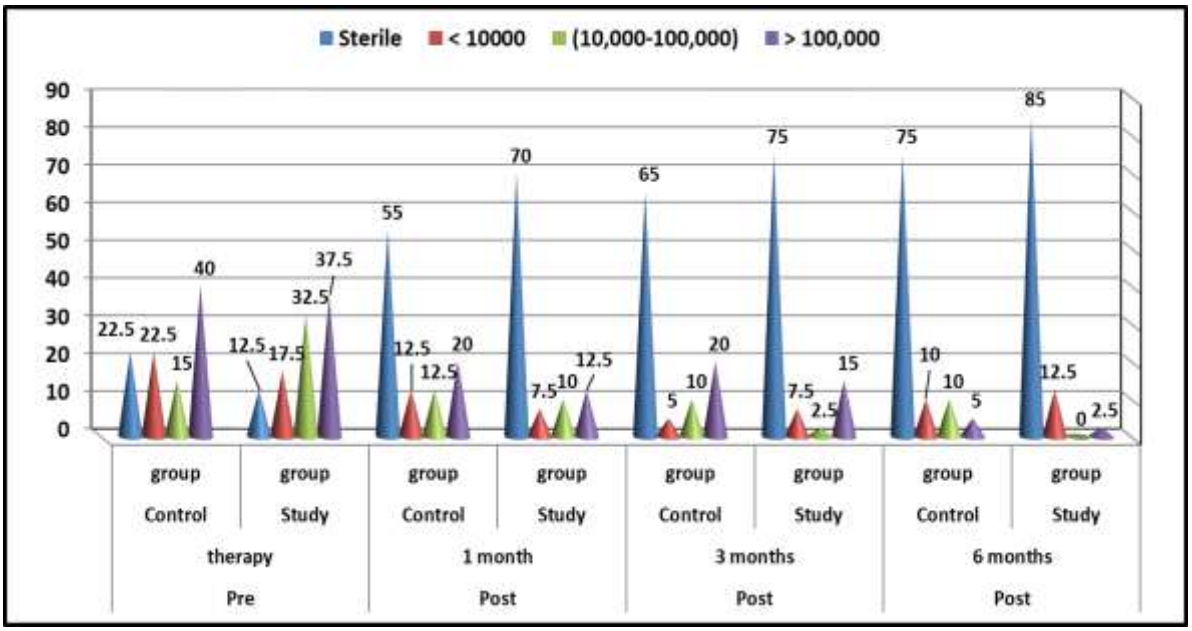

Figure (2) percentage of both control and study group according to their urine culture results during periods of the study.

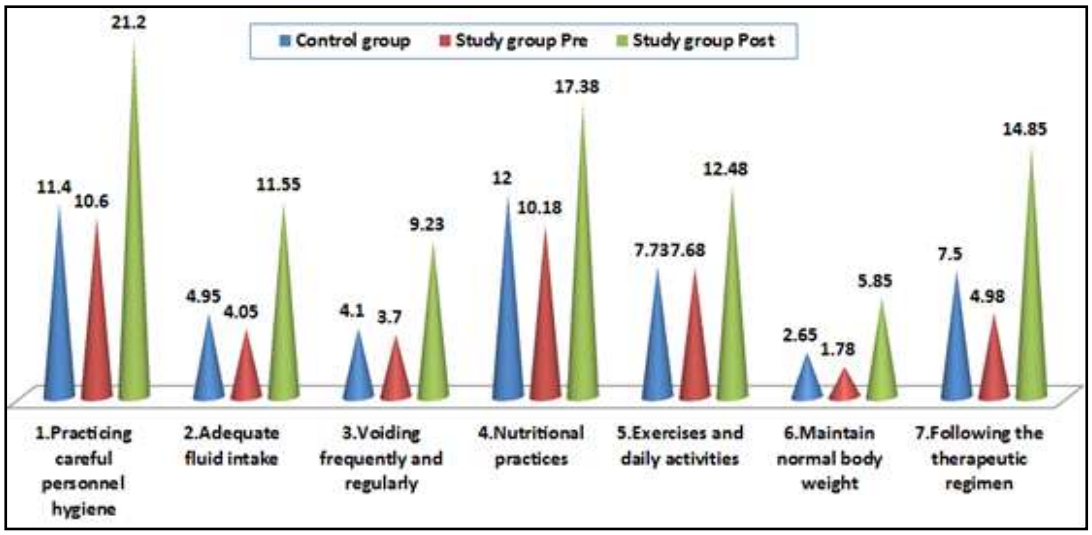

Figure (3): total mean scores of self–care practice domains among the studied groups pre and post-educational program.

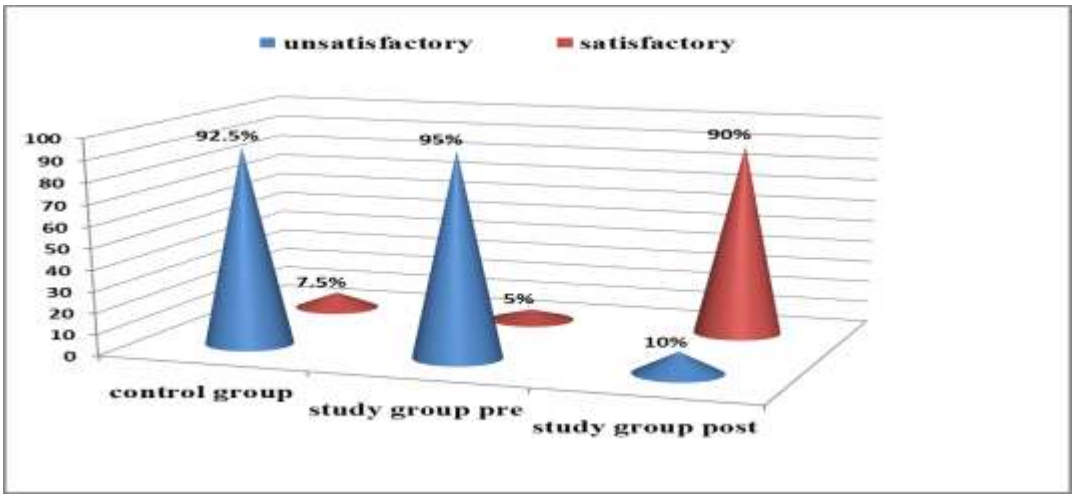

Figure (4): Percentage distribution of the studied groups according to their total self–care practice level pre and post-educational program.

Table (3): Correlation and relationship between total Knowledge level of the studied patients and their total practice level pre and post-educational program.

Total Knowledge Level	Total practice level											
	Control group (n=40)				Study group (n=40)							
					Pre				Post			
	Unsatisfactory (n=37)		Satisfactory (n=3)		Unsatisfactory (n=38)		Satisfactory (n=2)		Unsatisfactory (n=4)		Satisfactory (n=36)	
	N	%	N	%	N	%	N	%	N	%	N	%
▪ Poor	37	92.5	1	2.5	36	90.0	0	0.0	2	5.0	0	0.0
▪ Fair	0	0.0	2	5.0	2	5.0	1	2.5	1	2.5	0	0.0
▪ Good	0	0.0	0	0.0	0	0.0	1	2.5	1	2.5	36	97.5
χ^2, P	-				-				FE, 0.025*			
r , P	0.213 , 0.187				0.073 , 0.655				0.646 , 0.000**			

r: Pearson correlation coefficient FE: Fisher' Exact test
* Significant at level P<0.05. ** Highly significant at level P<0.01

Table (4): Correlation between the total knowledge score and the colony count/ml & infection manifestation among the studied groups pre and post the educational program.

	The studied patients (n=80) Total knowledge score					
	Control group (n=40)		Study group (n=40)			
			Pre		Post	
	R	P	r	P	r	P
Colony (count/ml) Sterile	0.149	0.359	0.194	0.231	**0.585**	**0.008****
Urinary tract infection manifestation						
1. Frequency	0.080	0.626	-0.106	0.514	**-0.291**	**0.026***
2. Urgency	-0.165	0.309	0.048	0.769	**-0.325**	**0.037***
3. Dysuria	0.059	0.719	-0.251	0.119	**-0.345**	**0.014***
4. Flank pain	0.052	0.751	-0.011	0.944	**-0.413**	**0.034***

r: Spearman's correlation coefficient

* Significant at level P<0.05. ** Highly significant at level P<0.01

Table (5): Correlation between the total practice score and the colony count/ml &infection manifestation among the studied groups pre and post the educational program.

	The studied patients (n=80) Total practice score					
	Control group (n=40)		Study group (n=40)			
			Pre		Post	
	r	P	r	P	r	P
Colony (count/ml) Sterility	0.265	0.098	0.060	0.714	**0.745**	**0.001****
Urinary tract infection manifestation						
1. Frequency	0.278	0.082	-0.114	0.484	**-0.251**	**0.049***
2. Urgency	-0.192	0.235	0.255	0.112	**-0.645**	**0.013***
3. Dysuria	-0.033	0.842	-0.159	0.326	**-0.362**	**0.024***
4. Flank pain	-0.163	0.218	-0.112	0.098	**-0.524**	**0.032***

r: Spearman's correlation coefficient

* Significant at level P<0.05. ** Highly significant at level P<0.01

Discussion

Urinary tract infection is one of the most prevalent infectious diseases worldwide affecting people of all ages. Urinary tract infection is an important health concern

worldwide and its treatment has recently become extremely difficult due to antimicrobial resistance[32]. People must know about the definition, risk factors, signs & symptoms and, preventive measures of UTI. If people have adequate knowledge, they can use their knowledge to prevent UTI.

Over the years, the concepts of self-care have been greatly studied. Because of this finding, self-care is important in improving health outcomes, improving the quality of life, and reducing the cost of health care [33]. Therefore, the present study was conducted to evaluate the effect of self-care practice health educational program for patients on urinary tract infection recurrence.

Regarding socio-demographic data of the studied groups, the results of the present study found that about one-third of the patients in both the control and the study groups were (50-60) and (40-50) years old respectively. This may be attributed to low immunity or complicated factors such as enlarged prostate in males which is common at this age and menopause in females. This finding is in harmony with **Gomaa, (2013)** [29] who stated that more than one-third of the patients in both control and study groups were (41-50) years old

Concerning sex the current study revealed that about two-thirds of both groups were male this is maybe due to males are more likely to visit the hospital more than females or females are embarrassed to seek medical care related to genitourinary in our culture. This finding was in line with **El Lawindi et al., (2015)** [34] and, **John et al., (2016)** [35]who reported that males constituting slightly less than two-thirds of total cases.

Also, it was cleared from this study that most of the control and the study groups were married and about two-thirds of them live in a rural area, these findings were inconsistent with the study of **Monalisa et al., (2017)** [36] they found three-quarters of the subjects were rural habitats and more than three-quarters were married. Moreover, concerning the level of education, it was found that about half of the study patients were secondary and high education. In line with our finding **Hassanine et al., (2018)** [37]found that around half of the study and control groups were intermediate and high education.

Regardingthe past medical history, it was found that around half of the studied

patients in the control and the study group had a history of urinary stones. This is consistent with the study of **Schwaderer and Wolfe, (2017)** [38]who stated that bacteria and urinary stone disease are clinically associated as the urinary stone is a predisposing factor for recurrent urinary tract infection and vise versa. Also, this finding is supported by the study of **Khan et al., (2015)** [39] who found that less than two-thirds of patients with a previous or current history of urolithiasis, were diagnosed with UTI.

Related to previous UTI, it was revealed that most of the patients of the control group and the study group had previous UTI. This finding may be due to the most of our participants had complicating factors as urinary stones, stricture, and enlarged prostate. these findings agree with **Minejima et al., (2019)** [40]who stated that more than half of patients had a history of previous UTI, while in **Changizi et al., (2014)**[41] was slightly less than a quarter and in **Arunachalamet al., (2017)** [42] was one-third, Also, it was found that more than one-third of the control group and slightly less than half of the study group had the previous operation in the urinary tract this may be attributed to that most of the patients in both groups have recurrent stone and stents have been placed. Additionally, it was found that more than half of the patients in the control group and one-third in the study group had the previous hospitalization this may be due to they had complicating factors and previous urinary operations. Our finding was consistent with **Gomaa, (2013)**[29].

The present study findings revealed that there were serious deficiencies in patient's knowledge regarding all the items related to UTI such as definitions, types, causes, predisposing factors, manifestations, complications, preventive measures, and treatment as the majority of the control and the study groups had poor knowledge before the educational program. This is maybe due to our patients didn`t receive any previous information or educational sessions about UTI. These findings were in agreement with a study in Egypt conducted by **Mohamed H et al., (2019)**[43] who revealed that most of the adolescent students had poor knowledge regarding UTI. Another study in Filipino by **Navarro et al., (2019)**[44] concluded that the majority of the respondents had unsatisfactory knowledge of UTI. The studies of **Khanal et al., (2014)**[45]**and El Lawindi et al.,(2015)**[34] also support ourfindings.

On the contrary, the study conducted by **Changizi et al., (2014)**[46] have shown that less than three-quarters of the participants had good knowledge and the findings of the study conducted by **Mangai et al., (2019)**[47] revealed that the majority of the

respondents had good knowledge about urinary tract infection. This is attributed to they received information about urinary tract infections by health care staff and by mass media, in addition to the high educational level of their participants.

Moreover, according to the present study findings, there was a statistically significant difference between pre and post the educational program in the study group's knowledge regarding all items. As the majority of the study group their total level of knowledge improved from poor level to good level. This significant improvement may be attributed to the content of the program which presented in a simple manner using audiovisual aids and the distribution of an illustrative booklet to the study group participants. On the other hand, most of the patients were keen to learn about their body parts and know about the disease.

Additionally, this finding is consistent with a study conducted in Saudi Arabia by **Ahmed and Khresheh, (2016)**[48] who concluded that the majority of the studied women had a good level of knowledge related to UTI immediately after the educational program. Also, this finding was supported by the study conducted by **Kharadi, (2019)**[49]whostated that all the respondents had adequate knowledge post-program implementation.Such finding agreed with a study conducted in Zagazig City, Egypt by **Nofal et al., (2019)**[50]who reported that there was a significant improvement in the knowledge about UTI after the educational program.

Regarding the result of the urine culture, our findings revealed that less than one-quarter of the control group and one-eighth of the study group had no growth of microorganisms in their urine culture before the educational program which increased in both groups during the period of follow-up post the educational program. Moreover, there were significant differences between the control and the study groups after one, three and, six months. This could be due to the positive effect of the educational program on the behavior and attitude of the study group in addition to following the therapeutic regimen while the control group receiving medicine only. Consequently, the recurrence rate decreased in the study group comparing with the control group. The current findings were in the same line with **Nofal et al., (2019)**[50] who found that about 10% of samples were sterile and **El-Ghareeb, (2018)**[51] who found that (20%) of urine sample were negative. While in the study conducted at Menoufia University Hospitals, Egypt by **Elraghy et al., (2016)**[9] who reported that no growth was reported in two-thirds of the urine

cultures. These disparities may be due to the intake of antibiotics.

The present findings revealed that the majority of the control and the study groups had unsatisfied **total self-care practices levels** before implementation of the educational program. Meanwhile, most of the study group their total self-care practices level improved to a satisfactory level one month post-program. This is promising that education can improve hygienic practices and the patients are willing to adhere to healthcare personal advice. So this improvement in the practices is related to an improvement in the knowledge which is the result of the educational program for the study group. These findings agree with the study of **Heydari et al., (2019)**[52] who stated that intervention and control groups showed no difference with each other before intervention ($p>0.05$). Nevertheless, after the intervention, mean scores in all aspects of behavior in the intervention group were significantly improved ($p<0.05$). Furthermore, a previous study conducted in Egypt by **Shaheen et al., (2016)**[53] showed that unsatisfactory personal hygiene had a significant role in developing UTI.

