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Summaries the key findings, outcomes or information in your report
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Effect of Instructional Guidelines on Students' Self Care Practices Regarding Vaginal Discharge at Secondary Schools in Tanat City

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Abstract

Vaginal discharge, may be physiological or pathological. Pathological vaginal discharge is the most common symptom of reproductive tract infections and its incidence is high among adolescents particularly in developing countries. **The aim of this study** was to determine the effect of implementation of instructional guidelines on students' self-care practices regarding vaginal discharge. **Subjects and method:** The study was conducted at 4 classes selected randomly from the second grade of 4 female governmental secondary schools at Tanta City. The total representive sample was 160 students. **Three tools** were used for collection of data. **Tool (I): Structured interview schedule:** It included**: Part a:** Bio-socio-demographic data**, Part b:**Menstrual history and **Part c:** Present history of vaginal discharge**. Tool (II): Student's knowledge assessment questionnaire:** It included students' knowledge regarding vaginal discharge**. Tool (III): Student's self-care practices regarding vaginal discharge:** It included**: a- Personal self care**, **b-** Self-care practices regarding genital and menstrual hygiene and **c-** Self-care practices regarding abnormal vaginal discharge**. Results:** The mean knowledge and self-care practice score of students regarding vaginal discharge was increased immediately and one month after implementation of the instructional guidelines with a statistically significant difference $P<0.05$ compared to pre-implementation. **Conclusion and recommendations:** Significant improvements of students' knowledge as well as self-care practices regarding vaginal discharge were observed immediately and one month after implementation of the instructional guidelines. Evident and continuous educational programs are to be established at schools for students, teachers and school nurses to increase their awareness regarding normal and abnormal vaginal discharge care.

Keywords: Vaginal Discharge, Adolescents, and Instructional Guidelines .

Introduction

Adolescents are the citizens of tomorrow and the generation of hope. They play a vital role in the health status of communities. Their behaviors, attitudes, and beliefs are shaping the future societies. Worldwide, in the 21st century, life is undergoing significant changes and the most affected are the adolescents. (1-2) The World Health Organization (WHO) identifies adolescence as the period of human growth and development that occurs after childhood and before adulthood, from 10 to 19 years of age. (3-4) It was estimated that 1.2 billion people, or 1 in 6 of the world's population are adolescents aged 10 to 19. Adolescents make up 20 % of the world population, more than four fifths of them live in developing countries and in Egypt, they represent around 25% of the population. (5)

Adolescent females form a potential component of population because they are the future mothers**.** The females children grow up till attainment of adulthood through different stages of life cycle. They experience physical and emotional challenges and issues of reproductive health soon after onset of puberty. **(6-7)** They reach the maturity of human reproductive organs during adolescence period.

Adolescent females are considered a vulnerable group globally and so more in our society where gender discrimination makes situation still worse for them.(8) Their' health, nutrition, education, and development are more neglected, these may have adverse effects on their reproductive health. Reproductive health issues are considered taboo subject and this attitude of the society adds to the woes of adolescent females. They are deprived of quality education and information regarding reproductive health, rendering them to be more prone for reproductive health and gynecological problems as (unwanted pregnancies, cervical cancer, uterine fibroid, sexually transmitted infections (STIs), reproductive tract infections ect). (9)

Vaginal discharge is one of the most common symptoms of gynecological morbidity affecting adolescent female and is a very common cause for seeking medical attention. (10) Vaginal discharge may be physiological or pathological. Physiological vaginal discharge in adolescents is usually clear to white, non-adherent to the vaginal wall, and pooled in the posterior fornix. It can appear non homogenous with clumps of desquamated epithelial cells. It has a pH of less than 4.5, no offensive odor and an abundance of epithelial cells. It is a natural defense mechanism that the vagina uses to maintain its chemical balance as well as

preserve the vaginal tissue. Normally, the secretion is just enough to lubricate vagina. Normal vaginal discharge does not wet undergarments or create any type of vaginal symptoms. The nature of physiological vaginal discharge, depends on factors such as age, phase of menstrual cycle, endogenous and exogenous hormonal influences.[11]

The commonest cause of vaginal discharge in adolescent females is physiological. The excessive vaginal secretions may be due to the physiological excess when the oestrogen levels become high in conditions such as puberty, around ovulation stage of the menstrual cycle, during pregnancy and during sexual excitement. On the other hand abnormal vaginal discharge predisposes to significant morbidity. Common infection causes of abnormal vaginal discharge among adolescents include non-sexually transmitted as candida and bacterial vaginosis, non-infective causes like foreign bodies as retained tampons, allergic reaction, or irritation from vaginal sprays, douches, perfumed soaps, detergents, and/or fabric softeners. Abnormal vaginal discharge is characterized by change of colour, consistency, volume, or odor, and may be associated with symptoms of itching, soreness, dysuria, pelvic pain, and/or intermenstrual or post-coital bleeding. [12-13]

Abnormal vaginal discharge (AVD) is not a disease for itself but it is a symptom of other diseases as reproductive tract infections and sexually transmitted diseases. If abnormal vaginal discharge isn't treated well, it may lead to severe complications as pelvic inflammatory disease, infertility, ectopic pregnancy, congenital anomalies and prognosis of genital tract malignancy. So, early detection and treatment of abnormal vaginal discharge can decrease the maternal morbidity and mortality.[14] Because of the cultural inhibitions, shame towards consulting male doctors in some communities, as well as all females are unable to differentiate between normal and abnormal vaginal discharge due to lack of health education. In Egypt, the school basic curriculum offers little education to students about health in general and reproductive health in particular. [15-16]

Nurse plays a critical role in identifying female complaining of abnormal vaginal discharge, assisting in prevention of gynecologic infections, as well as ensuring that patients comply with the suggesting clinical examinations and medications, as well as finding out bad hygiene habits and determining the right practices.[18] Nurses also must encourage wider social

discussion of reproductive health among adolescents. This would create a greater access to youth friendly sexual and reproductive health services. [18-19] So, it is important to determine the effect of implementation of instructional guidelines on students' self-care practices regarding vaginal discharge.

The aim of this study was to:

Determine the effect of implementation of instructional guidelines on students' self-care practices regarding vaginal discharge.

Research Hyposis:

Students' Knowledge and self-care practices are expected to be improved post implementation of the instructional guidelines regarding vaginal discharge .

Subjects and method:

Study Design:-

A quasi experimental research design was adopted to conduct this study.

Setting:-

The study was conducted at 4 female governmental secondary schools. They were selected randomly from all 10 female secondary schools at east and west sectors at Tanta City. Two schools were selected randomly from the east sector and two schools were selected randomly from the west sector.

	Schools in the East sector	**Schools in the West sector**
Selected schools	Al-Gil Al-Moslem for girls.	Am-Al-Moamenin for girls.
	Al-Naser Al-Zeraaya for girls	Tanta Al- Senaeya for girls.

Subjects:

Four classes were selected randomly from the second grade of the previously selected schools (one class from each selected school in east and west sectors). The average number of the students in each class is nearly 40 students. The total study representive sample was 160 female students.

Tools of data collection:

To achieve the aim of this study the following three tools were used for data collection:

Tool I: Structured interview schedule :

Part (A): Biosocio-demographic data of students: It included name, age, residence, religion, family type, family income, housing condition, mother's educational level and mother occupation status.

Part (B):Menstrual history :

It included age of menarche, interval, duration, amount, premenstrual symptoms and menstrual problems.

Part (C): Assessment of vaginal discharge (present history of vaginal discharge)

It included present history and characteristics of reported vaginal discharge as color, consistency, odor, volume, time of marked increase volume and associated symptoms as (genital itching, redness, dysuria, abdominal pain, back pain, swelling of vulva and also pelvic congestion).

Tool II: Student's knowledge assessment questionnaire :

This tool was developed by the researcher after reviewing the related literature[15, 17 and 18] and used to assess student's knowledge regarding vaginal discharge before and after implementation of the instructional guidelines. It included**:**

- Students' knowledge regarding female genital system such as (component of external female genital system, component of internal female genital system, location of the uterus, functions of uterus, functions of the vagina, type of microorganism that normally present in the vagina and also natural defense mechanisms in female genital system).
- Knowledge regarding menstruation included definition of menstruation, age of menarche, characteristics of normal menstruation (interval, duration and amount of blood loss, signs and symptoms associated with menstruation) menstrual hygiene and also menstrual problems such as premenstrual syndrome, dysmenorrhea, amenorrhea.
- Knowledge regarding physiological (normal) vaginal discharge

(9 questions) included the matter of normal discharge, source/origin, importance/ functions, color, odor, and consistency of normal vaginal discharge, changes of vaginal discharge during a month and also causes of excessive normal vaginal discharge.

The scoring system for the answers was as follow: Correct and complete answers were scored as (2)**,** correct and incomplete answers were scored as (1) and incorrect answers and do not know were scored as zero (0)**.**

The total score of knowledge level was calculated as follows:

- Poor level of knowledge 0- <60% (0-41)
- Fair level of knowledge 60 - <75% (42-52)
- Good level of knowledge ≥75% (53-70)

Tool III: Student's self-care practices regarding vaginal discharge:

The Adolescent health promotion scale [20] and Genital Hygiene Behavior Scale [21] were adopted by and adapted by the researcher. Then they were translated into Arabic language by the researcher. It was used to assess student's practices regarding vaginal discharge before and after implementing the instructional guidelines. It included the following dimensions **:**

a-Student's self-personal care: It included 6 subscales of adolescent health promotion scale as follow: Nutrition and eating habit (8 items), Exercise (4 items), Stress management (8 items), Social support (7 items) and also Life appreciation (8 items) .

The scoring system of self- personal care is as follow: It included 48 items on five point likert scale ranging from never to always . Never was scored as (1), rarely was scored as (2), sometimes was scored as (3), usually was scored as (4) and always was scored as (5). Subscale mean scores were obtained by summing the items (range 1-5). Each subscale was calculated separately, and therefore six different scores were obtained for each student. The possible total score ranged from (48-240) as (48x1=48-48x5=240) .

Total scoring for level of self-personal care was calculated as follows:

- Negative behavior <60% of total score (0-143)
- Positive behavior ≥60% of total score (144-240)

b- Student's self-care practices regarding genital and menstrual

hygiene: It included items of student's practices regarding:

- Genital hygiene: It included toilet care such as type of toilet, sharing toilet, and method of cleansing and dryness, under-wear care such as type of underwear, tightness, sharing under-wear, frequency of change, method of cleansing, method of dryness and use of tight fitting clothes (jeans). Genital care (perineal care) such as (direction of cleansing, frequency, hand washing before and after cleansing, using running water, perineal area dryness, using soup or other chemical substance, cleansing after each defecation or urination as well as removing the genital hair).
- Menstrual hygiene such as type of perineal pads used during menstruation, methods of pads discarding, frequency of changing sanitary pads per day, bathing during menstruation, remove genital hair before menstruation, and also changing underwear during menstruation.

c- Student's self-care practices regarding abnormal vaginal discharge: It included items of student's practices regarding: bath, perineal care and use of perineal pad . In addition dryness of genitalia, suitability and care of underwear and also the use of sprays for genital area. Furthermore, it included specific diet intake, using home remedies, self-administered drugs and (causes of seeking or not seeking medical care).

The scoring system for student's self-care practices regarding genital, menstrual hygiene and abnormal vaginal discharge :

Each healthy practice was scored as 1 point and unhealthy practice was scored as 0 point. The possible total score ranges from (0-46).

The total score of practice level was calculated as follows:

- Unsatisfactory practice <60%. (0-27)
- Satisfactory practice ≥ 60%. (28-46)

Method

1. Official permissions were obtained to conduct the study from the responsible authorities of Faculty of Nursing Tanta university Egypt and were submitted to the responsible authorities (undersecretary of the ministry of education at the educational administration at El Gharbia governorate Egypt) who defined the schools' names, places and students' number of female secondary schools at Tanta city after

clarifying the purpose of the study. Before data collection the researcher went to the educational administration at Schools Street and met the manager who defined the names, places of schools and number of the students in each one.

2. **Ethical and legal consideration consideration:** An oral and written consent were obtained from all the study participants after explaining the purpose of the study. The researcher ensured that the nature of the study didn't cause any harm and/or pain for the entire sample. Also, students have been informed about confidentiality of information, privacy, benefits and the right to withdraw from the study at any time.
3. Three tools were used in this study (Tool I, II were developed and Tool III was adopted by and adapted by the researcher after reviewing recent literature. Then, they were translated into Arabic language. The content validity of the developed tool was tested by a jury of five experts in obstetric and gynecological nursing field. Tool's reliability was tested using appropriate statistical test.
   - Review of the relevant recent literature was done for development of the contents of the instructional guidelines.
4. Tool I, II and III were applied three times, pre-implementation, immediately and one month post implementation of the instructional guidelines .
5. **A pilot study** was carried out on 10% of the total sample (16 students) (4 students from each selected school) from the previously mentioned settings to test feasibility and applicability of the developed tools for the purpose of modification and clarification. Those students were excluded from the study sample. The pilot study was conducted one month before data collection.
6. Data collection was carried out in four months from September 2019 to December 2019 in the first semester of academic year (2019-2020). The researcher attended 3 days per week in each selected school.

- **The study was conducted into 4 phases: assessment, planning, implementation, and evaluation.**

A - Assessment phase:

- This phase was done before giving sessions. The researcher met the manager of each selected female secondary school to determine

number of classes in the second grade then selected one class randomly from each selected female secondary school. Also to determine the suitable days for the selected classes for data collection (free session and break time).

- Students were assessed individually by the researcher using the developed tools I, II and III in the first session before implementation of the instructional guidelines.
- Each student by interview lasted from 10-15 minutes for each student. Each selected class contained nearly 40 students (first and second day 15 students each and 10 students at the third day). Totally the researcher took nearly 3 hours daily for first two days and nearly 1.5 hour for the third day.

B- Planning phase:

- The instructional guidelines was developed by the researcher based on data from the assessment phase and related literature. Priorities of goals and expected outcome criteria were formulated. The researcher prepared different methods of teaching as lectures, group discussion and demonstration for participants. Instructional materials were also prepared by the researcher as posters, videos, pictures and power point presentation to be used in the sessions. Colored booklet was prepared and distributed by the researcher to every student to be used as a guide of self-learning and as a reference.