Concerning the correlation and relationship between the total Knowledge level of the studied patients and their total practice's level, the finding of the present study showed that there was a positive non-significant correlation between total knowledge level and total practice level for both control and study groups preprogram while there was a positive highly statistically significant correlation between the total knowledge level and total practice level for the study group post-program. This may be because when knowledge increase, practices tend to be healthier. Similar to these findings **Mahmoud et al., (2019)**[54] reported that there was a positive correlation between pre and post-intervention among study group knowledge and self-care practices with statistical significance at p values of ≤ 0.001 post-intervention. Also, supported by **Mohamed et al. (2019)** [55] who stated that there was a strong statistically significant positive correlation between knowledge and practices.

Regarding the correlation between the total knowledge score with the urine culture result and infection manifestation. The study showed that there was a positive highly significant correlation between the total knowledge score and the sterility of the urine for the study group post-program as the urine sterility was increasing with the knowledge improvement. On the other hand, there were negative significant correlations between the total level of knowledge and manifestations of UTI such as frequency, urgency, dysuria, and flank

pain for the study group post educational program implementation as improving knowledge lead to decreasing the manifestation of UTI. We can conclude from this, by increasing knowledge the urinary tract infection can be reduced.

Concerning the correlation between the total practices score and the urine culture result and infection manifestation. The study showed that there was a positive highly significant correlation between the total practice score and the sterility of the urine for the study group post-program as the urine sterility was increasing with the improvement of the practice. On the other hand, there were negative significant correlations between the total level of practices and the manifestation of UTI such as frequency, urgency, dysuria, and flank pain for the study group post-educational program implementation as improving practices decreasing the manifestation of UTI. We can conclude from this, by enhanced healthy practices the urinary tract infection can be reduced.

Finally, this study emphasized that there was a lack of patient knowledge regarding urinary tract infection and unsatisfactory self-care practices related to reducing the recurrence of UTI before the educational program while after program implementation their knowledge and the practices significantly improved. Hence, the recurrence rate decreased and the symptoms of UTI relieved. Therefore, the need to raise awareness regarding UTIs and to expand services for prevention and periodic screening for high-risk groups is crucial.

Conclusion

According to study results and the research hypothesis, asignificant improvement in the total level of knowledge and self-care practices for the study group was observed after the program implementation. Also, the frequency of UTI manifestations and the growth of micro-organisms in the urine culture for the study group decreased throughout the study comparing with the control group.

Recommendations

1. Implementing continuous self-care practice health education programs regarding urinary tract infection in outpatient clinics and the urology departments.
2. A brochure about urinary tract infection self-care practices should be distributed to high-risk patients in the urology departments.
3. Periodic screening and follow-up for high-risk groups.
4. Further research on a larger probability sample is recommended to achieve the generalized capability and

wider employment of self-care practices.

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Abstract:

Background: Central line associated blood stream infections are serious but can often be prevented when evidence-based guidelines that are used by critical care nurse through utilized infection control measures during insertion and maintenance of central lines. **Aim of the study** was to evaluate the effect of educational guidelines on nurse's knowledge and practice regarding central line associated blood stream infection at intensive care unit. **Subjects and Method:Research design:** The present study utilized a quasi- experimental research design. **Setting:** The study was conducted at: Anesthesia Intensive Care Unit and Medical Intensive Care Unit of Emergency Hospital affiliated to Tanta Main University Hospital. Neurological Intensive Care Unit of Tanta Main University Hospital. **The study subjects:** All nurses (100) who are providing care for patients with central venous catheters and were having at least one year of experience. **Tools:** Two tools were used to collect the data; structured interviewing sheet and an observational checklist for nurses' practice. **Results:** The main results revealed that there was significant statistical improvement in the total knowledge and practice level among the studied nurses post nursing educational guidelines. **Conclusion:** the implementation of nursing educational guidelines hasa positive impact not only in improving nurses' knowledge and practice regarding central line care but also, decrease rate of central line associated blood stream infection**. Recommendation:** it was recommended that nurses should attend in-service training programs for improving their knowledge and enhancing their practice.

Key words: Central Line Associated Blood Stream Infection, Educational Guidelines, Knowledge, Practice.

Introduction

Central lines (CLs) have a multitude of complications that are associated with their placement. Health care associated infection particularly central line associated blood stream infection (CLABSI), contribute to the greatest threat to patient safety in critical care units which lead to increase mortality and morbidity rate. These complications can cause a significant healthcare burden in cost and patient quality of life. Recognition and management of central line complications are important when caring for patients with vascular access, but prevention is the ultimate goal [1, 2].

The central line associated blood stream infection has been defined by the Centers for Disease Control and Prevention (CDC) as a laboratory-confirmed primary bloodstream infection in patients who had a CL for at least 48 hours, which is not related to an infection at another site. The use of CLs is common for critical ill patients. However, CLABSI is caused by microorganisms that colonize the external surface of the device or the fluid pathway when the device is inserted, as well as an infection that occurs over the course of use [3, 4]. CLABSIs are serious but can often be prevented when evidence-based guidelines that are used by critical care nurse through utilized infection control measures during insertion and maintenance of CLs [5].

Following such guidelines which include optimal site selection that avoid femoral vein in adult patients and use of subclavian rather than jugular veins, the use of maximal sterile barrier precautions during catheter insertion, alcohol-based chlorhexidine 2% skin preparation and maximum barrier precautions [6].

Additionally, maintenance guidelines consist of daily review of central line necessity, prompt removal of unnecessary lines, clean the hands with an alcohol-based hand rub solution before any manipulation of the infusion line, disinfect catheter hubs, ports, connectors before using central venous catheter (CVC) and removing any useless catheters [9, 10]. Also, change dressings and disinfect site with alcohol-based chlorhexidine every 48hours and replace administration sets within 24 hours can considerably reduce the risk of infection and mortality in patients [11].

The nurse play a major role in providing care to the patients in all phases of central line insertion to control the infection which can help for decreasing the risk of central venous catheter related blood stream infection [12] . They assist in CL insertion as they select the optimal site for insertion with avoidance of femoral veins in adult

patients. The critical care nurse should maintain aseptic techniques, use maximal protective barrier precautions and use chlorhexidinegluconate 2% skin preparation before insertion [13, 14].

After insertion, the role of the nurse not limited to giving intravenous antibiotic prophylaxis but also include care of dressing, withdrawing a venous blood sample, and delivery of drugs. As well, critical care nurses teach the patients and their family about the care of central venous catheters. Therefore, they contribute to the decline of infection. Besides, integrated infection control programs, including supervision of hospital acquired infections have brought to a notable decline in the rate of infections in the intensive care unit (ICU) with resulting lowered health care costs [15-18].

Significant of the study

Critical care nurses have important roles in preventing CLABSI, so they must have the ability to know how to prevent complications associated with CL insertion and provide high quality of care. This is carried out through demonstrated of best practices utilization for assessment and maintenances of CVCs prior, during and at the end of the hospital duration which is the basic principles in preventing many complications related to CVC utilization [19]. A well trained nursing team on assessment and maintenance of CVC and the application of standardized evidence based guidelines are key success factors strongly influencing the incidence of CVC long term complications [20].

So, it is important for improving critical care nurses knowledge and practice which is the key factor in reducing CLABSI through educational guidelines that may result in significant decrease in critically ill patient's morbidity and mortality rate

When staff nurses feel supported from their head nurses to suggest new processes and share their ideas in a supported environment, they will be more

Aim of the Study

Evaluate the effect of educational guidelines on nurse's knowledge and practice regarding central line associated blood stream infection at intensive care unit**.**

Research hypothesis:

Total level of knowledge and practice mean scores of intensive care unit nurses would be improved post implementation of educational guidelines regarding central lineassociatedblood stream infection.

Subjects and Method

Study design:

The present study utilized a quasi-experimental research design which had been used to evaluate the effect of educational guidelines on nurse's knowledge and practice regarding central

line associated blood stream infection at intensive care unit.

Setting:

The study was conducted at Anesthesia Intensive Care Unit and Medical Intensive Care Unit of Emergency Hospital affiliated to Tanta Main University Hospital. Neurological Intensive Care Unit of Tanta Main University Hospital.

Subject:

All nurses (100) from above mentioned settings who are providing care for patients with central venous catheters and were having at least one year of experience. They were divided as following: 50 nurses from Anesthesia Intensive Care Unit, 30 nurses from Medical Intensive Care Unit and 20 nurses from Neurological Intensive Care Unit.

Tools of data collection

Two tools were used to determine the effect of educational guidelines on nurse's knowledge and practice regarding central line associated blood stream infection, which include the following:-

Tool (I): Structured interviewing:

It was comprised of two parts:

Part A: Socio demographic dataof nurses; which included; nurse's code, age, sex, marital status, level of education, occupation, years of experience and previous training about care of central line.

Part B: Nurse's knowledge assessment sheet:

It was developed by the researcher after reviewing of related literature [21- 24] to evaluate nurses' knowledge pre, immediate and 2-months later post implementation of educational guidelines regarding central line associated blood stream infection.

Scoring system of knowledge;

Two level of scoring for questions were used as the following:

- Correct and complete answer will be scored (2)
- Correct and incomplete answer will be scored (1)
- Incorrect answer will be scored (0)

The total scoring system of nurses' knowledge was (112) and classified as the following:

-Good → > 75% of the total score

-Fair → ≥ 60% - 75% of the total score

-Poor → < 60% of the total score

Tool (II): An observational checklist regarding nurses' practice

This tool was developed by the researcher after reviewing relevant literatures [25- 28]to assess nurses' practice pre, during and 2-months post implementation of educational guidelines about reducing CLABSI. It consisted of (146) subtitles classified under two main parts as the following:

Practice regarding central venous catheter procedure and practice regarding infection control measures.

Scoring System of practice

Two level of scoring for questions were used as the following:

-Done practice takes (1)

-Not done practice takes (0)

The total practices score will be (146) each right answer took one grade. The scoring system calculated (146) and classified as following:

-Satisfactory → ≥ 75 % of the total score

-Unsatisfactory → < 75 % of the total score

Method

The study was accomplished through the following steps:

1-Administrative process:

a- Official permission from the faculty of nursing was delivered to the appropriate authorities at the two selected units to conduct the study.

b- Permission was obtained from the directors of:

- Anesthesia Intensive Care Unit and Medical Intensive Care Unit of Emergency Hospital affiliated to Tanta Main University Hospital.
- Neurological Intensive Care Unit of Tanta Main University Hospital.

2-Ethical and legal considerations:

a- Nature of the study did not cause any harm or pain to all subjects.

b- An informed consent was taken from every participant patient after complete explanation about the aim of the study.

c- Complete confidentiality and privacy was considered regarding data collection and results. A code number was used rather than names.

d- The nurse was informed the right to withdraw from the study at any time and without any reason.

3-Tools development:

All tools of the study were developed by the researcher to collect the data after extensive review of literature [30, 20, 29, 30, and 31].

4- Tools of data collection nurses' knowledge assessment sheet were translated into Arabic language.

5- Validity of Tools:

All tools of the study were reviewed for content validity and clarity by a panel of (5) expertise in the field of Medical Surgical Nursing, critical care nursing, anesthesia, medical and neurological field physicians. Their opinions were elicited regarding tools format and consistency, it was calculated and found to be = (98%).

6- Reliability: The reliability for the study tools was calculated by cronbach's alpha test, it was;

- **Cronbach's Alpha** for **first tool was 0.761** for 64 items applied on 10 nurses.
- **Cronbach's Alpha** for **second tool was 0.802** for 157 items applied on 10 nurses.
- **Cronbach's Alpha** for **the sheet in total was 0.845** for 221 items applied on 10 nurses.

7-A pilot study:

It was conducted on (10) nurses to test the clarity, feasibility and the applicability of the different items of the determent tools to detect any obstacles during the period of data collection. The needed modification was done by the researcher before study according to the experience gained from this pilot study**.**

8-Data collection:

The subjects in pilot study are excluded from the current study. Data collection duration period was 6 months started from first of November 2019 to the end of May in 2020. The present study was conducted through four main phases (Assessment, planning, implementation and evaluation).

Assessment phase: Assessment of the nurse baseline data that was carried out by using the following: **Tool (I) part (A)** was used to collect baseline data of nurses. **Tool (I) part (B)** was used to assess nurses' knowledge regarding central line associated blood stream infection. **Regarding tool (II)**, it was used to assess nurses' practice.

Planning phase: it included; preparation of the content of nursing educational guidelines and preparation of the environment.

Implementation Phase: The educational guidelines was conducted in (6) sessions to the nurses who will be divided into (5) groups, each group was contain (8) nurses three days per week and the time of each session was about 30 minutes.

The evaluation phase: Tool (I) part A was used to collect baseline data about nurses. Tool (I) part B and tool II were used to assess knowledge and practice pre, immediately and 2-months later post implementation of educational guidelines regarding CLABSI.

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 of two variables in a group, paired samples t-test was used. For comparison between means for variables during three periods of intervention in a group, or 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 (**) [32].

3. Results

Table (1):shows the distribution of the nurses according to their socio–demographic characteristics. **Concerning to age**, this table revealed that more than half (59.0%) of the studied nurses were aged from(21to31) years old, where nearly one-third (31.0%) of them were in the age group from 31to less than 40 years old, with meanage (31.53±5.08).

Regarding to sexand marital status, the majority (86.o % and 80.0%) of the studied nurses were females and married. **In relation to educational leveland occupation**, it was seen that nearly half (49.0%) of the studied nurses had bachelor of nursing. Moreover nearly three-quarters (71.0%) of the studied nurses were nursing staff, while more than one-quarter(29%) of them were head nurses.In addition to**;** it was found that nearly half (45.0%) of the studied nurses had ≥10 years of nursing experience. **According to Previous training about central line related blood stream infection**, nearly four-fifths of the studied nurses (79.0%) did not have previous training about central line related blood stream infection.

Figure (1): The figure showed that there was a highly statistical significant improvement in the total level of nurses' knowledge regarding CVC where more than three-quarters (79%) and (77 %) of the studied nurses had poor and fair level of knowledge pre and post 2 months of nursing educational guidelines respectively, whereas all of them were good immediately after implementation of nursing educational guidelines.

Table (2): illustrates the distribution of the studied nurses according to their knowledge domains regarding CVC throughout all periods of implementation of nursing educational guidelines.

It was observed that there were highly statistical significant among the studied nurses regarding total knowledge mean score pre, immediately and post 2 months after implementation of nursing educational guidelines at p value = 0.000*.

Table (3):illustrates the distribution of the studied nurses according to their main practice domains levels throughout all periods of implementation of nursing educational guidelines.

The table revealed that there was statistical significant improvement in the total level of nurses practice regarding both CVC and

infection control measures pre, immediately and post 2 months after implementation in nursing educational guidelines at P value=0.000*

Table (4): illustrates the correlation between total knowledge domains and total practice domains among the studied nurses throughout all periods of implementation of nursing educational guidelines.

Regarding pre nursing educational guidelines, the table shows that there was positive significant correlation between total knowledge score &total practice score r= 0.227, P=0.023.

In relation to immediately after implementation of nursing e educational guidelines, the table shows that there was positive non-significant correlationbetween total knowledge score &total practice score (r= 0.149, P=0.14) respectively.

While post 2 months of implementation of nursing educational guidelines, the table shows that there was positive non-significant correlation between total knowledge score &total practice score (r=0.052 P=0.605) respectively.

Table (5):demonstrates the correlation between socio-demographic characteristics and total knowledge score among the studied nurses throughout all periods of implementation of nursing educational guidelines.

It was noticed that there was a highly negative significant correlation between occupation of the studied nurses and total knowledge score pre educational guidelines as (r= -0.341, P =0.001**) while immediately and 2months after implementing educational guidelines there was non-significant correlation between occupation of the studied nurses and total knowledge score.

On the other hand there was non-significant correlation between age, gender and experience of the studied nurses and total knowledge score pre, immediately &2 months post nursing educational guidelines as p> 0.05 respectively.

Table (6): demonstrates the correlation between socio-demographic characteristics and total practice score among the studied nurses throughout all periods of implementation of nursing educational guidelines.

It was noticed that there was negative significant correlation between age of the studied nurses and total practice score immediately after implementation of nursing educational guidelines (r = -0.213, P= 0.033), in contrary with pre and post 2 months of implementation of nursing educational guidelines there were negative non-significant correlation between age of the studied nurses and total practice score P> 0.05 respectively.

Also, there was non-significant correlation between gender, occupation and experience of the studied nurses and total practice score pre &immediately after nursing educational guidelines P> 0.05 respectively.

Table (1): Distribution of the studied nurses according to their Socio-demographic characteristics

Characteristics	The studied nurses (n=100)	
	no	%
Age (in years)		
▪ 21-< 31	59	59.0
▪ 31-< 40	31	31.0
▪ 40-50	10	10.0
Range	**(23-46)**	
Mean ± SD	**31.53±5.08**	
Gender		
▪ Male	14	14.0
▪ Female	86	86.0
Marital status		
▪ Single	20	20.0
▪ Married	80	80.0
Educational level		
▪ Technical institute	46	46.0
▪ Bachelor	49	49.0
▪ Post-graduate	5	5.0
Occupation		
▪ Nursing staff	71	71.0
▪ Head nursing	29	29.0
Experience (in years)		
▪ <5	27	27.0
▪ 5-<10	28	28.0
▪ ≥10	45	45.0
Range	**(1-23)**	
Mean ± SD	**8.70±4.77**	
Previous training about central line related blood stream infection		
▪ No	79	79.0
▪ Yes	21	21.0
Duration of training program		
▪ None	79	79.0
▪ < 2 weeks	21	21.0

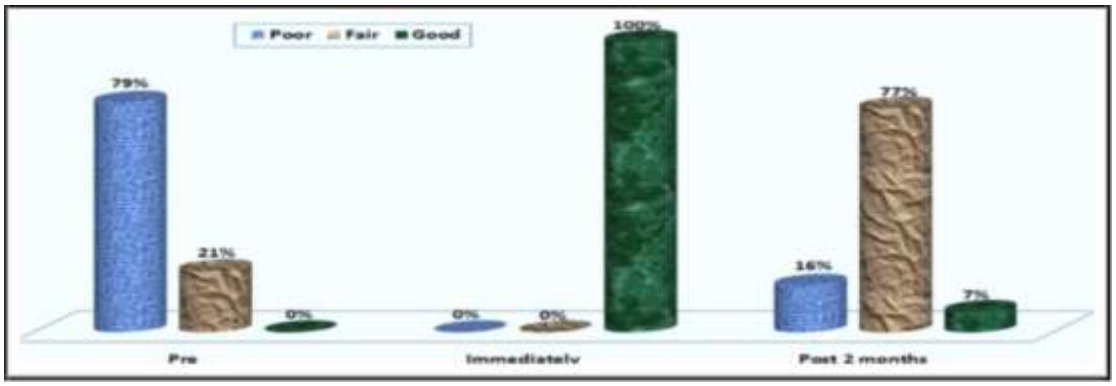

Figure (1): Distribution of the studied nurses according to their total knowledge level regarding CVC throughout all periods of implementation of nursing educational guidelines

Table (2): Distribution of the studied nurses according to their knowledge domains regarding CVC throughout all periods of implementation of nursing educational guidelines

Knowledge domains	The studied nurses (n=100)																		χ^2 P
	Pre						Immediately						Post 2 months						
	Poor		Fair		Good		Poor		Fair		Good		Poor		Fair		Good		
	n	%	n	%	n	%	n	%	n	%	N	%	n	%	n	%	n	%	
1. Knowledge regarding CVC	82	82.00	18	18.00	0	0.00	0	0.00	0	0.00	100	100.00	25	25.00	26	26.00	49	49.00	**272.53 0.000***
Range Mean ± SD	**(8-19) 13.39±2.84**						**(24-26) 25.62±0.63**						**(5-25) 17.47±3.71**						**F=523.86 P=0.000***
2. Knowledge about technical description, site and care of CVC	82	82.00	14	14.00	4	4.00	0	0.00	0	0.00	100	100.00	25	25.00	23	23.00	52	52.00	**286.95 0.000***
Range Mean ± SD	**(10-23) 14.11±2.86**						**(26-28) 27.30±0.73**						**(9-26) 18.57±3.54**						**F=635.62 P=0.000***
3. Knowledge about CLABSI																			
a) Definition, causes, types, …	69	69.0	28	28.00	3	3.00	0	0.00	0	0.00	100	100.0	25	25.00	19	19.00	56	56.00	**266.89 0.000***
Range Mean ± SD	**(7-17) 10.92±2.19**						**(17-20) 19.56±0.71**						**(8-18) 13.34±2.49**						**F=518.26 P=0.000***
b) Assessment, prevention and care of CVC	76	76.0	24	24.00	0	0.00	0	0.00	0	0.00	100	100.0	24	24.00	55	55.00	21	21.0	**286.17 0.000***
Range Mean ± SD	**(12-27) 20.16±3.19**						**(36-38) 37.59±0.63**						**(16-34) 25.30±3.82**						**F=968.94 P=0.000***
Total knowledge level	79	79.0	21	21.00	0	0.00	0	0.00	0	0.00	100	100.0	7	7.00	77	77.00	16	16.0	**381.916 0.000***
Range Mean ± SD	**(38-74) 58.58±8.31**						**(108-112) 110.07±1.18**						**(51-96) 74.68±7.69**						**F=1604.02 P=0.000***

<60% Poor (60-75)% Fair Good > 75%

* Significant at level P<0.05 C.V.C: central venous catheter

CLABSI: central line associated blood stream infection

Table (3): Distribution of the studied nurses according to their main practice domains levels throughout all periods of implementation of nursing educational guidelines

Practice domains levels	The studied nurses (n=100)												χ^2 P
	Pre				Immediately				Post 2 Months				
	Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory		
	n	%	n	%	n	%	N	%	N	%	n	%	
A. Practice regarding CVC procedure	80	80.00	20	20	0	0.00	100	100.00	40	40.00	60	60.00	**1 33.33 0.000***
Range	(41-80)				(90-99)				(49-85)				**646.68**
Mean ± SD	61.16±9.39				95.50±2.03				71.41±7.19				**0.000***
B. Practice regarding infection control measures	81	81.00	19	19	0	0.00	100	100.00	0	0.00	100	100.00	**221.91 0.000***
Range	(21-45)				(54-58)				(42-56)				**584.45**
Mean ± SD	33.37±7.42				56.32±1.28				47.09±3.46				**0.000***
Total Practice level	80	80.00	20	20	0	0.00	100	100.00	11	11.00	89	89.00	**177.95 0.000***

<70% Unsatisfactory ≥70% Satisfactory CVC: central venous catheter

* Significant at level P<0.05

Table (4): Correlation between total practice domains and total knowledge domains among the studied nurses throughout all periods of implementation of nursing educational guidelines

Knowledge domains	Practice domains																	
	A. Practice regarding central venous catheter procedure						B. Practice regarding infection control measures						Total practice score					
	Pre		Immediately		Post 2 Months		Pre		Immediately		Post 2 Months		Pre		Immediately		Post 2 months	
	r	P	R	P	R	P	r	P	R	P	r	P	R	p	r	p	r	p
1. Anatomy of the vein	-0.108	0.284	0.024	0.814	0.239	0.017*	0.036	0.721	-0.15	0.144	-0.02	0.883	-0.05	0.61	-0.05	0.611	0.16	0.094
2.Technical description	-0.11	0.278	0.13	0.196	0.076	0.453	-0.003	0.977	-0.28	0.006**	0.208	0.038*	-0.07	0.47	-0.22	0.025*	0.15	0.128
3. CLABSI: Definition, causes, types,…	-0.10	0.318	0.243	0.015*	-0.16	0.109	-0.209	0.037*	0.113	0.263	-0.15	0.142	-0.17	0.08	0.23	0.020*	-0.19	0.062
4. CLABSI: Assessment, prevention, ..	-0.16	0.096	-0.193	0.054	-0.08	0.459	-0.51	0.000**	-0.17	0.089	-0.05	0.631	-0.37	0.000**	-0.22	0.027*	-0.08	0.442
Total knowledge score	-0.16	0.103	-0.028	0.785	0.061	0.548	-0.236	0.018*	-0.27	0.006**	0.017	0.87	0.23	0.023*	0.15	0.149	0.052	0.605

* Significant at level P<0.05 CLABSI: central line associated blood stream infection

** Highly significant at level P<0.01

Table (5): Correlation between socio-demographic characteristics and total knowledge score among the studied nurses throughout all periods of implementation of nursing educational guidelines

Characteristics of the nurses	The studied nurses (n=100) Total knowledge score					
	Pre		Immediately		Post 2 Months	
	R	P	r	P	R	P
Age (in years)	-0.077	0.445	-0.043	0.669	-0.031	0.763
Gender	0.031	0.762	-0.015	0.883	0.104	0.304
Occupation	-0.341	0.001**	-0.038	0.706	0.023	0.821
Experience (in years)	0.135	0.180	-0.045	0.660	-0.060	0.553

* Significant at level P<0.05

** Highly significant at level P<0.01

Table (6): Correlation between socio-demographic characteristics and total practice score of among the studied nurses throughout all periods of implementation of nursing educational guidelines

Characteristics of the nurses	The studied nurses (n=100) Total practice score					
	Pre		Immediately		Post 2 Months	
	R	P	r	P	R	P
Age (in years)	-0.015	0.886	-0.213	0.033*	0.059	0.560
Gender	0.121	0.231	0.124	0.221	-0.058	0.568
Occupation	0.044	0.664	-0.104	0.304	0.023	0.821
Experience (in years)	0.038	0.708	0.181	0.072	0.072	0.474

* Significant at level P<0.05

** Highly significant at level P<0.01

Discussion

Nurses in intensive care units have the most direct and continuous role in performing care maintenance of the central venous catheter insertion site procedure and they should be experienced with supportive care measures in the insertion and maintenance of central lines. Therefore must be prepared to be able to contribute to the primary prevention guidelines of central line associated blood stream infection through improved their knowledge and practice toward proper use of CVC to minimize the risk of complications and improve patient's quality of life. So this is study was conducted to evaluate the effect of educational guidelines on nurse's knowledge and practice regarding central line associated blood stream infection at intensive care unit[33, 34].

Concerning tosocio-demographic characteristics of the studied nurses, the results of the present study showed that nearly more than half of the nurses were aged from 20 to less than 31 years old. This may reflects the demanding nature of critical care unites service, so that older nurses may find it difficult to cope with the load of work required and prefer the newly graduate to work in the critical care units, as they had the ability to acquire knowledge and change their behaviors based on submission of up to date knowledge.

This finding was in the same line with **Elbilgahy et al. (2019)** [35]who reported that nearly half of the studied nurses who are worked in intensive care units were aged from 20 to less than 30 years old. Moreover, **Abbady and Gaballah (2019)** [36] reported that the mean age of the studied nurses who are caring for central line in intensive care unit was 27.02±2.15. On the other hand, this finding was consistant with **Esposito and Guillari (2017)**[37] who reported that nearly three-quarters of nurses who are caring for patients with central venous catheter were aged from (20<40). The finding parallel to **Bayoumi and Mahmoud (2017)**[38] who reported that three quarter of the nurses who are deal with central line in hemodialysis unit were less than 25 years old. Additionallythis finding disagrees with **Mishras (2016)**[39] who reported that the most of the studied nurses in intensive care unit were aged from (29<39).

Concerning to sex and marital status, the result of the present study showed that the majority of the studied nurses were females and married. This finding was in the same line with **Shah (2019)** [40] and **Raghep and Elgazar(2019)**[41] who reported that the majority of the studied nurses who working in intensive care unit

and deal with central venous access device were females and nearly three quarters of them were married

In relation to nurses' educational leveland occupation, it was seen that nearly half of the studied nurses had bachelor degree of nursing. It could be due to hospital policy as they prefer highly qualified nurses in the critical care unites rather than other graduate to be able to carry up their responsibility. This finding was in the same line with **Sami et al.(2018)**[(42)] and **Muslim et al. (2018)** [(43)]who reported that most of the studied nurses who providing care for patients with central line were had bachelor of nursing.On the other hand, this finding disagreement with **Moursy and Sharaf*(*2017)** [(44)], who study bout "vascular access care at hemodialysis unit; nurses' compliance to infection prevention and control practice"**,** who reported that more than two third of the studied nurses the educational level are diploma.

Concerning to nurses' years of experiences, the present study results showed that nearly half of the studied nurses had ten or more years of nursing experience. This finding was congruent with **Deshmukh et al. (2014)**[(45)] who conducted that study about vascular access care among hemodialysis patients and mentioned that nearly of the studied nurses who were providing care to patients had more than twenty years of experiences. On the other hand, this finding was disagreement with **Elbilgahy et al. (2019)** [(35)] who stated that approximately two thirds of the studied nurses who work in hemodialysis units to care for central venous catheter having 10 years of experience.

According to nurses' previous training about central line related blood stream infection, nearly four fifths of the studied nurses did not have previous training about central line related blood stream infection. This finding was in the same line with**Abdelsatir (2013)** [(46)]and **Hawkins (2018)** [(47)]who conducted study about central line and infection control measures and found that the majority of the studied nurses didn't attend any pervious training about central line.Converse to**Moursy andSharaf(2017)** [(44)], reported that the majority of the studied nurses attended infection prevention training programs about Central line during work in the critical care unit.

Concerning to level of knowledge of the studied nurses regarding central venous catheter, central line associated blood stream infection and its management pre, immediately and post 2 months of implementation of nursing educational guidelines, the results of the present study showed that, there was statistical significant improvement in the level of

nurses' knowledge regarding central venous catheter, central line associated blood stream infection and its management. Where the majority of the studied nurses had poor level of knowledge pre nursing educational guidelines, whereas all of them had good level of knowledge after implementation of nursing educational guidelines.

The poor level of nurses' knowledge about central line and central line associated blood stream infection pre nursing educational guidelines may be related to lack of training program that must be conducted to improve nurses' knowledge and they depending on acquiring their knowledge from the experience of their colleagues. The implementation of nursing educational guidelines has a positive effect on nurses' knowledge as the majority of the studied nurses had good level of knowledge post nursing educational guidelines. This improvement in knowledge indicated effectiveness of the nursing educational guidelines and the teaching sessions that were done by the researcher. Also, this improvement may be related to nurses' desire to acquire new knowledge, active participation and regular attendance in the sessions of the program that was reflected on knowledge scores of the studied nurses.

This finding was consistent with **Raghep and Elgazar(2020)** [41] who revealed that the majority of the studied nurse's had unsatisfactory level of knowledge pre educational program intervention and reached to satisfactory level immediate and post program regarding care of patients during insertion of central venous catheter.

In addition, this result was supported by **Fayed et al. (2016)**[48] who illustrated that the lack of continuous education and training programs about central line led to poor level of nurses' knowledge pre-program implementation, while all of them had good knowledge after program implementation. Additionally, the finding of the present study was in the same line with **Sakshi (2019)** [49]who reported that the implementation of educational program regarding care of central venous catheter led to statistical significant improvement of knowledge level among nurses who were working in intensive care unit.

This finding was consists with **Aloush (2018)**[50] who reported that the majority of nurses had poor level of knowledge pre educational guidelines about procedure of central line. In addition the finding of the present study was in the same line with **Al Qadire (2017**) [51] who revealed that nurses of intensive care units had insufficient knowledge about central line associated blood stream infection.

Also, this result was supported by**Venkatesan et al. 2018** [52] who reported that all nurses who were providing care for patients with central line in intensive care unit had satisfactory level of knowledge post educational program regarding prevention of central line associated blood stream infection .In addition to ,this result agreed with **Chen et al. (2015)** [53] who revealed that there was statistical improvement of knowledge scores among nurses who were providing care for patients with central line in intensive care units post completion of educational guidelines.