C- Implementation phase:

- The instructional guidelines for the students were conducted through 3 main separate sessions, given jointly with an instruction booklet at the previously selected schools. The content of sessions were presented through 3 days per week.
- Each session was conducted in the selected class in each selected school in the scheduled break time and each session was ranged from 30-45 minutes, one session every day.
- The instructional guidelines sessions were presented through open group discussion, lectures, demonstration and redemonstration between the researcher and students, posters, videos, pictures and power point presentation and self-learning module was used as a method of teaching. The instructional guidelines sessions covered the following items .

- **First Session:**

– The researcher explained the anatomy and physiological functions of female genital system, and menstruation which included (definition of menstruation, age of menarche, characteristics of normal menstruation that include interval, duration and amount of blood loss signs, symptoms associated with menstruation, menstrual hygiene and menstrual problems such as, premenstrual syndrome , dysmenorrhea, and amenorrhea) .

– **Second Session:**

– This session included explanation of physiological (normal) vaginal discharge (color, odor, consistency, volume, charterstics of menstrual cycle and importance). Clarified pathological (abnormal) vaginal discharge (color, odor, consistency, volume, associated symptoms, causes, risks, complications of abnormal vaginal discharge, types of vaginal infections and management).

– **Third Session:**

– This session clarified self-care practices regarding vaginal discharge which included self-personal care as nutrition, exercise and stress management, personnel hygiene (including bathing, nail, hair, foot and mouth care), daily hygienic practices for genitalia including (underwear ,toilet and perineal care, genital hair removal), menstrual hygiene as (type of perineal pads used during menstruation, methods of pads disposal, number of change sanitary pads per day, bathing during menstruation, remove of genital hair during menstruation, and change of underwear), how to deal with normal and abnormal vaginal discharge including genital care, eating specific diet, home remedies and seeking medical examination .

D- Evaluation phase:

– The evaluation of the implemented instructional guidelines was done by:-

– Assessment of students' knowledge and self-care practices regarding vaginal discharge (three times), before, immediately and one month after implementation of the instructional sessions by using tools (II,III) (pre, posttests techniques).

– The tools were fulfilled individually for each student by the researcher through the interview schedule.

– Comparison was done in relation to students' knowledge and self-care practices before, immediately and one

month after implementation of the instructional guidelines to identify effect of the instructional guidelines on the student's knowledge and self-care practices regarding vaginal discharge .

- The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 19, SPSS Inc. Chicago, IL, USA). For qualitative categorical set of data frequency, percentage or proportion of each category, comparison between two groups and more was done using Chi-square test (χ^2) and Fisher Exact test were calculated.
- For comparison between more than two means of non-parametric data, Kruskal-Wallis (χ^2 value) was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p<0.05$ for interpretation of results of tests of significance.

Results:

Table (1): displays the distribution of students according to their bio-socio-demographic characteristics. It is observed that nearly two thirds (61.9%) of students were 16 years old, while 31.2% of them were 17 years old and 6.9% were 18 years old with Mean age ± SD =16.45±0.62. It revealed that majority (96.3%) of the students were Muslim and nearly two thirds (65.0%) of them were from rural areas. Also more than one third (38.1%) of students their mother finished secondary or diplom education, slightly more than one third (37.5%) of them finished university education and only 11.9% of them were illiterate. Concerning students mother occupation, it is found that slightly less than two thirds (62.5%) were housewives while 37.5% of them were working. It is observed that, nearly two thirds (63.8%) of the students were from nuclear families and nearly one half (44.4%) of their families had moderate income level and 36.2 % had low income level. On the other hand, the majority (93.8 %) of students had good sanitary housing condition while only 6.2% had poor sanitary housing condition.

Table (2) shows distribution of the students according to their present history of vaginal discharge. It shows that slightly more than one half (50.6%) of students had vaginal discharge and the rest 49.4% had no vaginal discharge. About 46.9.% of students complained from vaginal discharge since one month ago while 28.4% of them had discharge since one

month while 13.6% of them had discharge since one week ago . As regard to color of vaginal discharge, it is found that slightly more than four fifth (82.7%) of students had white discharge and (9.9%) of them had yellow discharge. Regarding the consistency of vaginal discharge about one third of the students (33.3%) had thick like cheesy discharge and nearly one third (32.1%) had thin discharge while 34.6% had liquid such as creamy discharge. Again regarding the odor of vaginal discharge about more than two fifth (45.7%) of the students had unpleasant odor, nearly two fifth (40.7%) of them had odorless discharge and 13.6% had offensive odor. As regards to amount of vaginal discharge, it is found that nearly two fifth (39.5%) of the students had few discharge, 37.0% of them had moderate discharge and 23.5% of them had heavy discharge.

Figure (1) shows distribution of students according to their associated symptoms with vaginal discharge**.** It clarifies that, the majority (86.4%) of students reported symptoms were itching in the gentalia followed by redness 40.7%, lower abdominal pain 39.5%, dysuria 35.8%, backache 33.3% and swelling of vulva (9.9%). Additionally pelvic congestion is mentioned by 8.6% respectively.

Figure (2) shows distribution of students according to total score level of knowledge regarding female genital system pre, immediate and one month post implementation of the instructional guidelines. The figure shows that 12.5% of the students had good level of knowledge regarding female genital system pre-implementation of sessions, which is increased to 89.3% immediately and 79.4% one month post implementation of the instructional guidelines.

Figure (3) shows distribution of students according to their total score level of knowledge regarding menstruation pre, immediate and one month post implementation of the instructional guidelines. The figure shows that 13.7% of the students had good level of knowledge regarding menstruation pre-implementation of sessions, increased to 97.5% immediately and 80.0% one month post implementation of the instructional guidelines.

Figure (4) shows distribution of students according to their total score level of knowledge regarding normal vaginal discharge pre, immediate and one month post implementation of instructional guidelines. The figure shows that 11.3% of the students had good level of knowledge regarding normal vaginal discharge pre-

implementation of sessions, which is increased to 90.6% immediately and 81.3% one month post implementation of the instructional guidelines.

Figure (5) shows distribution of students according to their total score level of knowledge regarding abnormal vaginal discharge pre, immediate and one month post implementation of the instructional guidelines. The figure shows that 12.5% of students had good level of knowledge regarding abnormal vaginal discharge pre-implementation which is increased to 91.9% immediately and 80.6% one month post implementation of the instructional guidelines.

Figure (6) shows distribution of students according to their total score level of self-personal care pre, immediate and one month post implementation of the instructional guidelines. The figure shows that 35.0% of students had positive health promotion behavior regarding self-personal care pre-implementation which is increased to 90.6% immediately and 76.3% one month post implementation of the instructional guidelines.

Table (3) shows distribution of students according to their total score level of self-care practice regarding genital and menstrual hygiene pre, immediate and one month post implementation of the instructional guidelines. It shows that nearly one quarter (25.6%) of the students had satisfactory practice regarding genital hygiene pre-implementation which is increased to 90.6% immediately post and 75.0% one month post implementation of the instructional guidelines. Regarding menstrual hygiene slightly more than one quarter (28.1%) of students had satisfactory practice pre-implementation which is increased to 92.5%
immediately post and 71.9% one month post implementation of the instructional guidelines.

Figure (7) shows distribution of students according to their total score level of **self-care** practice regarding **abnormal** vaginal discharge pre, immediate and one month post implementation of the instructional guidelines. It is noticed that that two fifth (40.0%) of students had satisfactory level of self care practice regarding **abnormal** vaginal discharge pre-implementation which is increased to 91.2% immediately post and 78.8% one month post implementation of the instructional guidelines.

Table (4) shows correlation between students' total score level of knowledge and total score level of self-care practices regarding vaginal discharge pre, immediate and one month post implementation of the instructional guidelines. It is observed that,

there is a significant correlation between total score level of knowledge and self-care practice pre-implementation of sessions, immediate post sessions and one month post implementation of the instructional guidelines where (r=0.604 and p=0.0001*), (r=0.164 and p=0.038*) and(r=0.555 and p= 0.0001*) respectively.

Table (5) displays the correlation between the total score level of knowledge and self-care practice regarding vaginal discharge among students and their socio demographic characteristics pre, immediate and one month post implementation of the instructional guidelines. It is observed that there is a significant relationship between students' knowledge regarding vaginal discharge and with their residence pre-implementation of sessions and with their age , mother's education , family income immediately post sessions and with mother's education one month post implementation of sessions where p = 0.001*****, p=0.003*****, p=0.0001*, p=0.013*****, and p=0.001*respectively**.** Moreover, there is a significant relationship between students' self-care practice regarding vaginal discharge and their age pre-implementation of the sessions only and their mother's education pre-implementation of sessions, immediately and one month post implementation of the instructional guidelines where p = 0.023*****, p= 0.034*****, p= 0.0001*, and p= 0.0001* respectively**.**

Table (1): Distribution of students according to bio-socio demographic characteristics.

Bio-socio- demographic characteristics.	The studied students	
	n	%
Age years		
16	99	61.9
17	50	31.2
18	11	6.9
Range	16.00-18.00	
Mean±SD	16.45±0.62	
Religion		
Islamic	154	96.3
Christian	6	3.7
Residence		
Rural	104	65.0
Urban	56	35.0
Mother's education		
Illiterate	19	11.9
Basic education	20	12.5
Secondary education	61	38.1
University education	60	37.5
Mother's occupation		
Working	60	37.5
Housewife	100	62.5
Type of family		
Nuclear family	102	63.8
Extended family	58	36.2
Family income		
Low	58	36.2
Moderate	71	44.4
High	31	19.4
Housing condition		
Good sanitation	150	93.8
Poor sanitation	10	6.2

Table (2): Distribution of students according to their present history of vaginal discharge. (n=160)

Present history of vaginal discharge	The studied students	
	n	%
Complain of vaginal discharge		
No	79	49.4
Yes	81	50.6
If yes, the beginning of discharge	**n = 81**	
One week	11	13.6
Two weeks	9	11.1
One month	23	28.4.
More than one month	38	46.9
Characteristics of reported vaginal discharge		
Color of vaginal discharge		
Yellow	8	9.9
Yellow tended to gray	4	4.9
Brown	2	2.5
Red	0	0.0
White	67	82.7
Consistency of vaginal discharge		
Thick like cheese	27	33.3
Thin secretions	26	32.1
Liquid such as creamy	28	34.6
Odor of discharge		
Unpleasant	37	45.7
Offensive	11	13.6
Odorless	33	40.7
Volume of vaginal discharge		
Few	32	39.5
Moderate	30	37.0
Heavy	19	23.5
Time of marked increase volume		
Before menstruation	27	33.3
After menstruation	21	26.0
In the middle of the month	23	28.4
All days of the month	10	12.3

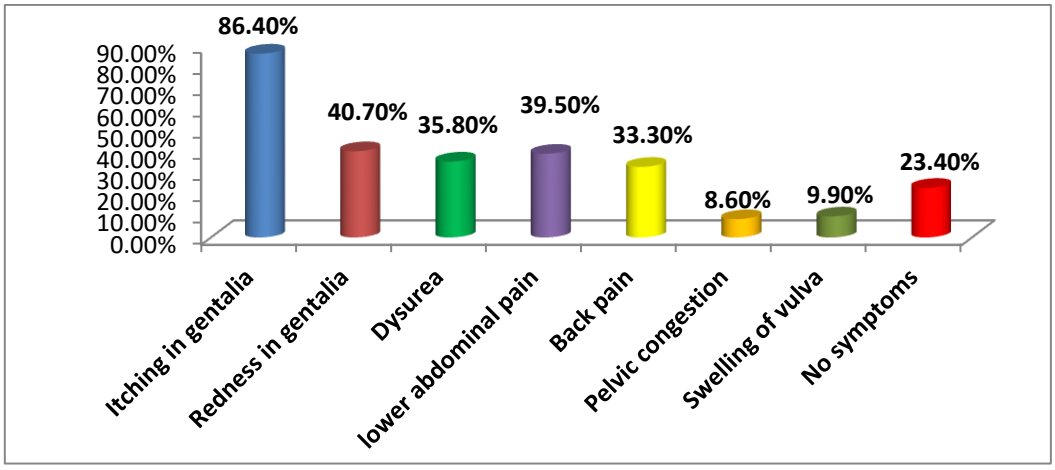

Fig (1): Distribution of students according to their associated symptoms with vaginal discharge n = 81

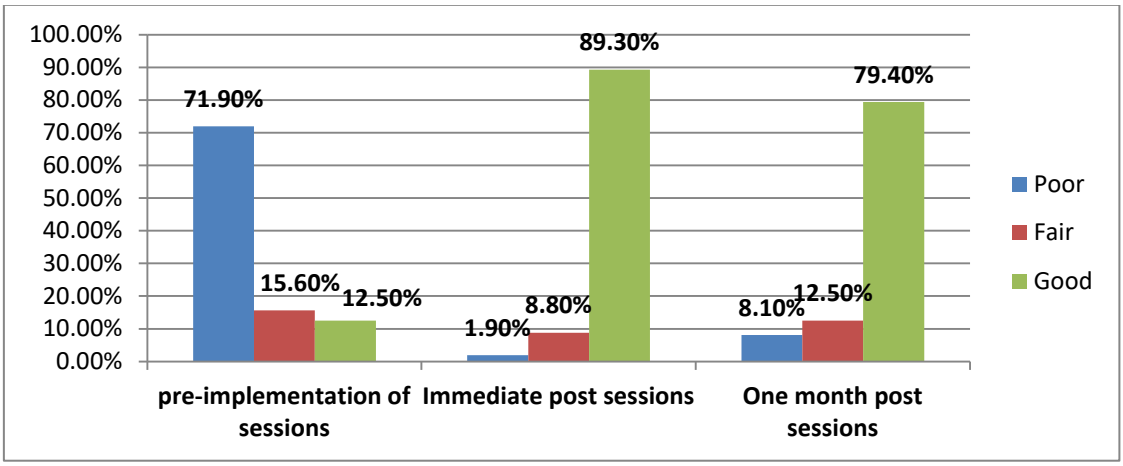

Fig (2): Distribution of students according to their total score level of knowledge regarding female genital system pre, immediate and one month post implementation of the instructional guidelines. (n=160)