Concerning to level of practice of the studied nurses regardingcentral venous catheter procedures and infection control measures, the present study showed that there was a statistical significant improvement in the level of nurses' practice regarding both central venous catheter and infection control measures, where the most of studied nurses had unsatisfactory level of practice pre nursing educational guidelines whereas all of them were had satisfactory level of practice immediately after implementing nursing educational guidelines .

The unsatisfactory level of nurses' practice regarding central venous catheter and infection control measures pre educational guidelines may be related to inadequate level of nurses' knowledge pre guidelines, shortage of nursing staff, lack of updating knowledge, lack of continuous education and deficiency of in-service training program. The implementation of educational guidelines has a positive effect on nurses' practice as the majority of studied nurses had satisfactory level of practice post educational guidelines. This improvement indicates effectiveness of the nursing guidelines that led to enhancement of nurses' knowledge which reflected on nurses' practice.

This finding was in the same line with **Bayoumi (2017)**[38] who reported that there was a highly statistical significant difference between nurses' practice pre and post implementation of educational guidelines as the majority of nurses had adequate level of practice post implementing the nursing educational program regarding central line.

Additionally, this finding was in the same line with **Yousifet al.(2017)**[54] who reported that there was a highly statistical improvement in the level of nurse' practice regarding infection control measures of central line care where about more than half of the studied nurses were had in competent practice at the pre-educational guidelines .While more than three quarter of them had a competent practice at post intervention phase.

Moreover, this finding was the same line with **Tang et al. (2014)**[55] who reported

that there was highly significant improvement in the level of nurse' practice regarding central line associated blood stream infection after implementation of infection control bundle. This finding was supported with **Sacks et al. (2014)**[56]who reported that majority of the studied had low level of practice regarding care of patients with central line in pre intervention, while the majority of them had good level of practice after nursing intervention.

Also, this finding was supported with **Kun et al.(2017)**[57] who reported that there was a highly statistical improvement in the level of nurses practice regarding care of peripherally inserted central catheter after and catheter maintenance after educational program.

Moreover, this finding was the same line with **Wright et al. (2013)**[58] who reported that there was a highly statistical improvement in the level of nurses' practice regarding disinfection of catheter hubs and prevention of central line associated blood stream infection.

Concerning correlation between both of total knowledge score, total practice score and their domains, findings of the present study reported that there was positive significant correlation between total knowledge score and practice score of the studied nurses pre nursing educational guidelines. It may be related to the nurses poor training can be skilled to unsatisfactory practice. This finding was in the same line with **Esposito et al. (2017)** [37]who showed thatthere was significant correlation between total knowledge score and practice score of the studied nurses during nursing educational guidelines. Moreover, this finding agreed with **El-Solet al. (2017)**[59] who conducted a teaching moduleregarding prevention of central-line associated blood stream infection on intensive care unit nurses and reported that implementation of the program that is organized according to the needs of nurses has beneficial effect in improving the nurses knowledge and practice.

Moreover,this finding was agreed with **Cooper et al. (2014)**[60] who implemented an educational program regarding central line care and confirmed that enhanced nurses' knowledge led to improve nurses' practice. Also, this finding agreed with **Awad et al. (2019)**[61] Who reported that there was significant correlations between total knowledge scores and total practice scores regarding central venous catheter care bundle on critical care nurses at emergency department.

Moreover,this finding was consistent with **Caetano et al. (2014)**[62] with who found that enhanced nurses' knowledge regarding

central venous catheter led to improve nurses' practice regarding prevention of central line complications. In addition, **Kadium (2015)** [63] who conducted a study in hemodialysis unit and found that there was statistical significant correlations between total knowledge scores and total practice scores regarding central venous catheter care.

Concerning to correlation between socio-demographic characteristics and total knowledge score among the studied nurses pre, immediately and post 2 months of implementation of nursing educational guidelines, the findings of the present study reported that there was a negative statistical significant correlation between occupation of the studied nurses and total knowledge score pre nursing educational guidelines. It may be related to that, head nurses were poor level of knowledge score due to absence of educational training program about central line and they were occupied with administrative work. This finding was in the same line with **Kadium et al. (2015)**[63] who clarified that there was a statistical significant correlation between occupation of the studied nurses and total knowledge score pre nursing educational guidelines. In the same line with **Yousef (2017)**[54] who noticed that nurses' knowledge scores were in significant relation with socio-demographic data of nurses. This finding agreed with **Barbosa1 et al. (2017)**[64] who observed that there was a statistical significant correlation between total knowledge score and age and years of experiences post implementation of educational program regarding central line care.

Moreover, this finding was agreed with **Koutzavekiaris et al. (2017)**[65] who reported that there was negative statistical correlation between age of the studied nurses and total knowledge score pre implementation of educational guidelines. Also, this finding was in the same line with **Kokila (2018)**[66] who noticed that there was significant correlation between occupation and total knowledge score about central line care in hemodialysis unit.

Concerning correlation between socio-demographic characteristics and total practice score of among the studied nurses pre, immediately and post 2 months of implementation of nursing educational guidelines, the finding of the present study revealed that there was a statistical significant correlation between age of the studied nurses and total practice score immediately after implementation of nursing educational guidelines**.** It may be related to that, the majority of nurses were aged from 20 to 40, this increasing their experiences and consequences lead to satisfactory level of practice regarding

central line care and prevention of infection.This finding was in the same line with **Caetano et al. (2019)**[62] who reported that there was a statistical significant correlation between age of the studied nurses and total practice score pre nursing educational guidelines. This finding agreed with **Fayed et al. (2016)**[48] who observed that there was a statistical significant correlation between total practice scores and age &years of experiences post educational guidelines regarding central line In addition,**Yousif et al. (2017)**[54]who reported that there was a positive correlation between age and total practice score pre implementing nursing educational program about central line associated blood stream infection.

On the other hand, this finding disagreed with **Aloush (2018)**[50] who noticed that there was no significant correlation between total practice scores and socio-demographic characteristics of the studied nurses throughout the educational program regarding central line.

Conclusion

Depending on the finding of the present study, it was concluded that:

Central venous catheter is a common procedure that is performed in intensive care units for a variety of indications. Central lines are known to be associated with risk of complications as infections and hemorrhage, thus good nurses' knowledge and practice of care are crucial in limiting these risks, also the nurse to be supposed to integrate safe care practice into their care to improve patients outcome [33].

- The implementation of nursing educational guidelines have a positive impact in improving nurses' knowledge and practice regarding prevention of central line associated blood stream infection.
- There was a significant statistical improvement in the nurses' total knowledge and practices mean scores pre, immediately and 2 months post nursing educational guidelines.
- There was a positive significant correlation between total knowledge score &total practice during and after 2 months of implementation in nursing educational guidelines.
- There was a statistical significant correlation between socio-demographic characteristics and total knowledge and practice score among the studied nurses throughout all periods of implementation of nursing educational guidelines.

Recommendations

Depending on the results of the present study, it was recommended that:

Nurses should attend the seminars

and the in-service training programs about central line associated blood stream infection and care for implanted ports for gaining updated knowledge and enhancing their practice.

- The nurses must attend external training courses and conferences to upgrade their knowledge and practices in their field and the evidence based guidelines for CLABSI prevention should be incorporated in all nursing curricula.
- Nurses should use central line insertion checklist to decrease mistakes and avoid infection.
- Nurses should be congruent with infection control guidelines in care of patients with central line.
- Nurses should be aware about pre discharge instructions that are given to the patient with implanted ports to prevent infection.

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Relation between Functional Status and Quality of Life of the Elderly with Rheumatoid Arthritis

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Abstract

Background: Rheumatoid arthritis (RA) is a crippling disease that affects all life domains of the patients, such as the body functions, the activity's performance and contributes to the occurrence of several complications and disalities. **The aim of the study:** was to assess the relationship between functional status and quality of life of the elderly with rheumatoid arthritis. **Subjects and method: Study design:** A descriptive cross-sectional study design was used in this study. **Study settings:** This study was conducted at the rheumatoid clinic in Ali IbnAbyTaleeb Health Insurance Hospital and the Rehabilitative clinic in Tanta University Hospitals. **Study subjects:** A convenient sample was utilized in this study. The total number of the studied subjects of Rheumatoid Arthritis patients was 120. **Tools of the study:** Four tools were used in this study to collect the necessary data**: Tool I.** Structured interview schedule that was developed by the researcher which included two parts; part (1): Socio-demographic characteristics of the elderly with rheumatoid arthritis and part (2): Past and present health history of the elderly with rheumatoid arthritis. **Tool II.** Katz Activities of Daily Living (Katz ADL). **Tool III.**Instrumental Activities of Daily Living (Lawton's IADL). **Tool IV.**World Health Organization Quality of life-BREF (WHOQOL-BREF)**. Results:** The majority (95.20%) of the studied subjects who aged more than 80 years had a poor QOL while, less than three-quarters (70.30%) of them who had a poor QOL that their age ranged 60 years and less than one-fifth (18.8%) of the same age group had a good QOL according to World Health Organization Quality of life-BREF (WHOQOL-BREF). **Conclusion:** The study concluded that more than three- quarters of studied elderly with RA had a poor QOL, while the rest of studied elderly with RA had a fair QOL and less than one-fifth of studied elderly with RA had a good QOL. **Recommendations:** This study recommended that there is a crucial need for further research to hold continuous educational and orientation programs for the elderly with RA and encourage a high level of self-care, follow up, teaching for rheumatoid arthritis and improving health status.

Key words: Rheumatoid arthritis'sdisease, Elderly,Quality of life, Functional status.

Introduction

Nowadays arthritis and other rheumatic conditions are among the most prevalent chronic conditions in Egypt and other parts of the world that affect all racial and ethnic groups [(1)]. Egypt is the land of the most rapidly aging populations (aged 60 and above) in the developing world [(2)].The aging process is associated with many changes that occur in all body systems such as an increase frequency of infections occurrence, malignancies, and autoimmune diseases due to the decline of normal immune surveillance and deregulation of immune responses which mistakenly attacks and destroysthe healthy body tissues [(3)].

Rheumatoid arthritis (RA) affects around 1% of the world population. Women have a double chance to develop rheumatoid arthritis than men; many people who are diagnosed with RA are of working age. Despite the illness frequently starts in middle age and increases in prevalence amongst older people, young adults can also develop RA. The incidence rate is approximately 25-50 new cases per100, 000 people every year [(4)].

Rheumatoid arthritis effects on the functional status that are considered the main advocator for elderly care and it aids the elderly to be unsusceptible to both acute and chronic health problems. Functional status is an individual's ability to perform normal daily activities required to meet basic needs, fulfill usual roles, and maintain health and well-being [(5)]. Functional status subsumes related concepts of interest: functional capacity and functional performance. While functional capacity represents an individual's maximum capacity to perform daily activities in the physical, psychological, cognitive, and social ability to carry on normal activities of life, functional performance refers to the activities people do during of their daily lives. Functional status is evaluated through the measurement of the skills of role function [(6,7)].

The activities of daily living (ADLs) are both essential and routine aspects of self-care. Instrumental activities of daily living (IADLs) are another factor to consider when assessing independence. It is an appropriate instrument to assess a person's ability to live independently and thrive. The Instrument is most useful for identifying how a person is functioning at present and to identify improvement or deterioration over time and there are activities of daily living include companionship and mental support, transportation and shopping, planning and preparing meals, managing the household, managing medications, communicating with others, and managing finances [(8)].

The elderly with RA has a great lowering quality of life (QOL) rather than those

elderly without the disease. Rheumatoid arthritis causing continuous changes in a patient's life [9]. RA is a divesting disease that affects the patients negatively as it can affect body functions, the activities performed and contributes to the occurrence of several complications and disabilities so; there is a necessary need for adequate nursing care [10].

World Health Organization (WHO) has further emphasized the importance of quality of life and defined it as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and concerning their goals, expectations, standards, and concerns. The activities of daily living (ADLs) are both essential and routine aspects of self-care [11]. It relates the self-perception of the individual expectations, standards and concerns within the context of the culture and value systems in which these people live each dimension focusing on specific activities such as the physical dimension of QOL concentrate on activities that help the client stay physically active, increase their sense of fun. The intellectual dimension of QOL includes activities that engage clients mentally as learning, hobbies, or any other form of creativity [12].The emotional dimension of QOL includes structured social interactions or time with family and friends or even a sense of being at peace with oneself and at the end spiritual dimension of QOL, this deals with how clients can maintain or build spiritual connection, whether through personal relationship or though spending time in religious practices [13].

The basic role of the nurse helping elderly patients maximizing independence and functional ability, preventing further deterioration or disability, and enhancing the quality of life [14].Community health nurse has provided emotional and psychological support to elderly, helping for an easy transition, enhancing lifestyles and relationships, enabling life review, facilitating self-expression and ensuring cultural sensitivity which improving confidence in the competence and continuously maximizing the quality of care [15]. So, the present study aimed to assess the relationship between functional status and quality of life of the elderly with rheumatoid arthritis.

Significance of the study:

Rheumatoid Arthritis can lead to profound changes in people's health and autonomy, especially in a growing and vulnerable group as elderly, thus the assessment of QOL in this population deserves to be considered patients with RA exhibit significant functional impairment, with a

consequent reduction in quality of life (QOL) [16,17]. Therefore, the aim of the present study wasto assess the relation between functional status and quality of life of the elderly of rheumatoid arthritis.

The aim of the study is to:

Assess the relationship between functional status and quality of life of the elderly withrheumatoid arthritis.

Research question:

What is the relation between functional status and quality of life of elderly with rheumatoid arthritis?

Subjects and Method

Study design:

A descriptive cross-sectional study design was used in this study.

Study setting:

This study was conducted at the rheumatoid clinic in Ali IbnAbyTaleeb Health Insurance Hospital and the Rehabilitative clinic in Tanta University Hospitals.

Study subjects:

A convenient sample was utilized in the current study.The sample was selected from the elderly diagnosed with rheumatoid arthritis who attended the previous settings they were aged 60 years and above, free from mental and psychiatric diseases, who were willing to communicate and accepted to participate in the study. The sample size was 120 cases that were attended through a period of six months.

Tools of the study:

In order to obtain the necessary data, four tools were used in this study.

Tool (1): A structured interview schedule:

A structured interview schedule was developed by the researcher according tothe literature review it consisted of the following parts [18].

Part 1: Bio socio-demographic characteristics of the elderly with rheumatoid arthritis:

This included data about age, sex, marital status, level of education, previous occupation, residence area, family income, and person is living with the elderly.

Part 2: Past and present health history of studied elderly with rheumatoid arthritis: -

It included data about health the history of

the elderly as number and causes of previous hospital admission, chronic diseases, family history with rheumatoid arthritis, the onset of RA, duration of RA, previous and present manifestation of disease, extra-articular manifestations as (subcutaneous nodules, Sjogren syndrome, pulmonary involvement and vacuities) which elderly was suffering from it and type of treatment and medications received.

Tool II: - Katz Activities of Daily Living (Katz ADL) [19].

This tool was developed by Katz et al., (1970) and it was adopted by the researcher. This tool is used for the assessment of the functional ability of the elderly with rheumatoid arthritis by measuring the basic activities of daily living. Katz ADL index measured ability to conduct self-care. It consisted of a six-item instrument, which assessed the independence or dependence in the activities of bathing, dressing, toileting, transferring, continence and feeding. Elderly patients were scored yes/no for independence in each of the six functions. Scores ranged from 0-6, a score of 6 indicated full function, 4 indicated moderate impairment and 2 or less indicated severe functional impairment.

Tool III: Instrumental Activities of Daily Living (Lawton's IADL) [20].

This tool was developed by Lawton and Brody, (1969) and it was adopted by the researcher. This tool is used for assessment of the functional ability of the elderly with rheumatoid arthritis by measuring instrumental activities of daily living. It was used to assess the independent living skills of an individual and measures functional ability as well as declines and improvements over time. It assessed 8 domains of function like telephoning, shopping, food preparation, housekeeping, laundering, use of transportation, use of medicine and financial behavior. Women were scored on all 8 areas of function but, for men the areas of food preparation, housekeeping and laundering were excluded. Elderly patients were scored according to their highest level of functioning in that category.

A total score ranged from zero (low function, dependent) to eight (highfunction, independent) for women and 0 through 5 for men.

Tool IV: World 0Health Organization Quality of life-BREF (WHOQOL-BREF) [21].

WHOQOL-BREF was an abbreviated generic quality of life scale developed by the World Health Organization in the year 1997.The WHOQOL-BREF instrument comprised twenty-six items. The twenty-six standard items contained two generic items (overall QOL and general health) and the remaining twenty-four items could be further classified into four domains: Physical health included seven items (items 3, 4, 10, 15, 16, 17, and 18), where Physiological items included six items (5, 6, 7, 11, 19 and 26), Social relationships included three items (20, 21, and 22). Finally, environmental included eight items (8, 9, 12, 13, 14, 23, 24, and 25).

The score ranged from 26-130. The score

twenty-six referred to (the worst possible QOL and the score 130 referred to (the best possible QOL).

The scoring system was modified by the researcher to be as follows: -

Poor quality of life: < 78 point (<50%)

Good quality of life: ≥ 78 points (≥50%)

Method

The operation of this study was carried out as follows: -

1-Administrative approval:

-An official permission to conduct the study was obtained from the Dean of Faculty of Nursing to Director of the medical outpatient clinic of Ali IbnAbyTaleeb Health Insurance Hospitals and Rehabilitative Department of Tanta University Hospital.

-Director of the medical outpatient clinic of Ali IbnAbyTaleeb Health Insurance Hospitals and the Rehabilitative Department of Tanta University Hospital was informed about the objectives of the study to take permission in order to collect data from the selected settings.

2- Ethical and legal considerations:

-An approval from the ethical committee in the faculty of nursing was obtained on the proposal of the study.

-An informed consent was obtained from all study subjects after providing an appropriate explanation about the purpose of the study.

-Each participant was informed that he/she has the right to withdraw from the study at any time he/she wanted.

-Nature of the study didn't cause any harm or pain for the entire sample.

-Confidentiality and privacy were put into consideration regarding the data collected.

3-Developing the tools:

-Tool I of the study was developed by the researcher based on the literature review (part I, II) **(18)**.

-Tool (II, III and IV) of the study was translated into Arabic and then were tested for its face and content validity by a jury of five professor expertise (three expertise in the field of Community Health Nursing and two expertise in Medical- Surgical Nursing) before conducting the study. Modifications are done according to the comments of the jury committee.

-The study tools were tested for their reliability by using Cronbach's alpha test, which was computed and it was found to be = (0.931).

4-The pilot study:

-A pilot study was carried out by the researcher on 10% of the sample for testing the tools for their 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. Based on

the results obtained some questions were omitted while others were added.

5-The actual study:

- The elderly patients were interviewed by the researcher in waiting areas in outpatient clinics over throughout the study for six months starting from the first of March to the end of August 2019.
- The average time spent for collecting data from each elderly was 20-30 minutes and the researcher met the elderly two days from 10AM up to 1PM one day in each setting weekly. The average numbers of elderly interviewed per day were ranged from two to three elderlies.

6-Statistical analysis of data:

- The statistical data were organized, tabulated, and statistically analyzed using statistical package for social studies (SPSS) version 25. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, the comparison was done using Chi-square test (χ^2). Correlation between variables was evaluated using Pearson's and Spearman's correlation coefficient(r) the level of Significance was adopted at $P< 0.05$ for interpretation of results of tests of significance.

Results

Table (I): Represents the distribution of the studied elderly with rheumatoid arthritis according to their socio-demographic characteristics. This table shows that more than half (53.3%) of studied subjects their ages ranged between $60 \geq 70$ years with a mean of 70.69 ± 6.60 years. As regards to gender and the rest of them were male, while more than half 55% of them were female.

Concerning the occupational status more than one-third (36.7 %) of studied subjects were housewife while, slightly less than two-thirds (63.3%) of them were working. Regarding the elderly income per month

nearly three-quarters (72.5%) of them mentioned that their income enough while about one-fifth (19.2) reported that their income wasn't enough and owed while only (8.3%) of them had enough money and save. Also, the table shows that (10.8%) of the studied subjects living alone while more than two-thirds of them (68.3%) were living with their families and more than one- fifth (20.8 %) ofthem were living in the geriatric home.

Figure (1): Represents the distribution of studied elderly with rheumatoid arthritis according to their marital status. The figure shows that, less than half (40%) of studied elderly with rheumatoid arthritis were

married, nearly half (49.2%) were widow and the rest (5.8% and 5%) were single and divorced respectively.

Figure (2): Represents distribution of studied elderly with rheumatoid arthritis according to their educational levels.The figure shows that, more than one-third (37.5%) of studied elderly with rheumatoid arthritis were illiterates, nearly one -quarter (24.2%) had secondary education.The figure also illusterates that (15.8%) of studied elderly with rheumatoid arthritis were university educated and above and the rest of them (13.3%,9.2%) were read and write and elementaryrespectively.

Figure (3): Represents the distribution of the studied elderly with rheumatoid arthritis according to their residence area. The figure shows that more than half (57.5%) of studied elderly with rheumatoid arthritis were from an urban area and the rest of them (42.5%) from rural areas.

Table (II): Represents the distribution of the studied elderly with rheumatoid arthritis according to their performance of activities of daily living.The table illustrates that more than one-third (35%)of the studied elderly with RA had independent in toileting and feeding while, less than one-fifth of them (19.2%) had independent in bathing, on contrast the majority (95% and 80.9%)of them had dependent in continence and bathing, while slightly less than two-third of them (65%) had dependent in toileting.

Table (III): Represents the distribution of the studied elderly with rheumatoid arthritis according to their degree of independency in the performance of activities of daily living.The table reveals that more than three-quarters (76.7%)of the studied elderly with RA had severe functional impairment, while less than one fifth (16.7%) had mild to moderate impairment and the rest of them (6.7%) had full function. The degree of independency of studied elderly 0-5 with a mean of 1.45 ± 1.54.

Table (IV): represents the distribution of the studied elderly with rheumatoid arthritis according to their instrumental activities of daily living.This table demonstrates that the majority (95.8%)of the studied elderly with RA had independent in telephoning while, only (9.2%, 7.5% and 5.8% respectively)of them had independent in shopping, financial behaviour and use of medicine. On contrast the majority (94.2%, 90,8% and 82.5%respectively)of them had dependent in use of medicine, shopping and financial behaviour while, only (4.2%) of them had dependant in telephoning.

Concerning independence for female the table reveals that more than one fifth (22.7%)of the studied elderly with RA had independent in housekeeping, while less

than one fifth (13.63% and 9.09% respectively)of them had independent in launderingand food preparation. On contrast the majority (90.91% and 86.36%) of them had dependent in food preparation and laundering while, more than three-quarters of them (77.27%) had dependent in housekeeping.

Represents the distribution of the studied elderly with rheumatoid arthritis according to their degree of independence in the performance of activities of daily living. This table presents that more than half of the studied women with RA (54.16%) had mild to moderate function while, more than two-fifths of men (45%) had mild to moderate function. Also, this table shows that the degree of independence in the performance of instrumental activities of daily living of studied elderly ranged from0-6with a mean of 1.8 ± 1.19.

Table (VI): represents the distribution of the elderly with rheumatoid arthritis according to their domains and categories of QOL. The table illustrates that more than one-third (41.7% and 41.7% respectively) of the studied elderly with RA had a fair and a good in overall their quality of life and general and less than one-fifth (16.7%) of them had a poor in overalltheir quality of life and general.

Regarding to physical domain the table illustrates that more than three-quarters (80%) of them had a poor physical domain and the rest (9.2% and 10.8% respectively) of them had a fair and a good physical domain.

According to psychological domain the table shows that more than two-thirds (66.7%) of the studied elderly with RA had a poor psychological domain while, more than one-fifth (21.7%) of them had a fair psychological domain and less than the rest (10.8%) of them had a good psychological domain.

Revealing to social domain the table reveals thatmore than one-third (35.8%) of them had a good social domain and less than one-third (31.7% and32.5% respectively) of them had a poor and a fair social domain. Concerning to environmental domain the table shows that less than two-thirds (65.8%) of them had a poor environmental domain while, one-fifth (25%) of them had a fair environmental domain and the rest (9.2%) of them had a good environmental domain.

Also, the table demonstrates that, there was highly statistically significant difference between overall quality of life, general health QOL domains and QOL categories in overall quality of life and general health, physical domain, psychological domain, environment domain and QOL categories

(p =0 .000). But there was insignificant association between social relationships domain and QOL categories, where (p =0 .83).

Table (VII): represents the correlation between domains of QOL and activities of daily living.The table reveals that there was statistically significance positive correlation between domains ofQOL and activities of daily living (p=<0.01).

Table (VIII): represents the correlation between domains of QOL and instruments activities of daily living.The table represents that there was statistically significance positive correlation betweenoverall quality of life and general health and all domains of QOL except social relationship domain and instruments activities of daily living with (p=<0.01).

Table (I): Distribution of the studied elderly with rheumatoid arthritis according to their socio-demographic characteristics

Variables	Elderly with RA (n=120)	
	No	%
Age in years:		
60-	**64**	**53.3**
70-	**35**	**29.2**
80≥	**21**	**17.5**
Range	**60-85**	
Mean ± SD	**70.69 ± 7.62**	
Sex:		
Male	**54**	**45.0**
Female	**66**	**55.0**
Occupation before the retirement:		
Not working or housewife	**44**	**36.7**
Working	**76**	**63.3**
The elderly income per month:		
Enough and save	**10**	**8.3**
Enough	**87**	**72.5**
Not enough and owed	**23**	**19.2**
Who live with the elderly:		
Live alone	**13**	**10.8**
Live with the family	**82**	**68.3**
Live in the geriatric home	**25**	**20.8**

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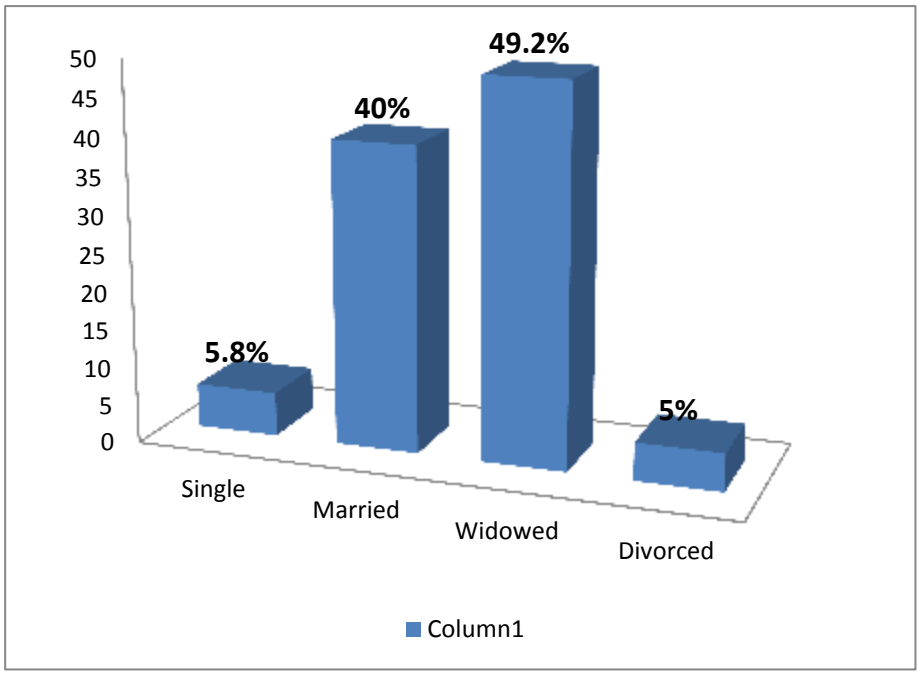

Figure (1): Distribution of studied elderly with rheumatoid arthritis according to theirmarital status

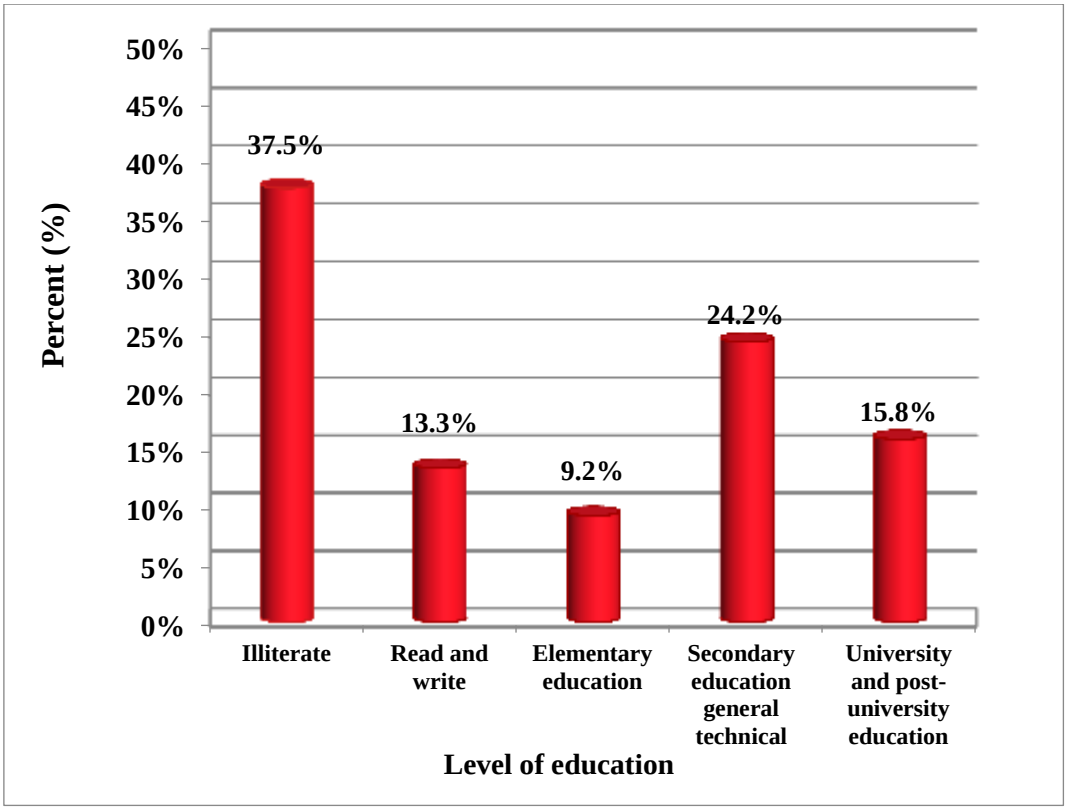

Figure (2): Distribution of studied elderly with rheumatoid arthritis according to their educational levels