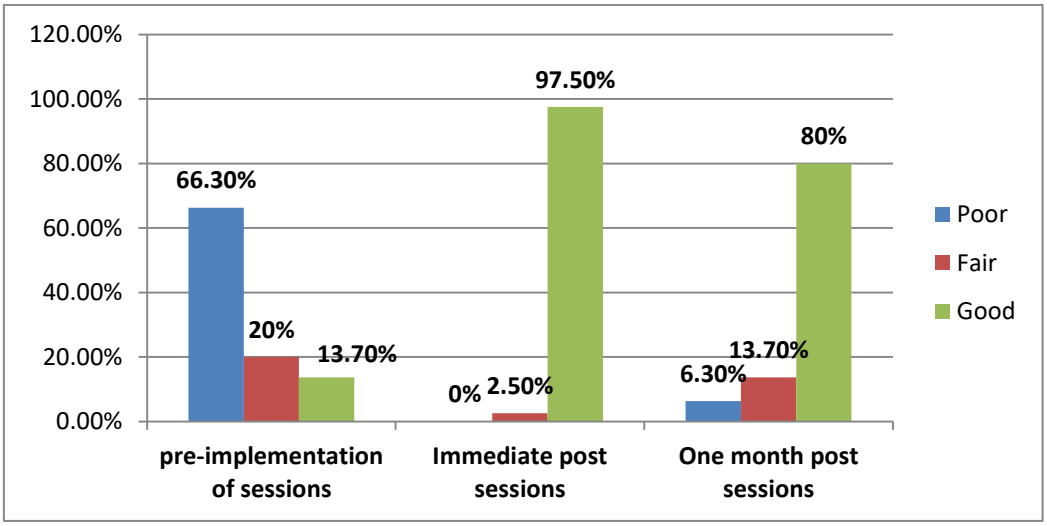

Fig (3): Distribution of students according to their total score level of knowledge regarding menstruation pre, immediate and one month post implementation of the instructional guidelines. (n=160)

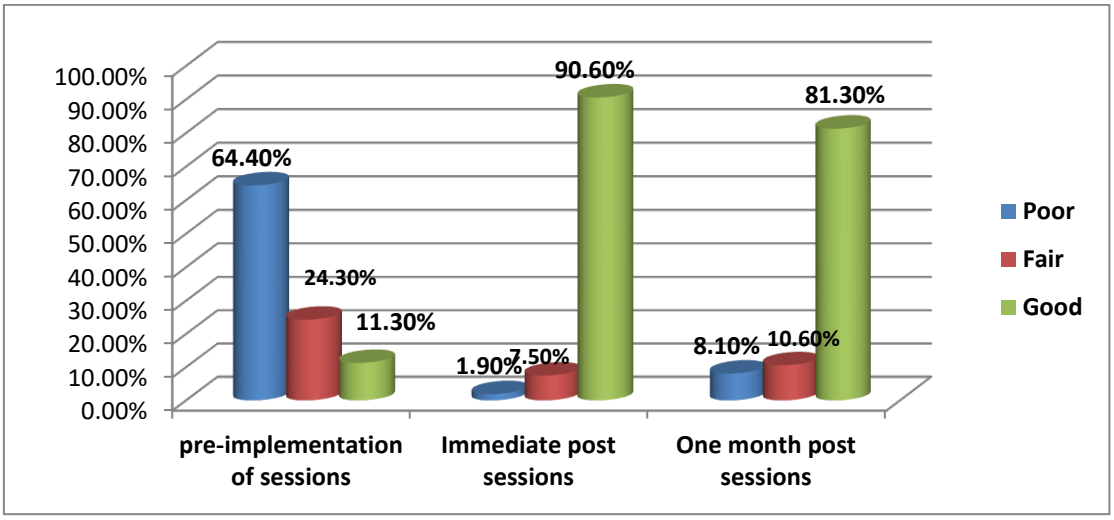

Fig (4) : Distribution of students according to their total score level of knowledge regarding normal vaginal discharge pre, immediate and one month post implementation of instructional guidelines(n=160).

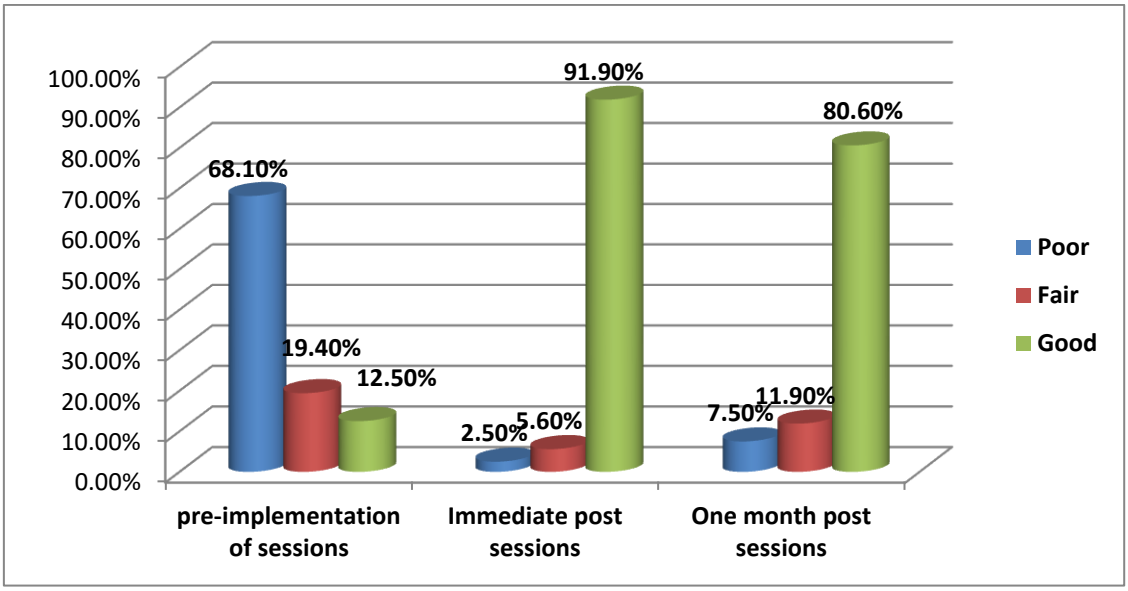

Fig (5): Distribution of students according to their total score level of knowledge regarding abnormal vaginal discharge pre, immediate and one month post implementation of the instructional guidelines (n=160).

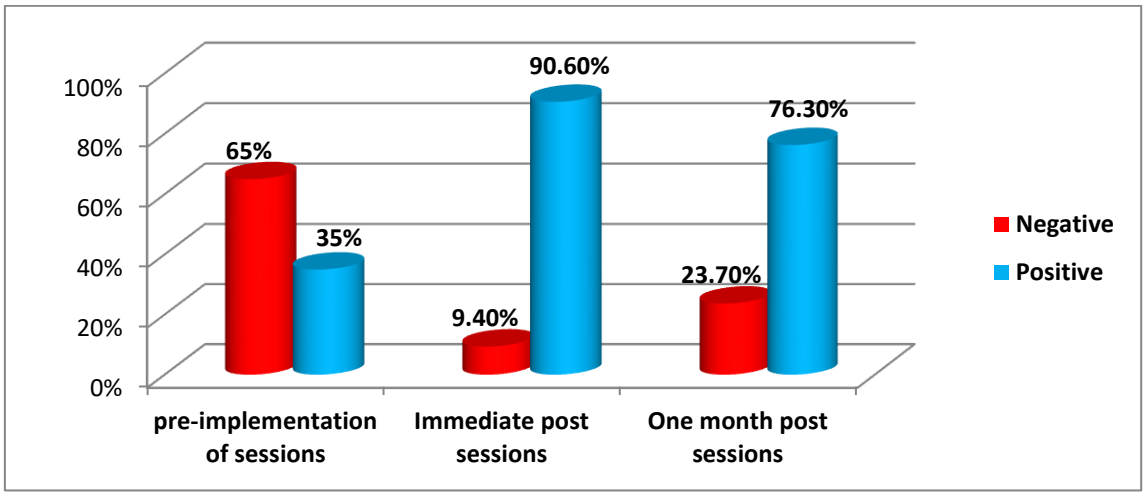

Fig (6): Distribution of students according to their total scores level of self-personal care pre, immediate and one month post implementation of the instructional guidelines(n=160).

Table (3): Distribution of students according to their total score level of self-care practice regarding genital and menstrual hygiene pre, immediate and one month post implementation of the instructional guidelines(n=160).

Self-care practices regarding genital and menstrual hygiene	Students						χ^2 P
	Pre-implementation of sessions		Immediate post sessions		One month post sessions		
	n	%	n	%	n	%	
Genital hygiene:							
Unsatisfactory	105	65.6	15	9.4	38	23.7	123.760
Satisfactory	55	34.4	145	90.6	122	76.3	0.0001*
Menstrual hygiene:							
Unsatisfactory	100	62.5	12	7.5	45	28.1	112.240
satisfactory	60	37.5	148	92.5	115	71.9	0.0001*

***Statistically significant (P<0.05)** **Unsatisfactory (<60%), Satisfactory (≥ 60%)**

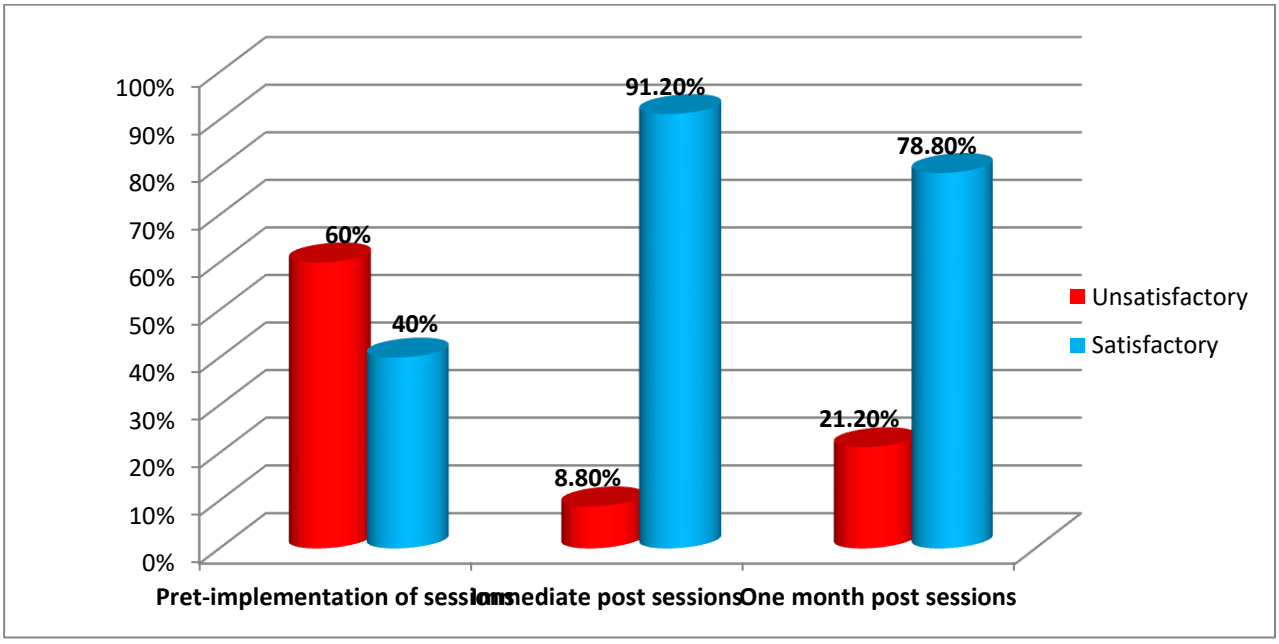

Fig (7): Distribution of students according to their total scores level of self-care practice regarding abnormal vaginal discharge pre, immediate and one month post implementation of the instructional guidelines. (n=160)

Table (4): Correlation between students' total score level of knowledge and total score level of self-care practices regarding vaginal discharge pre, immediate and one month post implementation of the instructional guidelines.

Variable	Total knowledge score level of vaginal discharge		
	Pre-implementation of sessions	Immediate post implementation of sessions	One month post implementation of sessions
	r P	r P	r P
Total self-care practice score level of vaginal discharge	0.604 **0.0001***	0.164 **0.038***	0.555 **0.0001***

*** Statistically significant (P<0.05) r=Correlation Coefficien**

Table (5): Correlation between the total score level of knowledge and total score level of self-care practice regarding vaginal discharge among students and their bio-socio demographic characteristics pre, immediate and one month post implementation of the instructional guidelines.

Students' bio-socio demographic characteristics	Total knowledge score			Total self-care practice score		
	Pre-implementation of sessions	Immediately post implementation of sessions	One month post implementation of sessions	Pre-sessions	Immediately post implementat-ion of sessions	One month post implementation of sessions
	P	P	P	P	P	P
Age	0.789	**0.003***	0.915	**0.023***	0.073	0.405
Religion	0.652	0.439	0.459	0.067	0.067	0.433
Residence	**0.001***	0.218	0.415	0.578	0.598	0.553
Mother's education	0.752	**0.0001***	**0.001***	**0.034***	**0.0001***	**0.0001***
Mother's job	0.253	0.253	0.704	0.732	0.885	0.732
Family type	0.348	0.348	0.966	0.918	0.227	0.696
Family income	0.535	**0.013***	0.557	0.144	0.369	0.344
Housing condition	0.622	0.312	0.931	0.732	0.885	0.732

***Statistically significant (P<0.05**

Discussion

Abnormal vaginal discharge (AVD) is common among adolescent females. [22] It is not a disease in itself but it is a symptom of an underlying reproductive tract infections, genital tract neoplasm, STDs or other reproductive tract disorder. It is pertinent to differentiate physiological from pathological discharge to prevent its complications. If it isn't treated well, it may lead to severe complications such as pelvic inflammatory disease, ectopic pregnancy, congenital anomalies and prognosis of genital tract malignancy. So, early detection and treatment of AVD and reproductive tract infections decrease the maternal morbidity and mortality**.** Several studies show that adolescent females often suffer from reproductive morbidities for a long time because of culture of silence and they believe that it's not a condition for which they should seek medical help[23 -24].

Concerning students' present history of vaginal discharge, the findings of the present study showed that, more than half of the students had vaginal discharge. The present finding strongly matches with **Khedr N., Elmashad H ., and Al-Wehedy A. (2015)[25]. T**hey estimated prevalence and explored knowledge and practices concerning vaginal secretions among students in the Egyptian universities**.** Also **Ilankoon M., Goonewardena C., Fernandopulle R., and Perera P. (2017)[26].** They assessed women's knowledge and experience of abnormal vaginal discharge in estates in Colombo District**.** As well as **Uwakwe K., Iwu A., Obionu C., Duru C., Obiajuru I., and Madubueze U(2018) [27]**. They assessed the prevalence, pattern and predictors of abnormal vaginal discharge among women attending health care institutions in Imo State, Nigeria and revealed that more than half of students had abnormal vaginal discharge. Moreover **Emam W. (2015)[28]** assessed the effect of vaginal discharge on nursing student's quality of life in Ain Shams University and **Mohamed H.(2013) [29]** assessed health practices among female university students regarding prevention of reproductive tract infections. They reported that the prevalence of abnormal vaginal discharge among more than two thirds of students.

On contrast, **Abd EL-Menim S., Moursi H., and Sarhan A. (2018)[30]** determined the effect of educational program on vulvitis prevention among nursing students and reported that only one quarter of students suffered from vaginal discharge. This difference may be due to embarrassment of female students to participate in the their study as it was conducted in upper Egypt where culture

may affect their disclosure of their private information. In addition **Shah S., Shrestha Sh., Maharjan P., Karki K., Upadhayay A., Subedi S., and Gurung M. (2019)[31]** assessed knowledge and practice of genital health and hygiene among adolescent girls of Lalitpur Metropolitan City. They revealed that about one third of adolescents reported vaginal discharge. This difference may be due to differentiation of culture, habits and environmental factors and low prevalence of RTIs. Again **Mahmood K., Farheen Z., Farah S., Marium Z., and Fatma A. (2011) [32]** identified causes and management of pathological vaginal discharge and showed that 6.4% of the subjects complained from abnormal vaginal discharge. This could be due to the small sample included of their study (30 female) in contrast to (160) in the present study.

In relation to the characteristics of reported vaginal discharge by the students, the present study revealed that, more than four fifth of students had white normal vaginal discharge, one tenth of them had yellow abnormal discharge. About one third of the students had thick like cheesy discharge, more than two fifth of them had unpleasant odor discharge and slightly more than one tenth of them had offensive odor. As well as the majority of students reported associated symptom as itching in the genitalia followed by redness, lower abdominal pain and dysuria. The present findings match with **Khedr N., Elmashad H ., and Al-Wehedy A. (2015)[25]**, **Ilankoon M., Goonewardena C., Fernandopulle R., and Perera P. (2017)[26]** and **Patel V., Pednekar S., Weiss H., Rodeigues M,. Barros p., Nayak B., Tanksale V., West B., Nevrekar P., Kirkwood K., and Mabey D. (2005)[33]**. They explored why do women complain of vaginal discharge in a South Asian community. They reported that the majority of samples had white discharge followed by yellow discharge, one third of them had thick discharge, the minority of them had offensive odor discharge and the most frequent associated symptoms with vaginal discharge was itching in external genitalia, followed by redness, painful urination and also abdominal pain.

On the contrary **Zaher E., Khedr N.,& Elmashad H. (2017)[22]** assessed women awareness regarding vaginal discharge, they reported that only half of the subjects had white vaginal discharge, nearly two fifth of them had yellow discharge and more than half of them had thick discharge. Again **Sinan O., Kaplan**

S., Sahin S., and Peksoy S. (2020) [34] who assessed the effectiveness of genital infection awareness training provided to women based on the IMB model. They reported that only one quarter of participants had white discharge and half of them had yellow bad smell discharge.

As regards the students' total score level of knowledge regarding female genital system, the present study revealed that slightly more than one tenth of students had good level of knowledge regarding female genital system pre-implementation of sessions. Compared to the majority of students had good knowledge level immediately post sessions and one month post sessions.

This finding is strongly in line with **Goudia A., Eswi A., Hamid A., and Hassan S. (2019)[35]** who examined the effect of instructional program on knowledge regarding vulvovaginal candidiasis among female university students. They revealed that the total score level of pre-test knowledge regarding anatomy of reproductive organs was very low which indicated poor knowledge level, while changed after program to good level. Moreover **Youness E and Omar A (2017)** [36] who assessed the effectiveness of planned educational program about vaginitis and its prevention among adolescent female nursing students. They stated that one fifth of students had good level of knowledge regarding the anatomy of the female reproductive system pretest compared to the majority of students who had good knowledge level posttest. In the contrary, **Gaferi M., Al-Harbi M., Yakout S., Soliman A. (2018)[37]** who assessed knowledge, attitude and practice related to reproductive health among female adolescents. They mentioned that more than half of students had correct knowledge about female reproductive organs. This difference might be due to larger sample size, wider geographic area and also variety of students nationality in their study that increase their awareness level.

As regards the students' total score level of knowledge regarding menstruation. It is noticed that slightly more than one tenth of students had good level of knowledge regarding menstruation pre-implementation of sessions compared to the majority of them had good level of knowledge immediately post sessions, and one month post sessions. This finding is strongly similar with **Abushaid F., Ahmad S., Ashmauey A., and Mohammad H. (2017)[38] and Ibrahim H and Esmail M**

(2019)[39] who stated that only one fifth of adolescent girls had good level of knowledge regarding menstruation before implementation of educational program compared to the majority of them had good level of knowledge after program. On contrast, **Kumar K., Datta A., and Bandyopadhyay A. (2015)** [40] and **El-Mowafy R., Moussa M., and El-Ezaby H (2014)** [41] mentioned that, three quarter of students had correct knowledge on the topic of menstruation. From the researcher point of view, this difference may be that students were well prepared about menarche and menstruation before attainment of menarche. **As regards the students' total score level of knowledge regarding normal vaginal discharge.** The present result revealed that slightly more than one tenth of of students had good level of knowledge regarding normal vaginal discharge pre-implementation of sessions compared to the majority of them immediately post sessions, and one month post sessions. This finding strongly matches with **Youness E and Omar A (2017)**[36] who stated that slightly more than one tenth of students had good level knowledge regarding normal vaginal discharge before planned educational program compared to nearly three quarter of them had good level of knowledge after program. **On contrast, Ilankoon M., Goonewardena C., Fernandopulle R., and Perera P. (2017)**[26] mentioned that the majority of females revealed correct answers on the physiological feature of vaginal discharge. This difference may be due to that subjects were older in age also change in culture and environmental factors affected their awareness.

As regards the students' total score level of knowledge regarding abnormal vaginal discharge, it is noticed that slightly more than one tenth of students had good level of knowledge regarding abnormal vaginal discharge pre-implementation of sessions compared to the majority of them had good level of knowledge immediately post sessions and the precentage slightly decreased but still significant in one month post sessions. The present finding is in agreement with **Chauhan A., Chawla D., Saini G., Rawat H., Pundir K., kumar L., & Benjamin P. (2014)**[42] who assessed the effectiveness of a planned teaching program on knowledge related to reproductive tract infections among rural women in Uttarakhnd and reported that most of subjects had good knowledge level related to RTIs after implementation of program. In addition **Youness E and**

Omar A (2017) [36] **and Yarmohammadi S., Taheri G., Mousavi S., Sheikhehpour M., Paykoub M., &Hashemian A. (2015)**[43] who evaluated the effect of education on knowledge, attitude and practice of patients with vaginitis in Iran. They showed that good knowledge score level regarding vaginitis in post-test among the majority of intervention group compared to the minority of them in pretest.

In the contrary, **Kamath P., Pais M., Nayak M., and Pramila S. (2014)**[44] who conducted a study in India revealed that, half of participants had good knowledge level score related to vaginal infections in pre-test which is more enhanced where almost all of them in the posttest 100% had good knowledge level. This difference may be related to sample size , culture difference and older age with high educational level of participant. Moreover **Şatıroğlu N., Hıdıroğlu S., and Karavuş M. (2012)**[45] showed that the majority of the subjects enabled to differentiate between the normal and abnormal vaginal discharge. This difference may be attribute to differentiation in culture and environmental factors that increase their awareness. Again **Ilankoon M., Goonewardena C., Fernandopulle R., & Perera P. (2016)**[46] who investigated the public health midwives' role in health education regarding vaginal discharge and revealed that more than half of sample had moderate level of knowledge regarding vaginal discharge, this difference might be due to that the sample were public health midwives that have better level of awareness.

Nowadays, however, female genital system and menstruation are included in school curriculum. The content is not explained enough or not explained at whole because of the presence of male teachers which have and lead to sense of shame and embarrassment to discuss these topics appropriately. Moreover knowledge about normal and abnormal vaginal discharge is not included in school curriculum. Most mothers may not have complete, accurate information and also girls feel shame and embarrassing to discuss such topics with their mothers before marriage. Therefore, the present study revealed improvement in total knowledge level score immediately and one month post sessions compared to pre implementation of sessions. This result may be due to the immediate effect of instructional guidelines supported by vaginal discharge booklet which was

helpful as ongoing reference. One month later, students' scores are somewhat reduced but still significant which may be due to absence of continuing education and study overload. By meaning of that improvement of knowledge post sessions in the study may be attributed to the ability and interest of students to gain and update their knowledge easily. As they mentioned that, this is the first time that someone discuss such topics with them.

WHO has predicted that, life style is responsible for around 70%-80% of mortality rate in developed and 40%-50% in developing countries. The relationship between vaginitis and lifestyle factors is under investigation. Some predisposing factors for vaginitis associated with life style include obesity, physical inactivity, dietary habits and stress. Improvement of information, and behavioral skills regarding healthy life style are necessary to change related behaviors , attain correct self-care behaviors and fight such infections.[47-48] **As regards the students' total score level of students' self-personal care**, the current study revealed that there was a significant improvement of total self-personal care. As more than one third of students had positive health promoting behavior pre implementation of sessions, compared to the majority of them immediately post and one month later. Hence, the finding of the current study is demonstrated that self-care instructional guideline regarding vaginal discharge was effective in improving self-personal care of students. This is attributed to that knowledge and behavioral skills that students have been taught during the sessions. This also plays prominent role in motivating them to change their lifestyle behaviors .

A similar study conducted by, **El Sayed H., Aboud S., and Ali F. (2019) [47]** who investigated the effect of implementing nursing intervention guidelines on recurrent vaginitis among reproductive-age women in Benha city. They reported that after intervention, the mean scores for overall health-promoting lifestyle (HPL) behaviors and all dimensions in the study group were significantly higher compared to the control group. Moreover **Parsapure R., Rahimiforushani A., Majlessi F., Montazeri A., Sadeghi R., and Garmarudi G. (2016)[48]** who assessed the impact of health-promoting educational intervention on lifestyle (nutrition behaviors, physical activity and mental health) related to vaginal health among reproductive-aged women with vaginitis, **Abdelnaem S., Mohasib S., and Mohamed H. (2019)[49]** and

Valsangkar S., Selvaraju D., Rameswarapu R., and Kamutapu S. (2014) [(50)]. They revealed that there was significant differences between the domains (exercise, stress management, nutrition, health responsibility, life appreciation, social support) as well as the total quality of life score before and after intervention. This similarity may be due to the effect of health educational guidelines on subjects' self-personal care. On contrast, **Borle P., Parande M., Tapare V., Kamble V., and Bulakh P**. **(2017)** [(51)] concluded that nearly three quarter of students had good (HPL) profile, this variation is due to their subjects who were nursing students and the majority of them from urban that enhance their awareness regarding healthy behaviors.

Genital hygiene is the major component of female's health. Nurses can undertake the role of a health educator and mentor through proper approaches in correcting genital hygienic practice skills [(18 and 30)]. **Regarding students' total score level of self care practice regarding genital hygiene**, the present study revealed that nearly one quareter of students had satisfactory practice regarding genital hygiene pre implementation of sessions, compared to the majority of them immediately post and one month post sessions. The present finding matches with **Baraia Z., Abdallah I., and Nour S**. **(2017)**[(52)] who revealed that the minority of participants had correct technique regarding perineal hygiene before the educational program. Then changed to the majority of them at both post and follow-up phases . Moreover **Abd El-Salam A., Eldeeb A., and Frahat F. (2018)** [(53)] and **El Sayed H., Aboud S., and Ali F. (2019)** [(47)]reported that only one fifth of students had satisfactory genital practice pre intervention compared to more than three quarter post intervention **.** On contrast, **Bano R and Al Sabhan F (2015)** [(54)] who reported that more than half of subjects had satisfactory practice of genital hygiene. This difference related to the majority of that subjects attained higher educational level, had good knowledge regarding reproductive health problems, as well as satisfactory general personnel hygienic practice due to increased their awareness about genital hygiene.

Poor menstrual hygiene has been associated with serious ill-health ranging from RTIs and urinary tract infection. Females are generally expected to exercise good hygienic practices during menstruation to prevent themselves from these problems.[(30)] **Regarding students'**

total score level of self care practice regarding menstrual hygiene, the present study revealed that slightly more than one quarter of students had satisfactory self care practice regarding menstrual hygiene pre implementation of sessions , compared to the majority of them immediately post and one month post sessions. The present finding is in line with **Abushaid F., Ahmad S., Ashmauey A., and Mohammad H. (2017)**[38] who showed that slightly more than one quarter of adolescents had satisfactory menstrual practice score level pre-intervention compared to the majority of them post intervention. Moreover **Bassiouny R and Abd El-Aziz M (2013)**[55] who reported that slightly more than one tenth of students attained satisfactory menstrual hygiene practice pre intervention significantly changed to the four fifth of them post intervention. On contrast, **El Meselhy H., Salama A., and El Mawardy S. (2020)** [56] **and Teklemariam G (2014)** [57] reported good menstrual hygiene among the majority of students in Egypt and North Nigeria. This discrepancy might be due to that most of students were from urban areas . **Regarding total score level of students' self-care practice of abnormal vaginal discharge (AVD).** The current study revealed that two fifth of students had satisfactory practice regarding AVD pre sessions. It was explained by the fact that lack of knowledge about vaginal discharge and genital and menstrual hygiene among students can lead to unhealthy practices. Because of their younger age, lack of formal and informal education about such sensitive matters, feeling shame to discuss it with others, culture of silence, lack of communication between girls with their mother and deficiency of mothers' knowledge themselves about reproductive health issues. Because the effect of instructional guidelines, the percentage increased to that the majority of students had satisfactory practice regarding AVD, immediately and one month later. On similarity, **Said S., Elbana H., and Salama A. (2019)**[58] who revealed that three quarter of study group had satisfactory practice regarding vulvovaginities after education guidelines compared to the minority of them pretest. Again **Elsayed E (2016)**[59] and **Sumarah S and Widyasih H (2017)**[60] who revealed that, there was a significant difference in the students' practice of pathological vaginal discharge between intervention and control group before and after intervention. **Regarding correlation between students' total**

score level of knowledge and total score level of self-care practices regarding vaginal discharge(VD). The study revealed that there was a significant correlation between total score level of knowledge and self-care practice regarding (VD) pre, immediate and one month post sessions. The present finding is supported by **Salhan S (2011) [61] and Said S., Elbana H., and Salama A. (2019) [58].** They reported that there was significant correlation between total score level of knowledge &practices in pre and post intervention among samples.