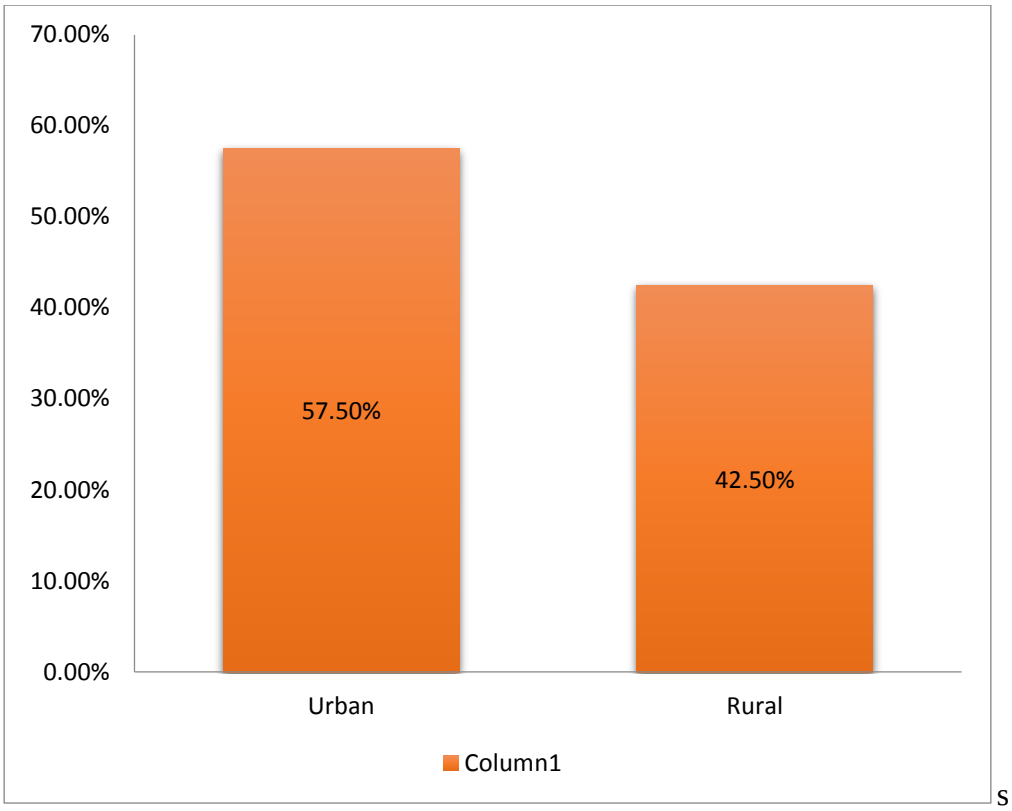

Figure (3): **Distribution of the studied elderly with rheumatoid arthritis according to theirresidence area**

Table (II): Distribution of the studied elderly with rheumatoid arthritis according to their performance of activities of daily living

Variables	The studied elderly with rheumatoid arthritis (n=120)			
	Independent		Dependent	
	No	%	No	%
Bathing	23	19.2	97	80.9
Dressing	25	20.8	95	79.2
Toileting	42	35	78	65
Transferring	36	30	84	70
Continence	6	5	114	95
Feeding	42	35	78	65

Table (III): Distribution of the studied elderly with rheumatoid arthritis according to their degree of independency in the performance of activities of daily living

Degree of independency in the performance of activities of daily living	The studied elderly with RA(n=120)	
	No	%
Severe functional impairment	92	76.7
Mild to moderate impairment	20	16.7
Full function	8	6.7
Range	0-5	
Mean ± SD	1.45 ± 1.54	

Table (IV): Distribution of the studied elderly with rheumatoid arthritis according to their instrumental activities of daily living

Variables	The studied elderly with RA (n=120)			
	Independent		Dependent	
	N	%	N	%
Telephoning	115	95.8	5	4.2
Shopping	11	9.2	109	90.8
Transportation	44	36.7	76	63.3
Use of medicine	7	5.8	113	94.2
Financial behavior	9	7.5	111	82.5
	N=66		N=66	
Food preparation (for female)	6	9.1	60	90.91
Housekeeping (For female)	15	22.7	51	77.27

Table (V): Distribution of the studied elderly with rheumatoid arthritis according to their level of independency in performance of instrumental activities of daily living

Variables	The studied elderly with RA (n=120)	
	No	%
Low function dependent for men and women	5	4.17
Mild to moderate function for women	61	50.83
Mild to moderate function for men	54	45.00
Range	0-6	
Mean ± SD	1. 8 ± 1.19	

Table (VI): Distribution of the elderly with rheumatoid arthritis according to their domains and categories of QOL

Variables	The studied elderly with RA (n=120)						χ^2	P-value
	QOL categories							
	Poor		Fair		Good			
	N	%	N	%	N	%		
Overall Quality of Life and General Health	20	16.7	50	41.7	50	41.7	15.0	0.00**
Physical Domain	96	80	11	9.2	13	10.8	117.6	0.00**
Psychological Domain	80	66.7	26	21.7	14	11.7	61.8	0.00**
Social relationships Domain	38	31.7	39	32.5	43	35.8	0.35	0.83
Environment Domain	79	65.8	30	25	11	9.2	61.55	0.00**
Total QOL	100	83.3	6	5	14	11.7	135.8	0.00**

**** Significant at p < 0.01.**

Table (VII): Correlation between domains of QOL and activities of daily living:

Domains of QOL of the studied caregivers	Activities of daily living	
	R	P-value
Overall quality of life and general health	0.251	0.00**
Physical domain	0.432	0.00**
Psychological domain	0.288	0.00**
Social relationships domain	0.232	0.01*
Environment domain	020.4	0.02*
Total QOL	0.376	0.00**

** Significant at p < 0.01 and *significant at p <0.05.

Table (VIII): Correlation between domains ofQOL **and instruments activities of daily living:**

Domains of QOL of the studied caregivers	**Instrument's activities of daily living**	
	R	**P-value**
Overall quality of life and general health	**0.283**	**0.00****
Physical domain	**0.427**	**0.00****
Psychological domain	**0.385**	**0.00****
Social relationships domain	**0.147**	**0.12**
Environment domain	**0.214**	**0.01***
Total QOL	**0.394**	**0.00****

** Significant at p < 0.01 and *significant at p <0.05.

Discussion

Rheumatoid arthritis (RA) is a chronic disabling disease of the joints and may affect other body parts which starting at any age but mainly 55^{th} to 75^{th}, and is a deadly disease in 80^{th} and older**.** It is three times more common among females than males **(22,23)**.

Elderly patients with RA suffer from complications that lead to poor quality of life and disability due to poor knowledge that affect their self-care behaviors toward disease coping and compliance with treatment regimen **(24,25)**.So, the aim of the current study was to assess the relationship between functional status and quality of life of the elderly with rheumatoid arthritis.

Regarding demographic characteristics of the studied elderly, the present study revealed that, less than half of them were male, while more than half of them were female. Also, slightly less than two-thirds of female elderly were employed. In addition, their ages ranged between 60 ≥ 70 years with a mean of 70.69 ± 6.60 years among female and male patients respectively **(Table I).** This result is in agreement with **Rais et al., (2014)** who conducted a study to examine rheumatoid arthritis clinical features and management strategies at an urban tertiary facility in Pakistan and reported that the majority of their participants were females **(26)**. From the study point of view this finding may be due to female hormones and genes, which may increase the risk for RA than males**.**

Regarding to elderly income the result of the current study shows that nearly three-quarters of the studied elderly with RA had enough income while, the rest of them had enough money and save. The findings of the present study are in the same line with **Yanget al., (2018)** who conducted a study to analysis of socioeconomic status among patients with rheumatoid arthritis and found that the subjects with low socioeconomic status are at in increasing risk of developing RA with higher mortality rate (27). This finding can be explained thatthe income has great impact on quality of life and prognosis of the disease.

The result of the present study shows that more than two-thirds of the studied elderly with RA were living with their families and less than one- quarter of them were living in the geriatric home **(Table I).** This result in the same line with **Cunha et al., (2010)**who conducted a study to examine NEAR study: needs and expectation in rheumatoid arthritis-do we know our patients' needs? and reportedthat the majority of the study subjectswere living with their family (28). This finding may be due to family bonding and family culture and traditions which do not allow for the

family‘s elderly to stay in the geriatric to keep the extended family.

The result of the present study shows that nearly half of the studied elderly was widow which constituted the highest percentage compared to less than half of them were married.**(Figure1).** This result is a contrast with **Unk and Brasington (2014)** who conducted study to examine efficacy study of multimedia rheumatoid arthritis patient education program and mentioned that about half of their participants were married and are complaining of RA [(29)].

With regards to educational level,the table illustrates that less than two-fifths of the studied elderly were illiterate while, the rest of them were read and write, nearly one- quarter of them had secondary education and less than one quarter had university and post graduate and only few of them had elementary education.**(Figure2)**. This result is similar with **Reckner-Osslon et al., (2001)** who conducted a study to evaluate comorbidity and Life style, reproductive factors, and environmental exposures associated with rheumatoid arthritis and reported that the majority of elders with RA were illiterate [(30).] This finding can be explained that the risk for RA decrease with increasing level of education for patients.

Concerning the place of residence, the result of the present study shows that more than half of the studied elderly with RA were living in urban area and the rest of them were living in rural areas.**(Figure3)**. This result disagrees with **Linde et al., (2008)** who conducted a study to examine health –related quality of life of patients with rheumatoid arthritis. Which factors are significance? And reported thatthe majority of elders with RA were living in urbanareas [(31)].

The results of the present study revealed that more than one-third of the studied elderly with RA had independent in toileting and feeding while, less than one-fifth of them had independent in bathing, on contrast the majority of them had dependent in continence and bathing, while slightly less than two-third of had dependent in toileting **(Table II).**This finding is supported with a study carried out by **Hilary et al., (2009)** for assessment of a sixteen-week training program on strength, pain, and function in rheumatoid arthritis patients and observed that the disability related to RA decreased implementation of their self-care [(32)]. Also, a study conducted by **Linn Rasker et al., (2006)** who illustrated the improvement of the severity of RA symptoms decrease implementation of their performance of activities of daily living [(33)]**.**

In relation to, the degree of independency in the performance of activities of daily living the result of the present study

illustrates that more than three-quarters of the studied elderly with RA had a severe functional impairment, while less than one-quarter had a mild to moderate impairment and the rest of them had full function**.** Also, the degree of independency of studied elderly ranged from 0-5 with a mean of 1.45 ± 1.54 **(Table III)**.This result is congruent with a study done by **Osman. (2016)** who reported thatmore than half of studied participants had a severe functional impairment of the daily functioning of their studied elderly [(34)]. Additionally, another study conducted by **Hilary et al., (2009)** who observed that there was a severe functional impairment of their RA studied participants and become more independent in their daily life activities [(32)].

As regards to instrumental activities of daily living the result of the current study illustrates that the majority of the studied elderly had independent in telephoning and more than two third had independent in transportation while, only few of them had independent in shopping, financial behavior and use of medicineon contrast the majority of them had dependent in the use of medicine, shopping and financial behavior while, only very few of them had dependent on the telephoning **(Table IV).**This results is in accordance with **Pytel et al., (2012)** who stated that the majority of RA patients dependent in use of medicine, shopping and they start to practice some exercise regularly after feeling better [(35)].

Concerning others independence of instrumental activities of daily living for female. The result of the present study reveals that more than one-quarter of them had independent in housekeeping, while less than one- fifth of them had independent in laundering and food preparation. On contrast the majority of them had dependent in food preparation and laundering, while more than three-quarters of them had dependent in housekeeping **(Table V).**This result is in accordance with a study conducted by **Nadrian, et al., (2019)** to examine development and psychometric properties of a self-care behaviors scale (SCBS) among patients with rheumatoid arthritis and illustrated thatthe majority of them had dependent in food preparation and laundering of their RA patients [(9)].

As regards to the levels of independency of elderly performance of instrumental activities of daily living. This table reveals that more than half of the studied elderly women with RA had mild to moderate function while, less than one half of men had a mild to moderate function**.** Furthermore, this result shows that the degree of independence in the performance of instrumental activities of daily living of

studied elderly ranged from 0-6 with a mean of 1.8 ± 1.19 **(Table V)**.This result is similar to a study conducted by **Chen and Wang(2007)** to examine the relationship between physical function, knowledge of disease, social support and self-care behavior among patients with rheumatoid arthritis and observed that more than half of women had mild to moderate function [(36)].

The result of the current study represents thatmore than one-third of the studied elderly with RA had a fair and a good in overall their quality of life and general health had a good social relationship domain, had a poor environmental domain and two-thirds of them had a poor psychological domain. As regards to physical domain more than three-quarter of them had a poor physical domain while, the rest of them had a fair and a good physical domain, had a good psychological domain and had a good environmental domain. Also, there was a highly statistically significant difference between overall quality of life, general health QOL domains and QOL categories in overall quality of life and general health, physical domain, psychological domain, environment domain and QOL categories (p =0 .000). But there was insignificant association between social relationships domain and QOL categories, at (p =0 .83). **(Table VI).** This result is in contrast with a study carried out by **Radner et al., (2011)** to determine comorbidity affects all domains of physical function and quality of life in patients with rheumatoid arthritis and mentioned that their study confirms that RA has a significant effect on the health-related quality of life of patients [(37)]. The disease duration was the most influencing factor on both the physical and mental function. This result is in the same line with a study done by**Sturgeon et al., (2016)** to assess theaffective disturbance in rheumatoid arthritis: psychological and disease-related pathways and reported that their study confirms that the interplay between physical and psychological processes in RA requires an understanding of many levels at which this interaction could occur in RA patients so management to patient require attention to both psychological health and physical function [(38)]. Another study conducted by**Lwinet al., (2020)** to evaluate the impact of mental health on disease: A narrative review and observed that the elderly depression is two times more prevalent in RAregarding anti-rheumatic therapies, on depression and cognitive function in RA patients [(39)].This finding can be explained that there was some medication as disease-modifying anti-rheumatic drugs (DMARD) for RA lead to negative cognitive perception and belief in the ability to do things with presence of RA.

The result of the present study shows that there was a significance positive correlation between domains of QOL and activities of daily living and general health (p=<0.01). **(Table VII).** This result is in agreement with a study by **Attia et al., (2016)** who reported that this study confirm that RA cause impairment of all aspects of QOL (physical, social, psychological and environment) and the disease activity is the most predictor factor in those patients [(40)]. This finding may be due to feeling of elderly with pain and functional disability may have an important impact on QOL of RA patients through restrictions and unpleasant physical sensations they cause.

The result of the present study reveals that there was a significance positive correlation between overall quality of life, general health and all domains of QOL except social relationship domain and instruments activities of daily living at (p=<0.01). **(Table VIII).** This result is supported by **Gupta et al., (2009)**who conducted a study to assess the relation between functional status and quality of life of elderly with rheumatoid arthritis and found that there was a significant correlation between instrumental hand function (grip strength, muscle power and range of motion) and Activities of Daily Living (ADL) in rheumatoid arthritis patients[(41)]. This finding can be explained that the most characteristic extra-particular lesion is rheumatoid nodules which are small granulomas, and appear under the skin especially over the bony prominence on tendons, in the sclera and viscera and about 30% of rheumatoid arthritis patients develop it.

The QOL is an individual category and its improvement should imply personal experience of the individual. Furthermore, the integrative therapeutic model should include psychosocial support, activities to improve functional abilities, professional counseling, and using medical and complementary therapies to alleviate the symptoms of RA [(42)]. In this way, the results of this study indicated the need for further research that would include a larger number of respondents. Assessing the impact of different interventions on the QOL should also be an important task that can help define a holistic and integrative model of treatment and rehabilitation for RA patients.

Conclusion:

Based on the findings of the present study, it can be concluded that, more than three-quarters of the studied elderly with RA had a poor QOL and less than one-fifth had a good QOL, while the rest had a fair QOL as a result of their domains and categories of QOL of elderly with RA. There was a

statistically significant positive correlation between all domains of QOL and activities of daily living and instruments activities of daily living.

Recommendation

Based on the findings of the present study, the following recommendations were suggested.

1. Hold continuous educational and orientation program for rheumatoid arthritis patients to upgrade their knowledge about rheumatoid arthritis's disease and its management and encouragethem for high level of self-care, health status, follow up.
2. Instructional guidelines should be applied on a wide range through different social media.
3. Community support either governmental or non- governmental should be provided to all rheumatoid arthritis patients.
4. Further research is required to investigate factors associated with rheumatoid arthritis patients as psychological, social and environmental factors.