Regarding correlation between students' total score level of knowledge and self-care practice regarding vaginal discharge (VD) and their bio-socio demographic characteristics. It is observed that there was a significant relation between students' knowledge regarding (VD) with their residence, age, mother's education and family income. This might be due to increase awareness in the urban area and among older age students than in rural area and younger age students. Also there was a significant relation between total score level of students' self-care practice regarding (VD) with their age and their mother's education**.** This might also be explained that, increasing students' age may lead to increase awareness about proper hygienic practices. In order to maintain healthy reproductive tract that is needed in childbearing period. Also mothers who had high educational level could educate their girls about healthy practices.

These results match with **Emam W. (2015)[28]** who stated that there was a highly significant relation between student's knowledge means score about VD and their age and place of residence. Similar study by **Youness and Omar A (2017) [36] and Abd EL-Menim S., Moursi H., and Sarhan A. (2018) [30]** reported that **,** there was a highly significant relation between student's total score level of knowledge regards vaginitis with their residence and mother's education. Moreover, **Slave S., Dase R., Mahjan S ., and Adchitre S. (2012)[62]** found poor knowledge about female reproductive system and (VD) among rural adolescent girls. In addition **Abdelnaem S., Mohasib S., and Mohamed H. (2019) [49]** found that there was a highly statistically significant relation between the students' total practices score and their age. Again **Mohamed H. (2013) [29] and Busari A (2012) [63]** revealed that there was a statistically significant relation between students' hygienic practices and their

mother educational level. In the contrary, **Jamshidi F., Rahimi Z., Parsa S., and Vesali S. (2015)[64]** mentioned that the total mean score of knowledge and practice regarding genital infections had no significant relation with age. Again **El-Lassy R and Madian A (2013)**[65] stated that there was negative correlation between mothers' education and students' practices. Moreover disagreement with **Renju N (2010) [18] and Shah S., Shrestha Sh., Maharjan P., Karki K., Upadhayay A., Subedi S., and Gurung M. (2019) [31]**who found that no association between total knowledge, practices score and selected socio demographic characteristics of adolescent girls.

The nurse plays an important role as health educator to deliver important health educational topics to the adolescent females as diet, personal hygiene, increasing immunity, and proper way of medication use to limit recurrences of infection and prevent subsequent complications. The nurse should perform careful assessment of common signs, symptoms of vaginal infections, and presence of risk factors such as improper diet, antibiotics, immunosuppressive condition, and improper personal hygiene[30 , 66 and 67]. So, based on the findings of the present study, the research hypothesis has been achieved through the effectiveness of the instructional guidelines where students' knowledge and self-care practice regarding vaginal discharge have been improved immediately and one month post sessions compared to before implementation of instructional guidelines.

Conclusion

– **Based on the findings of the present study, it can be concluded that:** Obviously there was lack of students' knowledge regarding the female genital system, menstruation as well as normal and abnormal vaginal discharge before implementation of instructional guidelines. In addition unsatisfactory self-care practice among students was revealed regarding self-personal care, genital and menstrual hygiene as well as vaginal discharge. Significant improvement of students' knowledge as well as self-care practices regarding vaginal discharge is observed immediately and one month after implementation of instructional guidelines. Where the majority of studied students had attained good score level of knowledge and satisfactory score level of self-care practice regarding vaginal. Thus, the overall improvement inturn reflect the effectiveness of the instructional guidelines.

Recommendations

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

- Evident and continuous educational programs are to be established at schools to increase awareness and healthy practices regarding normal and abnormal vaginal discharge and also reproductive tract infections (RTIs).
- Manual booklet containing basic needed information about vaginal discharge in simple Arabic language should be distributed at schools .
- Development of strategies to detect and manage barriers facing adolescent students to use reproductive health services.
- Implementation of simple educational program for young girls in preparatory schools as well as secondary school students, nurses and mothers to increase their awareness regarding prevention of reproductive tract infections and vaginal discharge in different geographical areas in Egypt , with larger sample size.

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Effect of Olive Oil, Lavender Oil and Placebo on Pain Intensity and Healing of Episiotomy in Women

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Abstract:

Introduction: Post-episiotomy discomfort and its consequences can affect maternal quality of life and mental health as well as the mother and baby relationship. Using of Lavender, olive oil was frequently prescribed and increased due to its antiseptic and healing properties. **Methodology:** Quasi-experimental involved 120 postpartum women admitted for labor in El-Shatby maternity hospital, Egypt. They were randomly categorized into three groups: Group 1 (using Lavender oil), group 2 (using olive oil) and group 3 (Using vegetable oil as a placebo oil). Participants' pain was recorded using a Visual Analogue Scale (VAS) and a Redness, Edema, Ecchymosis, Discharge Scale (REEDA). Pain was evaluated at 1d, 5 day, 9 day and 14 days following episiotomy. **Results:** Pain score, there was no difference at first day between three groups, while There was slight significant difference between three studied group regarding pain intensity at p value <0.05 at 5, 9, 14 day post episiotomy. The REEDA score was no difference between mean score of scale between three studied group at first day, while there was high difference between three studied groups at fifth, ninth and fourteenth day at p value <0.01. **Conclusion:** According to these findings, use of Lavender oil or olive oil can be effective in reducing perineal discomfort following episiotomy and improving healing of wound, but lavender oil highest benefit.

Key words: **Episiotomy, Healing, Lavender, olive, Pain, Placebo.**

Introduction:

Episiotomy is a surgical incision made into the perineum area that is usually done to prevent sever perinea tears that heals poorly. In 1850, it was first introduced in the United States **.** Episiotomy is a surgical incision of the perineum performed at the time of delivery to increase the diameter of the soft tissue pelvic outlet. Episiotomy will facilitate and expedite delivery and prevent perineal injury, if performed correctly and at appropriate times, such as dystocia, breech delivery, fetal macrosomia, prolonged second-stage labor, obstetric anal sphincter injury, and rapid delivery .[1,2]

In developing countries such as Egypt, episiotomy is a common procedure to facilitate vaginal delivery. Episiotomy may result in a few different complications, including; Infection, Large tears from the incision that may extend through the anus, Bleeding and perineal hematoma, a collection of blood in the perineal tissues, Painful intercourse and Perineal pain .[3]

Perineal pain is the most common complication of episiotomy. which is experienced by approximately 30% of women within the first two weeks and 7% of women up to 3 months after delivery. The perineal pain can decrease maternal quality of life and change mother's attitude towards her infant. Delay in wound healing can lead to poor anatomical outcomes; increase the risk of infection, and ultimately lead to dangerous complications and even death. In addition, post-episiotomy scars and pain interfere with breastfeeding position and effective lactation, thereby causing a delay in the initiation of lactation.[4]

The currently advocated strategy for postpartum care contains the use of complimentary non-pharmacological adjuvant therapies in aromatherapy. Aromatherapy is the usage of essential oils from plants for decreasing pain and improving patient's satisfaction. Essential oil is concentrated extracts taken from the roots, leaves, seeds or blossoms of plants Herbal sitz bath, such as lavender essential oil and olive oil, may help to prevent infection, speed up healing and offer pain release on postpartum women [5,6]

Wound healing and pain relief can be achieved in various ways, including cryotherapy, electrical stimulation, acupuncture, laser therapy, pelvic floor muscle training exercises, epidural analgesia, as well as taking medications, such as acetaminophen, mefenamic acid, and diclofenac sodium suppositories. [7] Nonetheless, many medicines used for this purpose, especially narcotics and

nonsteroidal anti-inflammatory drugs (NSAIDs), have such side effects as nausea, itching, and gastrointestinal bleeding. Herbal preparations are among the earliest methods adopted in episiotomy wound healing and pain relief, which have a significant advantage over chemical medicines due to their higher acceptability and lower side effects. Lavender, *Lavandula angustifolia*, is an herbaceous plant belonging to the mint family, effective against most of the turtle-borne pathogenic bacteria [8]

Pain control with lavender essential oil" indicated that the ant nociceptive effects of lavender on controlling acute and chronic pain considerably varied among different studies due to the nature of pain and method of drug administration. Olive Oil has antibacterial properties . Olive oil contains many nutrients that can inhibit or kill harmful bacteria olive oil has antibacterial and wound healing properties [9].

Material and Methods:

Aim of the study:

This study aimed to investigate the effect of olive oil, lavender oil and placebo on pain intensity and healing of episiotomy in women

Research hypothesis:

1- Olive oil had high positive effect on pain intensity and healing of episiotomy than lavender oil
2- Lavender oil had high positive effect on pain intensity and healing of episiotomy than olive oil

Subjects and methods

Research design

A quasi experimental study used to conduct the study.

Study setting

The study conducted at El-Shatby Maternity Hospital at Alexandria University at Egypt.

Subjects

A purposive sample used to achieve the aim of this study. It includes 120 women who meet the following inclusion and exclusion criteria: Inclusion criteria women age between 20 and 35 age and follow medical regimen related episiotomy wound.

Exclusion criteria include women with ventouse cup or forceps delivery, perineal injuries including anal sphincter and anal mucosa, post-partum bleeding, retained placenta.

They were blindly allocated into three groups each group 40 women:

Tool of data collection

Tool (I) : Predesigned questionnaire:

that consist of two parts :

- **Part one : Demographic**

characteristics:

It was developed by the researcher to assess women' demographic characteristics including : age, marital status, educational level, residence, employment and income

- **Part two: Medical history**: It was developed by the researcher to assess women's medical history. It includes gravidity, parity, previous episiotomy, current type of episiotomy and causes of episiotomy

Tool (II) : Visual Analogue Scale (VAS): Adopted from **Cline, Herman, Shaw & Morton, 1992 and Crichton, 2001[10].** It is a 10 cm line with anchor statements on the left (no pain) and on the right (extreme pain). It scored as

No pain =0, Mild =1-3, Moderate =4-6, Severe =7-9 and Extreme=10

Tool (III): The REEDA :scale is a tool for assessing perineal healing that was primarily developed by **Davidson, 1974[11]**. It includes five items related to the healing process: hyperemia, edema, ecchymosis, discharge and cooptation of the wound edges (Redness, Edema, Ecchymosis, Discharge, Approximation - REEDA), each item ranged score from (0 to 3).

Healing scores:

Good (0 – 4), Moderate (5 – 8), Mild (9 – 12) and Poor (13- 15)

Tools reliability:

The reliability was done by Cronbach's Alpha coefficient test of the tool which revealed the scale is .79 for pre designed questionnaire, .84 for VAS and .87 for REEDA scale.

Pilot study

A pilot study was carried out on 10% (12) from the total number of sample (120) of population to assess the tools clarity, relevancy, feasibility, objectivity, and estimate the time needed for data collection from the questionnaire. Those subjects in the pilot study were excluded from study sample, and certain modifications were done.

Ethical considerations:

Each women in the study was informed about the purpose and benefits of the study in the first part before starting the questionnaire, where every participant can't be starting the questionnaire without consent to participate in data collection in the current study. The women were assured that all data was used for research purpose only and each one was informed of the rights to refuse participation in the study or withdraw at any time before completing the questionnaire with no consequences.

Administrative approval:

An official permission was obtained from the Dean of the Faculty of Nursing, Alexandria University to collect the data after explaining the aim of the study.

Field work:

This study started in the January 2019 and ended in the end of June, 2019. Women interviewed for 10-15 minutes after delivery at the hospital stay to collect demographic and medical history data. Explain to each group way to care of episiotomy; group 1 underwent care by 10 drops of lavender essential oil 2% based lavender essential oil for each (5 liters). Group 2 by 10 drops olive oil sitz bath (5 liters) and group 3 (Placebo group) by 10 drops vegetable oil sitz bath(5 liters) for fourteenth days. After that the researchers provided clear and concise information through illustrative pamphlet for the groups included the following. Then assess the pain and healing wound through second and third tool over the course of four different measurements during the first, fifth, ninth, and fourteenth days postpartum during follow up at previous mentioned setting.

Statistical Design:

Computerized data entry and Statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 22. Descriptive and analytical statistics were used such as number, percentage, mean and standard deviation. Friedman test is the non-parametric alternative to the one-way ANOVA with repeated measures. It is used to test for differences between groups

Highly significant if p value <0.01

Significant if p value <0.05

Insignificant if p value >0.05

Results:

- **Table (1)** revealed that mean age of olive oil, lavender and placebo group was 28.56±6.1, 29.7±5.4 and 28.9±7.1, respectively. Regarding marital status, 92.5% of olive oil group was married while, 90% and 95% of lavender and placebo respectively were married. Educational level, showed that 47.5%, 50% and 42.5% of olive oil, lavender and placebo group respectively, had university education. Regarding residence, demonstrated that 72.5%, 62.5% and 75% of olive oil, lavender and placebo group from urban area. Regarding family income, 67.5%, 60% and 62.5% of olive oil, lavender and placebo group had enough income.

Table (2) revealed that 47.5%, 50% and 40% of olive oil, lavender and placebo

group , respectively was gravidity one. Regarding parity, showed that 50%, 50% and 45% of olive oil, lavender and placebo group was parity one. According type of episiotomy, 45%, 50% and 42.5% of olive oil, lavender and placebo group was medio-lateral. Regarding causes of episiotomy, 40%, 32.5% and 25% of olive oil, lavender and placebo group due to prim parity.

Table (3) demonstrated that at fourteenth day, 47.5% of olive oil group had no pain and 40% had mild pain. While 52.5% of lavender oil had no pain and 42.5% had mild pain. Meanwhile 40% of placebo group had no pain and 22.5% had moderate pain. At the end, there was slight significant difference between three studied group regarding pain intensity at p value <0.05.

Table (4) detected that there was no significant difference between three studied groups at first day at p value >0.05. While there was slight significant difference between studied groups at fifth, ninth and fourteenth day post intervention at p value <0.05.

Table (5) at fourteenth day post intervention, approved that according to redness, 17.5%, 17.5% and 32.5% of olive oil, lavender and placebo group suffered from moderate level. According to edema, 25%, 42.5% and 35% of olive oil, lavender and placebo respectively ,group suffered from mild edema. Regarding discharge, 60% of lavender group had no discharge, while 50% of olive oil had no discharge but 47.5% of placebo group had none discharge. According approximation 40% of lavender group had closed wound, while 45% of placebo group had mild separation. Regarding total REEDA scale, 52.5% of lavender group had good healing, while 45% of olive oil group had good healing, but 37.5% of placebo group had moderate healing, so there was high significant difference at p value <0.01. where group lavender oil is most better result than olive oil , again group of olive oil is batter than placebo group in healing score.

Table (6) revealed that there was no significant difference between three studied groups at first day post intervention. While there was slight significant difference between studied groups at fifth, ninth and fourteenth day related edema and approximation at p value <0.05. Meanwhile, there was high significant difference between three studied groups at fourteenth day related discharge and ecchymosis at p value <0.01. Regarding total REEDA scale, there was no difference between mean score of scale between three studied group at first day, while there was high difference between three studied groups at fifth, ninth and fourteenth day at p value <0.01.

Table (1) Number and percent distribution of studied groups according to their demographic characteristics

Items	Olive oil (N=40)		Lavender oil (N=40)		Placebo (N=40)		Friedman test
	N	%	N	%	N	%	
Age:							
20 - <25	7	17.5	8	20	7	17.5	1.056
25- <30	13	32.5	15	37.5	12	30	0.068
30 – 35	20	50	17	42.5	21	52.5	
Mean S.D	28.56±6.1		29.7±5.4		28.9±7.1		
Marital status:							
Married	37	92.5	36	90	38	95	2.031
Divorced	3	7.5	2	5	1	2.5	0.057
Widow	0	0	2	5	1	2.5	
Educational level:							
Preparatory	4	10	5	12.5	6	15	0.968
Secondary	14	35	12	30	13	32.5	0.144
University	19	47.5	20	50	17	42.5	
Higher education	3	7.5	3	7.5	4	10	
Residence:							
Urban	29	72.5	25	62.5	30	75	2.218
Rural	11	27.5	15	37.5	10	25	0.052
Employment:							
Employee	17	42.5	16	40	19	47.5	1.008
Unemployed	23	57.5	24	60	21	52.5	0.097
Income:							
Enough	27	67.5	24	60	25	62.5	1.305
Not enough	13	32.5	16	40	15	37.5	0.071

Table (2) Number and percent distribution of studied groups according to their medical history

Items	Olive oil (N=40)		Lavender oil (N=40)		Placebo (N=40)		Friedman test
	N	%	N	%	N	%	
Gravidity:							
1	19	47.5	20	50	16	40	1.720
2	14	35	15	37.5	16	40	0.054
3	7	17.5	5	12.5	8	20	
Parity:							
1	20	50	20	50	18	45	0.994
2	13	32.5	16	40	16	40	0.201
3	7	17.5	4	10	6	15	
Previous episiotomy:							
Yes	10	25	9	22.5	8	20	1.006
No	30	75	31	77.5	32	80	0.081
Current type of episiotomy:							
Medio-lateral	18	45	20	50	17	42.5	2.101
Median	9	22.5	7	17.5	13	32.5	0.0531
Lateral	10	25	11	27.5	10	25	
J-shape	3	7.5	2	5	0	0	
Causes of episiotomy:							
Prim parity	16	40	13	32.5	10	25	3.068
Large baby	8	20	12	30	16	40	0.042*
Prolonged 2nd stage	9	22.5	11	27.5	6	15	
Shoulder dystocia	7	17.5	4	10	8	20	

Table (3) Number and percent distribution of the studied subjects according to their pain intensity post the intervention at fourteenth day

Items	Olive oil		Lavender oil		Placebo		Friedman test
	N	%	N	%	N	%	
No pain =0	19	47.5	21	52.5	16	40	3.987
Mild =1-3	16	40	17	42.5	15	37.5	0.038*
Moderate =4-6.	5	12.5	2	5	9	22.5	
Severe =7-9.	0	0	0	0	0	0	
Extreme=10.	0	0	0	0	0	0	

Table (4) Compare mean between studied groups according pain score

Items	Observation day	Olive oil	Lavender oil	Placebo	FRIEDMAN TEST	P VALUE
		Mean s.d	Mean s.d	Mean s.d		
Pain score	1	5.96±2.1	6.01±1.9	5.99±2.03	1.060	0.051
	5	4.92±1.99	4.45±1.71	5.12±1.80	3.102	0.024*
	9	3.12±1.26	2.40±1.02	3.41±1.33	3.647	0.021*
	14	1.42±0.68	1.1±0.43	1.87±0.94	2.991	0.035*

Table (5) Number and present distribution of the studied subjects according to healing of their episiotomy using REEDA scale at fourteenth day

Items	Olive oil (N=40)		Lavender oil (N=40)		Placebo (N=40)		Friedman test
	N	%	N	%	N	%	
Redness:							
None	13	32.5	16	40	12	30	
Mild	18	45	17	42.5	11	27.5	5.168
Moderate	7	17.5	7	17.5	13	32.5	.008**
Severe	2	5	0	0	4	10	
Edema:							
None	15	37.5	14	35	9	22.5	
Mild	10	25	17	42.5	14	35	3.562
Moderate	12	30	8	20	11	27.5	.011*
Severe	3	7.5	1	2.5	6	15	
Ecchymosis:							
None	14	35	19	47.5	12	30	
Mild	17	42.5	15	37.5	10	25	6.002
Moderate	8	20	6	15	14	35	.007**
Severe	1	2.5	0	0	4	10	
Discharge:							
None 0	20	50	24	60	19	47.5	
Mild1	13	32.5	12	30	10	25	5.264
Moderate2	7	17.5	4	10	10	25	.008**
Severe3	0	0	0	0	1	2.5	
Approximation:							
None/closed	15	37.5	16	40	15	37.5	
Mild separation	22	55	23	57.5	18	45	2.897
Moderate separation	3	7.5	1	2.5	7	17.5	.023*
Severe separation	0	0	0	0	0	0	
Total scale:							
Good healing	18	45	21	52.5	16	15	
Moderated healed	17	42.5	16	40	15	37.5	4.067
Mildly healed	5	12.5	3	7.5	8	20	.009**
Poor healed	0	0	0	0	1	2.5	

Table (6) mean score between studied groups according to healing of episiotomy using REEDA scale

Items	Observation day	Olive oil	Lavender oil	Placebo	Friedman test	
		Mean s.d	Mean s.d	Mean s.d	Test	P value
Redness	**1**	2.78±1.01	2.81±0.99	2.79±1.20	0.968	0.087
	5	2.11±1.20	1.97±0.87	2.46±0.96	3.684	0.011*
	9	1.64±0.96	1.21±0.65	2.01±0.88	4.963	0.009**
	14	0.95±0.26	0.77±0.29	1.50±0.34	5.168	0.008**
Edema	**1**	2.41±1.33	2.43±1.04	2.48±0.99	1.002	0.069
	5	1.99±0.96	1.70±0.85	2.10±1.01	2.961	0.024*
	9	1.46±0.88	1.28±0.71	1.74±0.61	3.135	0.017*
	14	1.07±0.30	0.90±0.24	1.35±0.39	3.562	0.011*
Ecchymosis	**1**	2.30±1.40	2.26±1.60	2.21±1.39	1.044	0.051
	5	1.96±1.14	1.53±1.02	2.00±1.06	3.106	0.010*
	9	1.37±0.74	1.14±0.79	1.66±0.97	2.946	0.021*
	14	0.90±0.21	0.67±0.36	1.25±0.27	6.002	.007**
Discharge	**1**	2.10±1.00	2.16±1.30	2.05±0.99	1.303	0.056
	5	1.68±1.02	1.49±1.06	1.70±0.86	3.067	0.011*
	9	1.34±0.64	1.06±0.74	1.40±0.66	2.901	0.020*
	14	0.67±0.14	0.5±0.11	0.82±0.31	5.264	.008**
Approximation	**1**	2.62±1.04	2.59±0.97	2.65±1.31	0.968	0.061
	5	2.04±0.87	1.89±0.93	2.02±1.06	1.989	0.041*
	9	1.46±0.94	1.11±0.72	1.68±1.01	2.364	0.029*
	14	0.7±0.12	0.625±0.26	0.80±0.19	2.897	0.023*
Total scale	**1**	12.21±3.68	12.25±4.16	12.18±4.20	1.006	0.055
	5	9.78±3.04	8.58±3.94	10.28±4.09	5.018	0.008**
	9	7.27±2.97	5.80±2.26	8.49±3.03	5.694	0.007**
	14	4.29±1.94	3.46±1.75	5.72±2.10	4.067	0.009**

Discussion:

Perineal pain is the furthermost common complaint among women post-delivery. Pain results in stress and anxiety, which disturb the tissues repair process. Thus, perineal pain post-delivery lead to negative impressions on women's performance in providing care for their infants and family members **(**Therefore, the current study aimed to compare the three groups with respect to pain intensity. **(12)**

The present results showed that there was slight significant difference between three studied group regarding pain intensity at p value <0.05. Also, detected that lavender oil group had mean pain score less than olive oil, but placebo oil had highest score of pain. These results in cohort with the study conducted by **Behmanesh, 2011(13)** titled in A Clinical trial to compare the effectiveness of Lavender essential oil and olive oil at healing postpartum mother's perinea, who detected that mean pain score of olive oil group, was lower than lavender oil group. But, supported with the study performed by **Sheikhan et al., 2013(14)** about Episiotomy pain relief: Use of Lavender oil essence in primiparous Iranian women-Complementary Therapies in Clinical Practice, who concluded their study that using of Lavender oil essence can be effective in reducing perineal discomfort following episiotomy.

Also, consistent with **López, Nielsen, Solas, Ramírez & Jäger, 2017(15)**, titled in Exploring pharmacological mechanisms of lavender (Lavandula angustifolia) essential oil on central nervous system targets, who demonstrated that lavender oil had analgesic effect. Also, agreement with the study conducted by **Moradi, Niazi, Mazloumi, Mousavi & Lopez, 2020 (16)** about effect of lavender on episiotomy wound healing and pain relief: a systematic review, who recommended lavender oil as the treatment of choice in episiotomy wound healing and pain relief.

Also, consistent with the study performed by **Rezaie-Keikhaie et al., 2019(17)** about effect of aromatherapy on post-partum complications: a systematic review, who presented that essential oil can use to improvement of different psychological and physical symptoms. Meanwhile, supported with **Essa, Mohamed & Kandeel, 2020(18)** titled in effect of aloe vera gel versus normal saline on pain relief and healing process of episiotomy, who recorded essential oils such as lavender, olive, turmeric, Aloe Vera, were reported as the less costs, most effective methods in wound healing and attenuation of episiotomy pain. And, consistent with the study performed by **Behmanesh, Aghamohammadi, Zeinalzadeh & Khafri, 2013(19)** about

effects of olive oil sitz bath on improvement of perineal injury after delivery, who revealed that pain intensity was lower in the olive oil group on days 5 and 10 after delivery.

Complications of episiotomy include hemorrhage, infection, wound dehiscence, obstetric anal sphincter injuries, necrotizing fasciitis and delayed ones like dyspareunia, scar endometriosis and fistula **(Mittal, 2020)** [20]**.** The typical healing time for an episiotomy is around 4 to 6 weeks depending on the size of the incision and the type of suture material used to close the wound **(Aydın Besen & Rathfisch,** [21] **2020).**

According wound healing, by using REEDA scale, the current study revealed that slight more than half (52%) of lavender group had good healing, while Less than half (45%) of olive oil group had good healing, but more than one third (37.5%) of placebo group had moderate healing, so there was high difference between three studied groups at fifth, ninth and fourteenth day at p value <0.01. These results supported with the study conducted by **Sari, Hamranani & Sawitri, 2020**[22] titled in Effectiveness of lavender sitzbath therapy on episiorraphy of postpartum mother, who demonstrated that lavender sitzbath therapy had a significant relationship in the healing process of primiparous mother. Agreement with the study performed by **Mori, Kawanami, Kawahata & Aoki, 2016**[23] titled in wound healing potential of lavender oil by acceleration of granulation and wound contraction through induction of TGF-β in a rat model, who reported that lavender oil improvement wound healing. Meanwhile, cohort with the study performed by **Kaur & Kaur, 2016** [24] about a study to assess the effectiveness of lavender oil versus povidine iodine on healing of episiotomy wound among postnatal mothers, who detected that Lavender oil helps in episiotomy wound healing in experimental group from day 1 to day 5. Lavender oil was more effective in episiotomy wound healing from day 1 to day 3 as compared to povidine-iodine.

Also, consistent with **Shayan et al., 2020**[25] about the effect of olive oil and honey combination on episiotomy wound healing and pain relief: a randomized clinical trial, who showed that using honey and olive oil combination improves episiotomy wound healing and also relieves its' associated pain. Also, cohort with the study conducted by **Mahboubi et al., 2016**[26] titled in the effect of oliveria decumbens and pelargonium graveolens on healing of infected skin wounds in mice,

who revealed that olive oil, had positive effect on wound healing. And, supported with the study by **Kapoor, 2018**[27] about a comparative study to assess the effectiveness of medicated and non-medicated sitz bath on episiotomy wound healing among postnatal mothers, who detected that sitz bath with essential oil had same effect of medicated sitz bath on episiotomy healing. But, disagreement with the study by **Behmanesh et al., 2011,** [28] who detected that there was no significant difference between lavender oil and olive oil group at healing of episiotomy **.**

Conclusion:

To conclude, According to these findings, use of Lavender oil or olive oil can be effective in reducing perineal discomfort following episiotomy and improving healing of wound, but lavender oil had the highest benefit.