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The Effect of Health Instructional Guidelines for Prevention of Sexual Harassment on Perceptionsof Preparatory Schools Male Students at Tanta City

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Abstract

Background: Sexual harassment in schools is unwanted and unwelcome behavior of a sexual nature that interferes with the health and wellbeing of students, also it makes the educational environment hostile. **Aim of study**: the study aimed to evaluate the effect of health instructional guidelines for prevention of sexual harassment on perception of preparatory school male students at Tanta city. **Subjects and method**: **Studydesign:** Quasi-experimental design was used. **Studysetting:** The study was conducted at two governmental preparatory schools. **Studysubjects:**A convenience sample of 200 students attending the previous setting from four classes was included in the study. **Tools:**A structured questionnaire schedule was used to carry out this study which contained the following parts; part 1: Socio-demographic characteristics of the male students and their families, part 2: Assessment of sexual harassment experiences of male students by using Sexual Experience Questionnaire, part 3: Assessment of male students' knowledge about sexual harassment and its prevention, part 4: Assessment of used protective measures of male students toward sexual harassment, and part 5: Assessment of perception of male students toward sexual harassment**. Results:** The percentage of students who gained good level of total knowledge score improved from 11% to 81% pre and immediately after implementation of health instructional guidelines respectively. About 75% of them had a negative perception of sexual harassment pre health instructional guidelines and this decreased to only 17% immediately after the implementation of health instructional guidelines. **Conclusion**: The health instructional guidelines were effective and improved the level of perception, knowledge of the studied male students about sexual harassment were improved after implementation of health instructional guidelines.**Recommendations:**continuous implementation of health instruction guidelines for students and their families about sexual harassment and their role in its prevention andproviding sufficient training for preparatory school male students regarding prevention of sexual harassment to enhance their perception.

Keywords: Health instructional guidelines, prevention of sexual harassment, perception of preparatory school, and male students.

Introduction

Adolescence is a time of great change for young people. It is a time when physical changes are happening at an accelerated rate. Adolescence is not just marked by physical changes. Young people are also experiencing cognitive, social/emotional and interpersonal changes as well. As they grow and develop, young people are influenced by outside factors such as: parents, peers, community, culture, religion, school, world events and the media. While it is true that each teenager is an individual with a unique personality and interests, there are also numerous developmental issues that just about every teen face during the early, middle and late adolescent years [(1)].

A wide spreading of sexual harassment among adolescence has become an issue that, generate enormous public concern and has become a focus of prevention in nursing and public health. This is because it threatens the safety and stability of society and the sanctity of institutions of learning. Sexual harassment spread in recent times and the seriousness of it lies in the leak of sexual harassment inside the walls of schools that serves as places of education and instills values, principles and morality[(2)].

In Egypt, according to the United Nations Entity for Gender Equality and the Empowerment of Women (2018), 99.3% of the studied women have been sexually harassed, also the National Egyptian Council for women reported that 62% of Egyptian men admitted harassing women, and 53% of Egyptian men have blamed women for bringing it on. A medico legal study performed at Ain Shams University, Faculty of Medicine about child sexual abuse in greater Cairo, Egypt, from 2005-2011, on the age group 6-12 years, found that the higher rate of sexual harassment was in 2011 with a percentage of 49% in that year, mostly in males 71.8%, and 83% of them belonged to low social class, and 78.1% of them were out of school. All offenders were males. The unmarried offenders assaulted females more than males whereas the married assaulted males than females [(3, 4)].

Accurate methods of predicting which individuals will engage in sexual harassment behaviors aren't available. An individual's use of sexual harassment seems to be influenced by variety of factors both external and internal. These factors include: previous aggressive or violent behavior, being the victim of physical abuse and /or sexual abuse, exposure to violence in the home and /or community, genetic (family heredity) factors, exposure to violence in media (TV, movies, etc.), presence of firearms in home and combination of stressful family socioeconomic factors (poverty, severe

deprivation, marital breakup, single parenting, unemployment, and loss of support from extended family) [5].

Regarding the consequences of sexual harassment, physical injuries are not the only consequences, but it also affects the emotional, psychological and social well-being of adolescence. Sexual harassment is positively associated with depression, anxiety, anger and dissociation, lower intelligence (IQ scores), poorer language skills, decreased in visual-motor integration skills and problems with attention and memory. Adolescent exposure to sexual harassment is also associated with a variety of aggressive and maladaptive behaviors that can disrupt children's school adaptation and academic performance [6].

Community health nurse can prevent sexual harassment through providing education to the school community in problem solving and conflict resolution skills, recognizing early warning signs that lead to sexual harassment and identifying factors outside the school setting that might predispose adolescence to sexual harassment and threaten their safety. When sexual harassment occurs, school nurse is positioned to intervene, working collaboratively to change the dynamics of the crisis situation[7].

School nurse is able to support the efforts of administration to provide and maintain security for adolescence, and to offer programs to parents that support building skills in the areas of communication, problem-solving, and monitoring of their children. School nurse is also able to serve on school safety and curriculum committees, identifying, advocating and implementing sexual harassment prevention program within the school community [6, 7].

The role of the nurse is performed through variety of health promotion mechanisms as periodical examination, guidance and education. School nurse role should follow the three levels of prevention which includes primary, secondary, and tertiary levels. This is done by collaboration of educational personnel and health care providers in the community. School health nurse should use all community facilities and resources to achieve the three levels of prevention effectively. Community health nurse has an active role in responding to sexual harassment among school students. In fact, this role may be enacted in services to individual level and families, community health nurse may also be involved in planning and implementing intervention to control the problem of sexual harassment at the community or population level [8].

Significance of the study:

Sexual harassment has been viewed as a social and health problem all over the world, requiring the efforts of social and health care professionals. Public health is increasingly taking a stand against accepting sexual harassment and is taking serious efforts to prevent it [9].

There is a great concern about the incidence of sexual harassment behavior among children and adolescents. Adolescents who witness sexual harassment behavior are more likely to experience depression, anxiety, nightmares, teen dating violence and disruptions with school work. Exposure to sexual harassment impacts on the development, safety and well-being of children and young people. The effects of sexual harassment on children may include physical injuries that may even result in death feelings of fear, anxiety, shame, depression, anger, confusion, distrust, low self-esteem, sleeping difficulties (such as bedwetting and nightmares), aggressive and withdrawn behavior, slow developmental capacities like poor school performance, missing drugs, alcohol and using violence to resolve problems. The result of the current study will add to the nursing body of knowledge and will be of great benefits to school nurse to initiate programs that aims at preventing sexual harassment and its negative consequences. It also will increase parent's awareness regarding how to avoid sexual harassment and its negative effect on their children [9, 10]. So, the aim of the current study was to evaluate the effect of health instructional guidelines for prevention of sexual harassment on perceptions of preparatory schools' male students at Tanta City.

The aim of this study was to:

Evaluate the effect of health instructional guidelines for prevention of sexual harassment on perception of preparatory school male students at Tanta city.

Research hypothesis:

Perception of preparatory school male students at Tanta city expects to be improved after implementation of the health instructional guidelines.

Subjects and Method

Study design:

Quasi-experimental study design had been utilized in this study.

Study settings:

Tanta city includes two educational districts (west and east) which include 24 preparatory schools. Two governmental preparatory schools had been selected randomly from each district to be included in the study. These schools were Said-Elarian and Saad -Zaglool from east educational district and Khaled -Ebn El-walid and Ali -Mubarak from west educational district.

Study subjects:

One class was chosen by stratified random sample from first and second grades from each of the selected governmental preparatory schools ,36 male students from the first grade and 29 male student from second grade in Said –Elarian and 27 from the first grade and 12 from the second grade in Saad-Zagloolpreparatory schools for male students in east educational district at Tanta city, and 28 male students from the first grade and 27 male students from the second grade in KhaledEbn El-Walid and 24students from the first grade and 17students from the second grade in Ali- Mubarak preparatory schools for male students from the west educational district at Tanta city. The total number of students attending the previous setting was 200.

Tools of data collection:

In order to collect the necessary data in this study a structured questionnaire schedule was used whichincluded the following parts**:**

Part (1) Socio-demographic characteristics of the male students and their families:

(A) Socio-demographic characteristics of the male students which included data about age, academic year, number of siblings, student order among his siblings and place of residence.

B) Family socioeconomic status was measured by using scale for measuring family socioeconomic status (SES) for health research in Egypt which was developed by Fahmy and El-Shrbini(1983)[(11)]which was updated by Fahmy et al. (2015)[(12)]. The scale included ten variables with a total score of 48, with a higher score indicating better SES which included data about mothers and fathers' educational level, mothers and fathers' professions, family use of computer, family income level, number of family members, number of rooms in house, domestic sanitation and safe disposal of wastes.

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

- High: - ≥ 70% (33.5-48)
- Middle: - 40 to <70% (19.2 to < 33.6)
- Low: - < 40% (< 19.2)

Part (2): Assessment of sexual harassment experiences of male students by using Sexual Experience Questionnaire

Sexual Experience questionnaire was developed by Fitzgerald, Gelland and Drasgow(1995)**[(13)]**. The questionnaire was adapted by the researcher to assess sexual harassment experience of the male adolescent students in the current study. The sexual experience questionnaire was 20- item, self- report measure that assessed

experiences with various types of gender harassment, unwanted sexual attention, and sexual coercion. This part included questions about telling pornographic jokes, unwanted attempts to discuss sexual materials, treated differently as a male, offered him sexual materials, anyone make sexual hints about his gender, touching him in uncomfortable way, anyone had tried to have sex attempt with the student or anyone forced him to accept sexual or social invitation with him in order to be treated well or any one sexually harassed him. Items were rated as either one for (yes) or zero for (no). The higher score indicated a greater exposure to and more experience with various types of sexual harassment.

The total score was categorized as follows:

- More experience:>50% of the total score.
- Low experience: ≤ 50% of total score.

Part (3): Assessment of male students' knowledge about sexual harassment and its prevention:

This part was developed by El-Gunidi et al.(2018)[14], and was adopted by the researcher in the current study it included:

1-Basic knowledge regarding sexual harassment which included definition, types, and causes of sexual harassment, hearing about sexual harassment before, attending of educational program, lectures or seminars regarding sexual harassment before, the sources of information about sexual harassment, the family role regarding education about sexual harassment and laws and penaltiesin Egypt regarding sexual harassment.

2- Risks of exposure to sexual harassment, which included physical and psycho-social consequences that the student would be exposed to as a result of harassment.

3- Preventing sexual harassment among male students, which included knowledge about protective measures from harassment for the student himself, his role toward his colleagues and in preventing sexual harassment and in the society as well as the role of religion and moral values in preventing sexual harassment.

Scoring system:

The responses of students scored as complete correct answers (2 points), incomplete correct answers (one point) and incorrect or do not know answers (zero point). The responses of students were summed up, converted to percentage, and categorized as follow:

Total knowledge score would be classified as following:

- Good knowledge → 65% of total knowledge score.
- Fair knowledge → 50% - 65% of total knowledge score.
- Poor knowledge → < 50% of total knowledge score

Method

1-Obtained approval: An official approval to conduct the study was obtained from the Dean of Faculty of Nursing to the Educational Administration at Tanta City in order to obtain their permission to collect the data from the selected settings.

2-Ethical considerations:

-The consent from the faculty's ethical committee was obtained.

-Informed consent was obtained from the study subjects to participate in the study after explanation of the purpose of the study.

-Each student would be informed that he has the right to withdraw from the study any time he wants

-Confidentiality and privacy were put into consideration regarding the data collected.

-Nature of the study wasn't led to any harm or pain for the entire students.

3-Developing tool: The questionnaire was developed based on literature review. Part 2 was adapted according to Egyptian culture, also part 2 and part 5 were translated into Arabic language by the researcher.

4-Study tools were tested for its face and content validity by a jury of five professors' expertise in the field of community health nursing before conducting the study. Then necessary modifications were done.

5-Study tools were tested for its reliabilityby using Cronbach's alpha test, and found to be (0.862) for all the study tools, (0.832) for part 1, (0.901) for part 2, (0.889) for part3, (0.796) for part 4, and (0.802) for part 5.

6- A pilot study was carried out on 10% of the total sample after taking their approval to test the tool for its clarity, organization, determine length of time needed to collect this data. The necessary modifications were done and those students were excluded from the actual study subjects.

7-The researcher met with students in their schools in Tanta city according to the suitable selected date and time with schools' manger.

8-The duration for collecting the data was started from March2020 until May and then from September until October 2020

9-Steps of health instructional guidelines:

The health instructional guidelines were carried out according to the following phases:

A) Assessment phase:

Data was collected by the previously mentioned tools through meeting students in their classrooms to collect the baseline data as a pre-intervention assessment.

B) Planning phase:

The health instructional guidelines were planned according to the students' needs

and the literature review. The goal of the instructional guidelines was to improve male students' knowledge and promote positive perceptions regarding prevention of sexual harassment.

Objectives of the program:

At the end of the health instructional guidelines, the male students were able to:

1. Define sexual harassment.
2. List causes of sexual harassment.
3. Mention types of sexual harassment.
4. Discuss consequences of sexual harassment.
5. Illustrate preventive measures of sexual harassment.
6. Recognize their role in prevention of sexual harassment.
7. Appreciate of efforts for prevention of sexual harassment.

C) Implementation phase:

-The health instructional guidelines were presented to the students by the researcher. Three sessions were provided for the students at their classes according to their actual needs about sexual harassment.

The sessions were as follow:

Session (1): The aim of this session was to establish relationship with the student and orient them about the importance of the health instructional guidelines, its sessions and expectations of each session as well as definition of sexual harassment and its types, and to increase awareness of students about causes of sexual harassment.

Session (2): The aim of this session was to increase awareness of students about risks of sexual harassment, prevention and management of its complications, and promote positive perceptions of male students toward sexual harassment.

Session (3): The aim of this session was to enable male students to identify their role toward themselves, their peers and their community in prevention of sexual harassment.

Time of each session ranged between 30-45 minutes.

-The following methods and materials were used for implementation of the instructional guidelines: Lecture and group discussions. Handouts, videos, and power point presentation was used as teaching aids.

D) Evaluation phase: Evaluation phase of the health instructional guidelines was done two times:

First time (pretest): To test their baseline data, and perceptions about sexual harassment. (Parts 1-5).

Second time (immediate posttest): Immediately after implementation of the health instructional guidelines. (Parts 3- 5).

10- Statistical Design:

The statistical analysis of data was done by using the computer software of Microsoft

Excel Program and Statistical Package for Social Science (SPSS) version 22. Statistical methods were applied including descriptive statistics such as (frequency, percentage, mean (X) and standard deviation (SD). Baseline differences between the group at pre and immediate post were assessed using an independent t-test for continuous variables. P-values were considered statistically significant when:

- P-value > 0.05 Not significant (NS)
- P-value ≤ 0.05 Significant (S)
- P-value ≤ 0.01 Highly Significant (HS).

Results

Table (I): shows the distribution of the studied male students according to their socio-demographic characteristics. The table illustrates that male students' age ranged from 12-14 year with Mean ±SD 13.01±0.17 year. As regards to student grade, the table shows that more than half of the studied male students (58%) were at first grade and 56% had 3-5 siblings. Regarding thebirth order, 37.5% were the second child. More than half of them (57%) residing in rural areas and only 6% of them residing in slums.

Table(II):shows the distribution of the studied male students according to the socio-economic status of their families. The table illustrates that more than half (59%) of the mothers of studied male students were diploma or secondary school graduates and 76% of them were housewives. On the other hand, 52.5% of the fathers of the studied students were secondary education or diploma graduates and 32.5% of them were not working. Moreover, 51% of the student's families had enough income and small loan and 37% of their families consist of 5 members and 56% of them had < 3 rooms in their house. Related to crowding index,45% of the students' familieswere > 2. Nearly one-third (32%) of the studied students didn't have sewage disposal and 64% of them didn't have refuse disposal while, more than half (53%) of their families didn't use the computer.

Table (III): shows the distribution of the studied male students according to their levels of experiences of exposure sexual harassment. The table demonstrates that the majority (95%) of the studied male students had low experienceof sexual harassment. While, only (5%) of them had more experience.

Figure (1): reveals the distribution of the studied male students according to their level of total knowledge about preventing sexual harassment at pre and post implementation of health instructional guidelines. The figure shows that, more than two-thirds (67%) of the studied students had a poor level of total knowledge and only 11% had good knowledge about sexual harassment pre

health instructional guidelines whereas, only 14% of them had poor knowledge and 81% of them had good level of total knowledge immediately post implementation of health instructional guidelines.