Recommendations:

-This study suggests that lavender oil and olive oil added to routine water sitz bath for post-episiotomy care

-Further study about effect of lavender oil and olive oil on wound healing with increasing sample size and different settings.

-Assess factors affecting on pain and wound healing for post-episiotomy women

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Effect of Educational Program about Nurse Managers' Performance Appraisal During COVID19 on Staff Nurses' Satisfaction and Motivation

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Abstract:

Background: COVID-19 creates a negative impact across healthcare sectors and performance appraisal is one of the most areas in nursing management which is significantly affected. **Aim of the study**: This study aimed to explore effect of educational program about nurse managers' performance appraisal during COVID19 on staff nurses' satisfaction and motivation. **Materials and method:** Quasi experimental research design was utilized. The study was conducted in all departments at cardiology center at El Mehallah El Kobra city. All (n =30) nurse managers and all (n=183) staff nurses worked in the same setting are involved in the study. Four tools were used to gather the data: nurse managers' role in managing performance appraisal during COVID 19 self- reporting questionnaire, nurse managers' performance appraisal knowledge questionnaire, staff nurses' satisfaction with performance appraisal scale and staff nurses' job motivation scale. **Results:** All nurse managers had low level in their role in managing performance appraisal during COVID- 19 and in total level of knowledge preprogram compared to the majority and nearly two-thirds had high level post program in role and knowledge, respectively. Statistically significant improvement was found in levels of staff nurses' satisfaction with performance appraisal and motivation post program implementation. **Conclusion*:*** Educational program for nurse managers on performance appraisal during COVID 19 plays a vital role in increasing staff nurses' satisfaction and motivation. **Recommendation:** Prime importance to modify performance appraisal forms to adapt to any changing that occurs in environment and receives continuous feedback from staff nurses about their satisfaction with present performance appraisal system.

***Key words*:** Motivation ,Nurse Managers, Performance appraisal during COVID-19, Staff nurses' satisfaction

Introduction

COVID-19 pandemic created a negative impact across all healthcare sectors. Nurse managers found themselves in big challenges. They had to adapt to novel situations, make critical decision, and ensure safe delivery of care. Also, they are responsible for engagement of their staff nurses that struggle to cope with the new working environment especially staff nurses taking new tasks and roles that not done before. Nurse managers found that most of the components of performance reviews have been discarded and unsuitable during the coronavirus crisis. So, how performance appraisal done in current situation of COVID 19 becomes a critical issue that have to be considered in the present time of crises [(1-3)].

Nurse managers tend to restructure the appraisal process structure refocusing on staff nurses' role in achieving the new objectives and retain a balance between the staff nurses' safety and wellbeing, as well as their efficiency and productivity during the pandemic [(4)] . Staff nurses' performance appraisal at the time of COVID-19 crises is not only an opportunity to evaluate current work, but it is also an opportunity to reset priorities and emphasis on what needs to be achieved in the coming months of the pandemic. Without guidance on staff nurses' new key priorities, they can be left demotivated and unengaged, which negatively impacts their satisfaction and output [(5)].

Performance appraisal as a formally planned system is a continuous process that measure inputs and outcomes of staff nurses directing on their strengths, weaknesses and discovering how the staff nurses performing in their job. It includes organizational processes such as performance measurement, objective formation, and reward management[(6)]. Review of performance is an important career development tool for the managers and staff nurses in which the managers guide staff nurses on the track to corporate advancement, and staff nurses get a clearer understanding of what is expected from their daily job duties goals [(7)]. The information obtained through the assessment provides foundations for training and growth of existing staff, as well as motivating and upholding a quality workforce by adequately and accurately rewarding their performance[(8)].

Managing performance appraisal effectively during COVIDE 19 requires the managers to create positive environment and plan for appraisal accurately. Nurse managers enhance positive environment through avoiding staff nurses criticism, continuing

conversations and discussions with staff nurses what is expected from them, what is need to improve, and what support might be needed to help achieve their new role. Then creating a comprehensive plan for staff nurses' development and giving nurses' achievements to strive for will inspire a higher level of competence. Once staff nurses' performance is measured against the set goals and objectives, a need can be identified about the future strategies of staff nurses' motivation [9,10]. Motivation is the process that empowers staff nurses and pushes them to achieve their goals. Performance appraisal that designed appropriately have a strong effect on success of organization [7]. The management has to pay more attention to the level of staff nurses' satisfaction with the performance appraisal process to achieve motivation which in turn leads to better performance and proficiency[11].

Staff nurses' performance appraisal also can act as incentive to improve their efficiency. When staff nurses see their goals evidently defined, their performance challenges identified and career enrichment solutions in place to help advance their role in treating COVID patients, the effect is to inspire the staff nurses to achieve those goals[7]. If managers use the appraisal inappropriately, cause disastrous effects [12]. In this period of slowdown and uncertainty the role of manager becomes quite essential to provide guidance, build strategy and implement support to the staff nurses' work[13]. Therefore, educational program become urgent for helping nurse managers to be aware about new approaches and strategies for performance evaluation to promote nurses' performance, productivity, and motivation.

Significance of the study

COVID-19 significantly impacted hospital cardiology services in different ways and posed new challenges in staff nurses' role[14]. Unanticipated stress on the cardiac staff nurses' role performance, systems of nursing care, and critical resource supplies are presented [15]. The lack of satisfaction with the performance appraisal process in organizations is considered as one of the symptoms of the organizational diseases [16]. So, improving the performance evaluation process for motivating, reassuring, and satisfying staff nurses come to be imperative to enhance their job performance and productivity. Because of the complexity ever changing and challenging nature of the evaluation methods, the educational program for

nurses managers help them to manage appraisal at this changing time, increase their responsiveness to overcome the appraisal problems of subjectivity and unfairness, inappropriate feedback.

Aim of the study

This study aimed to explore effect of educational program about nurse managers' performance appraisal during COVID19 on staff nurses' satisfaction and motivation

Research hypothesis

1- After implementing educational program, it is expected that managing performance appraisal during COVID 19 by nurse managers will be improved.
2- Nurses' motivation and satisfaction level will be improved.

Subjects and Method:

Research design: Quasi experimental research design was utilized.

Research Setting: study was conducted in all departments at Cardiology Center at El Mehallah El Kobra city with capacity of 140 beds. The setting is one from Ministry of Health and Population sectors that provides combination of profit and nonprofit services. Units understudy included CCU, open heart surgery, emergency, cardiac catheterization, and inpatient wards.

Subjects All (N =30) nurse managers and all (N=183) staff nurses worked in the above-mentioned hospital.

Tools*:* four tools were exploited to gather the study data.

Tool (1): Nurse Managers Role in Managing Performance Appraisal during COVID 19 Self- reporting Questionnaire

This tool developed by the researchers guided by **Deligiannis (2020)[5], and Alvear & David (2006)[17]** to assess nurse managers role in managing performance appraisal during time of covid 19. It included three subscales: creating positive environment for appraisals during covid 19 (6 items), planning the performance appraisal during covid 19 (9 items), and performance review during covid 19 (10 items) **besides**, seven items related to nurse manager' personal characteristics. The subjects' response were on 3-points Likert scaling varying from 1 (never done) to 3 (always done). Levels of nurse managers role in managing performance appraisal statistically represented based on the cut of value into three levels; ≥75% as high level; <75%-60% as moderate level; <60% as low role level.

Tool (II): Nurse Managers' Performance Appraisal Knowledge Questionnaire

This tool was developed by the researcher guided by **Deligiannis (2020) [5] , Moradi et al (2017) [18], Saeedi et al (2014)[19] , Aggarwal and Thakur (2013) [20]** to assess nurse managers' knowledge about performance appraisal. It consisted of 25 multiple choice and true & false questions covering the following: performance appraisal basic concepts (4 items), purpose of performance appraisal (4 items), principles of performance appraisal (4 items), methods of performance appraisal (4 items) , Strategies used to appraise staff during COVID 19 (5 items), and limitation to effective performance appraisal during COVID 19 (4 items). The scoring system for the questionnaire sheet consisted of score one for correct answer and zero for wrong answer. The scoring levels were statistically arranged at cut point as > 75% for high level of knowledge, moderate level 60-75% and low level of knowledge <60%.

Tool (III): Staff Nurses' Satisfaction with Performance Appraisal scale.

The adopted performance appraisal satisfaction scale was developed by **Bekele et al (2014) [6]** contained 12 items to assess staff nurses' satisfaction with performance appraisal during COVID 19. Staff nurses rated their responses by using 5 points Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Levels of satisfaction with performance appraisal represented statistically according to cut of point into; high level >75%, moderate level 60-75% and low level of satisfaction level <60%.

Tool (IV): Staff Nurses' Job Motivation Scale.

This tool developed by researcher based on **Warr** and **Clapperton (2010) [21]** and **Cameron and Pierce (1994) [22]**. It consisted of 12 items to assess staff nurses' job motivation. Nurses rated their responses by using 5-point Likert scale ranging from 1 (never) to 5 (always). Staff nurses' job motivation levels statistically represented based on the cut of value as > 75% high level; 60-75% as moderate level; and <60%. as low motivation level.

Method

Official permission was obtained from the authoritative personnel to conduct the study.

Ethical consideration

- Informed consent was gotten from nurse managers and staff nurses before data gathering.

- subjects' anonymity was considered and assured that the data is confidential and used only for research purposes.

Validity and reliability

A panel of 5 experts in field of nursing administration revise and check content validity of tools. The necessary modifications were done based on their opinion through omitting and clarifies some items. A pilot study was conducted on 10 percent of the study sample (3 nurse manager and 19 staff nurse). Cronbach Coefficient Alpha test was used to measure tools' reliability; it was 0.83 for tool 1; 0.94 for tool II; 0.91 for tool III and ; 0.86 for tool IV.

Field work

Data was collected in four phases.

1- **Assessment phase:**

- Tool I, II were distributed by researcher to assess nurse manager role in managing performance appraisal during COVID-19 and their knowledge levels about performance appraisal. Tool III and tool IV used to assess staff nurse's satisfaction with performance appraisal and assess their job motivation.
- The data collected during subjects' morning shift. Researchers were present during collection of data for any needed guidance and clarification.
- The tools collected personally by researcher immediately after completed. The administration time for filling the questionnaire sheet was approximately 15-20 minutes for tool (I, II) and approximately 10 minutes for (tool III, IV).

2- **Planning phase**:

- Program objectives, content and methods of teaching was selected after careful assessment of nurse managers' needs.
- The teaching methods used were lecture, group discussion and examples from life and work situation with the aids of data show and handout

3- **Implementation phase**:

- All nurse managers divided into five groups. Every group had one session every day for 3 days, each session lasted an hour.
- The program cover points on performance appraisal basic concepts, purpose, principles, methods, limitations and strategies used to manage performance appraisal at COVID-19.
- The program sessions were held in conference room at the last hour in nurse managers shift to be free after completed their work. The program educational

sessions lasted two months from first of June to end of July 2020.

4- **Evaluation phase**:

- Tool II was utilized immediacy after the program implementation to assess the changes in nurse managers level of knowledge. Tools (I,III and IV) utilized one month later post program implementation because the performance appraisal officially done monthly in the study setting (cardiology center) to assess nurse managers role in managing appraisal and levels of staff nurses' satisfaction with performance appraisal and their job motivation post program

Data analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0**. (**Armonk, NY: IBM Corp**).** Qualitative data were described using number and percent. Quantitative data were described using mean, standard deviation. Significance of the obtained results was judged at the 5% level. Chi-square test was used to determine differences between variables, and Pearson coefficient test to correlate between two normally distributed quantitative variables.

Results:

Table (1) shows distribution of study samples according to personal characteristics. The table reveals that 80% of nurse managers had more than forty years with mean age 40.0 ± 1.49. High percent (70%) of them had years of experience between 5-10 years with mean years of experience 7.63 ± 2.19. Moreover, all (100%) nurse managers were female and married. About quarter (26.7%) of them worked in cardiac catheterization unit while the majority (86.6%) had bachelor's degree, and all (100%) not attend any training programs about performance appraisal.

For staff nurses, the majority (88%) were in the age group 20-25 years with mean age 25.45 ± 2.99. Nearly half (49.2%) of staff nurses had years of experience between 5-10 years with mean years of experience 5.57 ± 2.38. Furthermore, the majority (92.8%, 82.5%) of them were married and female, respectively. Nearly quarter (23.5%) of staff nurses worked in cardiac care unit (CCU) and more than one-third (37.7%) of them had bachelor's degree.

Figure (1) shows levels of nurse managers

overall role in managing performance appraisal during COVID- 19 pre and post program implementation**.** All nurse managers had low level in their role in managing performance appraisal preprogram compared to the majority had high level post program implementation**.**

Table (2) illustrates levels of nurse managers role subscales in managing performance appraisal during COVID- 19 pre and post program implementation. There is statistically significant improvement in all nurse managers' role in management performance appraisal during COVID- 19 post program implementation. Pre- program, all (100%) nurse managers had low level in all subscale of their role in managing performance appraisal during COVID- 19 compared to 80%, 76.7%, 66.7 had high level in performance review, planning the performance appraisal and creating positive environment for appraisal respectively post program implementation.

Figure (2) shows nurse managers' total knowledge levels about performance appraisal pre and post program implementation. The figure shows that all nurse managers had low level of knowledge about performance appraisal management during COVID- 19 preprogram implementation compared to nearly two third had high level post program implementation.

Table (3) shows Nurse managers' knowledge levels about performance appraisal pre and post program implementation. The table shows statistically significant improvement in nurse managers' levels of knowledge post program implementation in all items of performance appraisal. Preprogram, knowledge level was low ranged from 93.3%- 100% in all items of performance appraisal. However, post program high percent (76.6%, 70%) of nurse managers had high level of knowledge regarding strategies to manage appraisal during COVID -19 and methods, respectively.