Table (IV):presents the distribution of the studied male students regarding to their levels of total perception score of sexual harassment pre and post implementation of health instructional guidelines. The table illustrates that three-quarters (75%) of the studied students had negative perception of sexual harassment at pre-health instructional guidelines, compared with 17% immediately after health instructional guidelines. The table also reveals that most (83%) of the studied students had a positive perception of sexual harassment immediately after health instructional guidelines. It was obvious that there was a marked improvement in total score of students' perceptions of sexual harassment post applying health instructional guidelines with a highly statistically significant difference between pre and immediate health instructional guidelines (P= < 0.01).

Table (V): shows the correlation between the levels of students' family socio-economic status, sexual harassment experiences, knowledge about sexual harassment and perception towards sexual harassment. The table demonstrates that there was a highly significant positive correlation between total score of knowledge about sexual harassment of the studied students and theirtotal score of family socioeconomic status, total score of knowledge about sexual harassment of the studied students and their total score of perception about sexual harassment, also total sexual harassment experiences andtotal perception towards sexual harassment and also total score of perception of the students about sexual harassment and their total score of knowledge about SH.

The table also shows that there was a significant negative correlation between the total score of experience of the studied students about sexual harassment and their total score of family socioeconomic status (P= < 0.01). There was a highly significant negative correlation between levels of family socioeconomic status of the studied students and their total perception of sexual harassment.

Table I: Distribution of the studiedmale students according to their socio-demographic characteristics

Socio-demographic characteristics of the studied male Students	The studied male students (n=200)	
	No	%
Age		
12	30	15
13	104	52
14	66	33
Mean ±SD	**13.01±0.17**	
Range	**12-14**	
Student grade		
First grade	116	58
Second grade	84	42
Number of their brothers/sisters		
<3	68	34
3-5	112	56
>5	20	10
Birth order		
First	45	22.5
Second	75	37.5
Third	40	20
More than third	40	20
Place of residence		
Rural	114	57
Urban	74	37
Slum	12	6

Table II: Distribution of the studied male students according to the socio-economic status of their families

Socio- economic status of the families of the studied male students	The studied male student (n=200)

	No	%
Mother's educational level		
Illiteracy / reads and writes	8	4
Primary education	22	11
Preparatory education	35	17.5
Secondary education or diploma	118	59
University education	15	7.5
Postgraduate studies	2	1
Father's educational level		
Illiteracy / reads and writes	10	5
Primary education	18	9
Preparatory education	41	20.5
Secondary education or diploma	105	52.5
University education	22	11
Postgraduate studies	4	2
Mother's work		
Working	48	24
housewives	152	76
Father's work		
Working	135	67.5
Not working	65	32.5
Family income		
Not enough and not repaid loan	18	9
Enough and big loan	32	16
Enough and small loan	102	51
Enough only	28	14
Enough and saving	20	10
Number of family members		
7 or more members	28	14
6 members	30	15
5 members	74	37
Less than 5 members	68	34
Number of rooms in the house		
< 3	112	56
≥ 3	88	44
Crowding index		
< 1	48	24
1-2	62	31
>2	90	45
Sewage disposal		
Yes	136	68
No	64	32
Refuse disposal		
Yes	72	36
No	128	64
Family use of the computer		
Never	106	53
Sometimes	64	32
Most of time	30	15

Table III: Distribution of the studied male students according to theirlevels of experiences regarding sexual harassment

Level of sexual harassment	The studied male

experiences of the studied male students	students (n=200)	
	No	%
More experience	10	5
Lowexperience	190	95

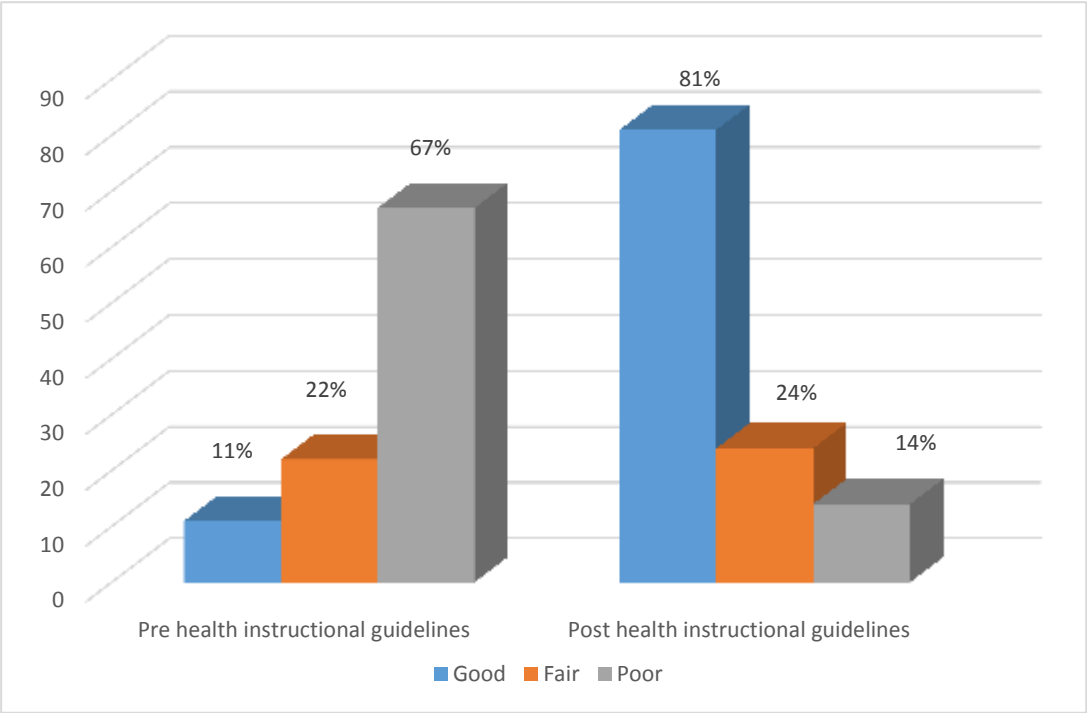

Figure 1: Distribution of the studied male students according to their level of total knowledge about preventing sexual harassment at pre and post implementation of health instructional guidelines.

Table IV: Distribution of the studied male studentsregarding to their levels of total perceptionscore about sexual harassment pre and post implementation of health instructional guidelines

Levels of student's perception of sexual harassment	The studied male students (n=200)				χ^2	P-value
	Pre-health instructional guidelines		Posthealth instructional guidelines			
	No	%	No	%		
Positive	50	25	166	83	26.94	.000**
Negative	150	75	34	17		

****Significant at P<0.01**

Table V: Correlation between the total score of students' family socio-economic status, sexual harassment experiences, knowledge about sexual harassment and perception towards sexual harassment

Variables	Total score of family socioeconomic status	Total sexual harassment experiences	Total score knowledge about sexual harassment
	r p	r p	r p
Total score of family socioeconomic status			
Total sexual harassment experiences	-.231 .037*		
Total score of knowledge about sexual harassment	.357 .001**	.318 .005**	
Total perception towards sexual harassment	-.345 .001**	.475 .001**	.595 .000**

****Significant at P<0.0**

Discussion

Adolescence is a very sensitive period, because it plays an important role in

building the future of the person and his personality depending on the choices and decisions, he makes during it. It also depends on the tests he faces, which makes him confused and feels the desire to develop himself and learn new skills and experiences. The adolescent is affected either negatively or positively by the results of these tests. It is considered normal for a teenager to go through obstacles and problems, but it depends on his ability to confront and overcome them. The most important problems that adolescents suffer from are physical changes that happens due to hormonal changes, emotional and psychological problems occur also due to hormonal changes[17].

Sexual harassment is any form of unwelcome sexual behavior that's offensive, humiliating or intimidating. Most importantly, it's against the law. Being sexually harassed affects people in different ways. Sexual harassment in schools presents its specific problems; it is including sexual coercion, demands for sexual cooperation and disciplinary and related sanctions for refusal. This type of harassment is difficult to conceptualize when applied to peer sexual harassment in schools, which is often perpetrated without clear sexual intent in mind [`18]. This study developed to find ways to promote a better school environment through the prevention of and management of sexual harassment through development of health instructional guidelines on prevention and management of sexual harassment for preparatory school students. Therefore, the aim of this study was to evaluate the effect of health instructional guidelines for prevention of sexual harassment on perception of preparatory schools'male students at Tanta city.

It obvious from the current study that, more than half of the studied male students were at first grade had 3-5 siblings and more than one-third of them were the second child **(table I)**. This result was in agreement with **Zaki et al., (2019)**[19] who conducted study to assess knowledge, awareness, and attitude about sexual harassment among saudi preparatory school students in Western Region, Kingdom of Saudi Arabia and found that the majority of male students were at first grade and had 3-5 siblings. However, this result was in disagreement with **Tolera et al., (2017)**[20] who studied" Risky sexual behaviors and associated factors among high and preparatory school youth in East Wollega, Ethiopia " and found that more than two-third of them were the first child.

Concerning socio-economic status of families of the studied male students, the current study revealed that more than half

of the studied male students' mothers were diploma or secondary school and more than two- thirds of them were not working. On the other hand, more than half of the studied male students' fathers were secondary education or diploma and nearly one- third of them were not working. Moreover, more than half of the student's families had enough income and small loan **(table II)**. This study is in accordance with **Elgunidi et al., (2018)** [(14)]whichfound that the majority of the studied female student's' fathers and mothers were secondary and university educated, more than half of the studied female students' mothers were not working and the majority of their families had enough income. Conversely, this result was in disagreement with **Letourneau et al., (2017)**[(21)] whose study entitled "Preventing the onset of child sexual abuse by targeting young adolescents with universal prevention programming in Cannada" and found that more than half of the student's families hadn't enough income.

Experiences of behavior that might be considered sexual harassment include: unwanted sexual innuendo, propositions, sexual attention, or suggestive comments and gestures; inappropriate humor about sex or gender-specific traits; sexual slurs or derogatory language directed at another person’s sexuality, gender, gender identity, sexual orientation, or gender expression; insults and threats based on sex, gender, gender identity, sexual orientation, or gender expression; and other oral, written, or electronic communications of a sexual nature that an individual communicates is unwanted and unwelcome [(22)].

Regarding the total score of sexual harassment experiences of the studied male students, the current study demonstrated that the majority of the studied male students had low experience of sexual harassment. While, a few percent of them had more experience **(table III)**. From the researcher point of view, these findings may be due to the schools of students were not a common setting for this behavior and also the students may not like to talk about this such topics due to its sensitivity.

These findings were in accordance with a study conducted by **El-Ganzory et al., (2014)** [(23)] to evaluate the effect of educational guidelines program on internship nursing students facing sexual harassment behavior and found thatthe majority of the male students had low experience of sexual harassment. Conversely, these findingswere in disagreement with **Cafo et al., (2014)**[(24)] who studied "Assessment of sexual violence and associated factors among high school students in Harari Regional State, Harar Town, Eastern Ethiopia"and found thatone quarter of the male students had high experience of sexual harassment**.**

Sexual harassment can take many forms. Sexual harassment may include, but is not limited to sexual advances or request for sexual favors, inappropriate comments, jokes or gestures, or other unwanted verbal or physical conduct of a sexual nature, may be blatant and intentional and involve an overt action, a threat of reprisal, or may be subtle and indirect, with a coercive aspect that is unstated and it may occur in the classroom, in the workplace, in residential settings, over electronic media (including the internet, telephone, and text), or in any other setting [(25)].

As regard to the total knowledge of the studied male students about preventing sexual harassment at pre and post implementation of health instructional guidelines, the current study showed that there was a great improvement of in students' knowledge as a few percent of the studied students had a poor level of total knowledge and more than three- quarters of them had a good level of total knowledge immediately post implementation of health instructional guidelines **(figure 1)**. From the researcher point of view, this result may be due to the positive effect of health instructional guidelines and that the studied male students were in need to more information about sexual harassment at adolescences period.

These results were in accordance with **Fentaw et al., (2018)**[(25)] who found that the majority of the studied male students had a good level of total knowledge immediately post implementation of health instructional guidelines. Conversely, this result was in disagreement with **Lee et al., (2019)**[(26)] who found that the majority of the studied male students had a good level of total knowledge about sexual harassment pre health instructional guidelines.

As regard to the perception of the studied of sexual harassment, the current study illustrated that three-quarters of the studied students had a total negative perception of sexual harassment pre health instructional guidelines, however most of the studied students had a total positive perception of sexual harassment immediately after health instructional guidelines. It was obvious that there was a marked improvement in total students' perception of sexual harassment post applying health instructional guidelines with highly statistically significant difference between pre and immediate health instructional guidelines **(table IV)**. This result may be attributed by that the health instructional guidelines had a positive effect on information of the studied male students about sexual harassment which improve their perception.

This result was in agreement with **Lijster et al.,(2014)**[27] who found that the majority of studied students had a positive perception of sexual harassment immediately after health instructional guidelines about sexual harassment. Conversely, this result was in disagreement with **Mehasb et al., (2017)**[28] who studied" Perception and attitude of internship nursing student regarding sexual harassment" and who found that more than half of the internship nursing students had an average level of perception regarding sexual harassment and the minority had a good level of perception, and also found that more than half of nursing students had a negative attitude toward SH. Also, this study was in agreement with **Elgunidi et al., (2018)**[14] who found that the majority of the studied female students had a negative perception of sexual harassment after health educational program.

Regarding correlation between the levels of students' family socio-economic status, sexual harassment experiences, knowledge about sexual harassment and perception towards sexual harassment, the current study demonstrated that there was appositive correlation between total score of knowledge about sexual harassment of the students and their total score of family socio-economic status. This may be due to families from high socio- economic status can offer different experiences to their children to gain knowledge **(table V)**.

Also, a positive correlation was found between total score of knowledge and total SH experiences which reflect the importance of knowledge in formulating the perception. Furthermore, a positive correlation was also found between total score of knowledge and total score of sexual harassment experience. This may be explained by that those with more knowledge about sexual harassment are more alerts to experiences (**table V**).

In the same line; this result was in agreement with **Tolera et al., (2017)**[20] who found that there was a highly significant positive correlation between attitude toward sexual harassment, family connectedness and risky sexual behavior between secondary school students. On the other hand, this result was in disagreement with **Fentahun et al., (2012)**[29] who found that all socio-demographic variables appear to be not the predictor of teachers' attitude towards contents of school sex education at school or teachers' expectations about ideal time to start school sex education.

Consequently, with the spread of this phenomenon, the phenomenon of sexual harassment, it is necessary to have educational programs such as this one to raise the awareness of children and fathers and mothers so that they, in turn, educate

their children not to allow anyone, even if they are close to them, to touch any part of their bodies, as well as the existence of programs to train teachers and activate student participation in it and the implementation of laws inside those educational facilities to reduce this problem.

Conclusion

Based on the findings of the present study, it can be concluded that the health instructional guidelines were effective in improving the level of perception, knowledge of the studied male students about prevention of sexual harassment and also their information about the protective measures to protect themselves from SH. The majority of the studied male students had low experienceof sexual harassment.

There was highly significant positive correlation between total knowledge about sexual harassment of the studied students and theirtotal score of family socioeconomic status, total sexual harassment experiences andtotal perception towards sexual harassment. Furthermore, there was significant negative correlation between total score of family socioeconomic status of the studied students and their sexual harassment experiences and total perception towards sexual harassment.

Recommendations

In the light of results of this study, the following recommendations were suggested:

1. Continuous implementation of health instruction guidelines for students and their families about sexual harassment and their role in its prevention.
2. Providing sufficient training for preparatory school male students regarding prevention of sexual harassment to enhance their perception.
3. Opening outlets to absorb the energy of young people through youth centers and excursions,cultural competitions, and awareness.
4. Attempting to promote positive values among students in particular by creating role models of good youth, instead of the negative models they present to the media.
5. Putting in place strict legislation that everyone agrees on to confront the phenomenon, this legislation should tighten the penalties around the phenomenon.

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