Table (4) shows levels of staff nurses' satisfaction and motivation pre and post program

implementation. Statistically significant difference found between levels of staff nurses' satisfaction with performance appraisal and motivation pre and post program implementation. Preprogram, majority (90.7%, 81.96%) of staff nurses had low level of satisfaction with performance appraisal and motivation, respectively while post-program implementation of performance appraisal around two-third (65.57%, 64.4%) of staff

nurses had high level of satisfaction with performance appraisal and motivation respectively.

Table (5) shows correlation between nurse managers' knowledge and role with staff nurses' level of satisfaction and motivation. There is significant correlation between nurse managers' total level of knowledge and role with total staff nurses' level of satisfaction and motivation at ($p \leq 0.05$).

Table (1): Distribution of study subjects according to their personal characteristics.

Variable	Nurse managers (n = 30)		Staff nurses (n = 183)	
	N	%	N	%
Age				
20-25	-	-	161	88.0
30-35	6	20.0	22	12.0
≥40	24	80.8	-	-
Mean ± SD	**1.49±40.0**		**2.99±25.45**	
Years of experience				
<5	0	0.0	79	43.1
5-10	21	70.0	90	49.2
>10	9	30.0	14	7.7
Mean ± SD	**2.19±7.63**		**2.38±5.57**	
Sex				
Female	30	100	151	82.5
Male	-	-	32	17.5
Marital status				
Married	30	100	170	92.8
Single	-	-	13	7.2
Others	-	-	-	-
Unit				
CCU	6	20	43	23.5
Open heart surgery	7	23.3	29	15.8
Cardiac catheterization	8	26.7	37	20.2
Emergency	5	16.7	24	13.1
Inpatient	4	13.3	50	27.3
Qualification				
Diploma	4	13.4	58	31.7
Associate degree	-	-	32	17.5
Bachelor	26	86.6	69	37.7
Master	-	-	8	4.4
Diploma degree	-	-	16	8.7
Attendance of training program about performance appraisal				
Not attend	30	100	-	-

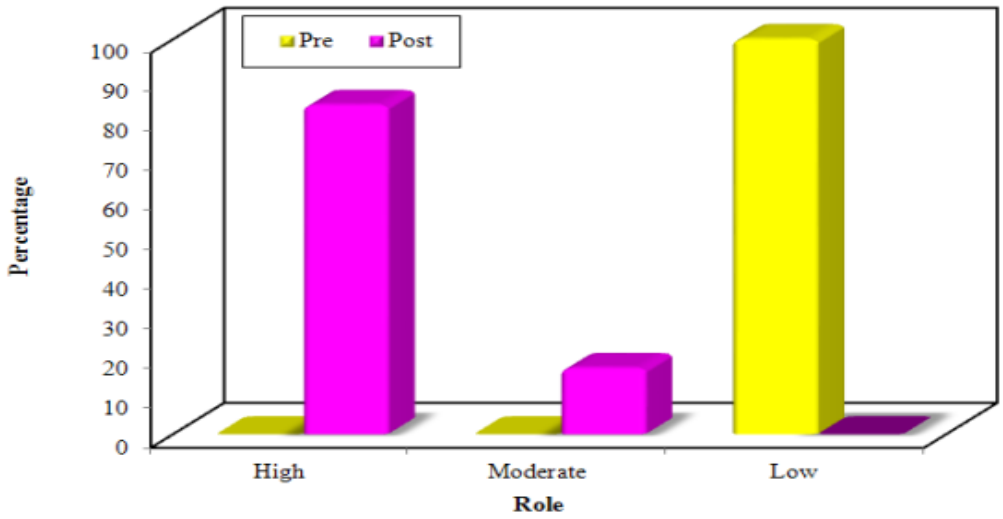

Figure (1): Levels of nurse managers' overall role in managing performance appraisal during COVID- 19 pre and post program implementation.

Table (2): Levels of nurse managers role subscales in managing performance appraisal during COVID- 19 pre and post program implementation (n = 30)

Role subscales		Levels of nurse managers' role in managing performance appraisal						Test of sig
		Pre			Post			
		High	Moderate	Low	High	Moderate	Low	
Creating positive environment for appraisal during COVID 19	N	-	-	30	20	6	4	17.191
	%	-	-	100	66.7	20	13.3	<0.001*
Planning the performance appraisal during COVID 19	N	-	-	30	23	7	-	29.589
	%	-	-	100	76.7	23.3	-	<0.001*
Performance review during COVID 19	N	-	-	30	24	5	1	39.091
	%	-	-	100	80	16.7	3.3	<0.001*

***: Statistically significant at p ≤ 0.05**

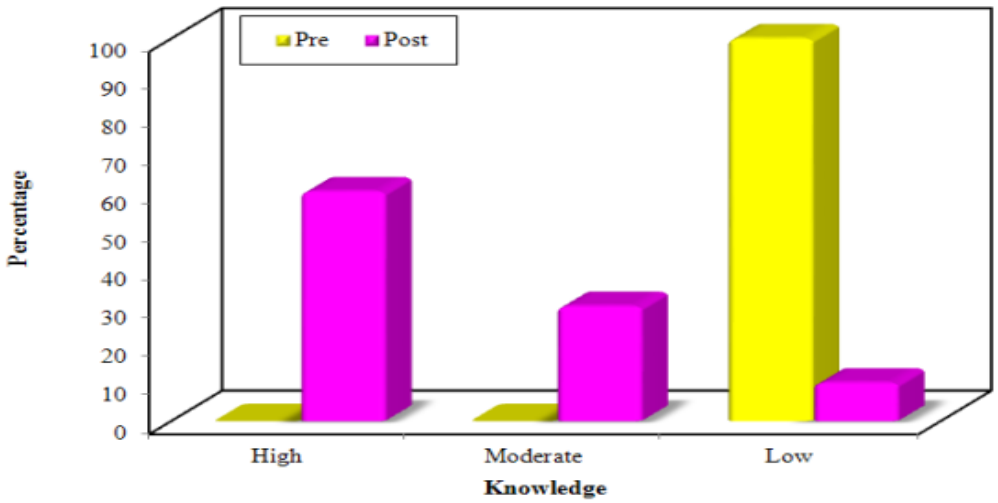

Figure (2): Nurse managers' total knowledge levels about performance appraisal pre and post program implementation

Table (3): Nurse managers' knowledge levels about performance appraisal pre and post program implementation (n=30)

Performance appraisal knowledge main items		Level of nurse managers' knowledge						test of sig
		Pre			**Post**			
		High	**Moderate**	**Low**	**High**	**Moderate**	**Low**	
Basic concepts	n	-	-	30	20	10	-	12.072*
	%	-	-	100	66.7	33.3	-	p <0.001*
Purpose	n	1	-	29	19	6	5	10.428*
	%	3.3	-	96.7	63.3	20	16.6	p <0.001*
Principles	n	-	-	30	19	11	-	12.425*
	%	-	-	100	63.3	36.6	-	p <0.001*

Performance appraisal knowledge main items		Level of nurse managers' knowledge						test of sig
		Pre			**Post**			
		High	**Moderate**	**Low**	**High**	**Moderate**	**Low**	
Methods	n	-	2	28	21	9	-	9.898*
	%	-	6.7	93.3	70	30	-	p <0.001*
Strategies to manage appraisal during COVID 19	n	-	-	30	23	7	-	19.507*
	%	-	-	100	76.6	23.3	-	p <0.001*
Limitation	n	1	-	29	20	10	-	12.775*
	%	3.3	-	96.7	66.6	33.3	-	p <0.001*

Table (4): Levels of staff nurses' satisfaction and motivation pre and post program implementation (n = 183)

		Levels						**Test of sig**
		Pre			**Post**			
		High	**Moderate**	**Low**	**High**	**Moderate**	**Low**	
Staff nurses' motivation	N	23	10	150	118	44	21	42.107
	%	12.66	5.56	81.96	64.4	24.3	11.3	<0.001*
Staff nurses' satisfaction	N	11	6	166	120	30	33	20.894
	%	6	3.3	90.7	65.57	16.39	18.04	<0.001*

Table (5): Correlation between nurse managers' knowledge and role with staff nurses' level of satisfaction and motivation

			Staff nurses' level of satisfaction and motivation		
			Nurses' motivation	Nurses' satisfaction	Overall
Nurse managers' Knowledge	Basic concepts	R	0.232	0.311	0.258
		P	0.218	0.094	0.169
	Purpose	R	0.513	0.391	0.539*
		P	0.004*	0.033*	0.002*
	Principle	R	0.092	0.120	0.155
		P	0.629	0.529	0.413
	Methods	R	0.464	0.532	0.505*
		P	0.010*	0.002*	0.004*
	Strategies to manage appraisal during COVID 19	R	0.527	0.501	0.419*
		P	0.003*	0.005*	0.021*
	Limitation	R	0.125	0.238	0.128
		P	0.509	0.205	0.499
	Overall knowledge	R	0.726	0.768	0.792*
		P	<0.001*	<0.001*	<0.001*
Nurse managers' Role	Creating positive environment for appraisal during COVID 19	R	0.435	0.430	0.597
		P	0.016*	0.018*	0.001*
	Planning the performance appraisal during COVID 19	R	0.206	0.182	0.138
		P	0.275	0.336	0.467
	Performance review during COVID 19	R	0.286	0.327	0.311
		P	0.125	0.078	0.095
	Overall role	R	0.414*	0.474*	0.406*
		P	0.023*	0.008*	0.026*

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Discussion

The current realities of coronavirus inspire all sectors to rethink on how to evaluate performance of their staff especially there is a need for new skills, competences required from all staff to steer today's changing workplace priorities [(23)]. Performance appraisal become a challenging task required from nurse managers to identify staff nurses' strengths, areas of improvement and motivate them to perform to their full potential [(24)]. So, our study intended to explore effect of educational program about nurse managers' performance appraisal during COVID19 on staff nurses' satisfaction and motivation

Awareness of nurse managers of performance appraisal is very important for improving quality of healthcare service [(18)]. But preprogram implementation, our result revealed that all nurse managers had low level in their role in managing performance appraisal during COVID-19 and low level in total knowledge. This is result can be explained by that fact that none of nurse managers attended any previous training program about performance appraisal. Nurse managers did not have sufficient knowledge about basic concept, principle, method, limitations, and strategies used to appraise staff during COVIDE 19. This is result agreed with **Bigdeli**, **et al, (2019)** **[(25)]** who found that the major problems in performance appraisal returned to inadequate education of appraisers and lack of appraisal guidelines. Also, **King, (2020)** **[(26)]** mentioned that appraisers need to provide staff with appropriated feedback about their performance. **Sippy& Varma (2014)** **[(27)]** , **Nikpeyma et al (2014)** **[(28)]** & **Najafi et al, (2011)** **[(29)]** recommended about importance of training program for the appraiser to reach the optimal level of performance.

Post program implementation the present study result supported our first hypothesis that after implementing educational program, it is expected that managing performance appraisal during COVID 19 by nurse managers will be improved. The study result showed significance improvement in nurse managers role and knowledge post program implementation. Nurse managers ability to review performance, planning the performance appraisal and creating positive environment during COVID 19 for performance appraisal increased. Also, they had high level of knowledge especially for strategies used to manage

appraisal during COVID- 19 and methods of appraisal. **Celik, (2014)** [30] result disagreed with our result and found that training program done for managers about performance appraisal didn't yield any significant differences and rationalized this when there is need to change evaluation behavior, this require more time and more experience.

Present study result revealed that preprogram, majority of staff nurses had low level of satisfaction with performance appraisal and motivation. This result may be due to nurse managers based on old form of performance appraisal that is present in hospital with no consideration to any changing occurs during COVID-19. **Vidya & Kothai,(2020** [31] agreed with our result and found that the used performance appraisal system was ineffective because the criteria used in measuring performance not clearly defined. **Najafi et al, (2010)** [32] result indicated that appraisal methods in the health care system are not effective and do not have an influence on the appraisal improvement**.** Also, **Bulto**& **Markos**, **(2017)**[33] found poor implementation of performance appraisal. Result supported with **Aly**& **El-Shanawany (2016)** [16] who found that nurses' dissatisfaction with performance appraisal process and less motivated in their work. Also, **Aly et al, (2020)** [34] & **Saad, (2014)**[35] found that studied sample had low satisfaction about performance appraisal. In contrast **Chaponda, (2014)** [36] revealed that respondents were satisfied and motivated with appraisal system used.

Post program implementation**,** the result showed that around two third of staff nurses had high level of satisfaction with performance appraisal and motivation that supported the second hypothesis of our study. This is because nurse managers' role in performance appraisal begin to be improved especially their ability to manage performance appraisal during COVID 19 post acquired knowledge and training during program. This agreed with Kaushik & Arora (2020) [1] who stated that at time of COVID- 19 its necessary for managers to redefine their expectations about job done. **Christodoulou et al, (2020)**[37] recommended about redesigning the performance appraisal system to be more effective..

Result of study revealed significant correlation between total nurse managers' level of knowledge and role with total staff nurses' level of satisfaction and

motivation. This is because staff nurses enjoy and exert effort in their work when nurse managers create positive work environment for appraisal. Managers explain to staff nurses what is expected from them and what should do to achieve high performance. This agreed with **Bulto** & **Markos**, **(2017)** [33] who found positive and significant relationship between performance appraisal system and employee motivation. **Abed & EL Banan (2016)** [38] found significant correlation between quality of performance appraisal process and job satisfaction**. Schub** and **Mennella (2018)** [24] mentioned that after conducting performance appraisals, the nurse will demonstrate motivation to maintain or improve performance.

Conclusion

Educational program for nurse managers on performance appraisal during COVID 19 play a vital role in increasing staff nurses' satisfaction and motivation that help in improving their performance , as there is a statistically significant correlation between total nurse managers' total level of knowledge and role with staff nurses' level of satisfaction and motivation.

Recommendation

For hospital administration

- Modify performance appraisal forms to adapt to any changing that occurs in environment or organization, to maintain relevance and effectiveness**.**
- Provide educational programs for nurse managers continuously on performance appraisal and strategies that motivate staff nurses
- Receive continuous feedback from staff nurses about their satisfaction with present performance appraisal system.

For nurse manager

- Inform staff nurses about any changing in appraisal form.
- Provide supportive environment by avoiding criticism to staff performance and encourage good discussion and communication.
- Attend workshop or training programs on performance appraisal.

Further research: effect of application of performance appraisal at COVID 19 on patient safety.

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Stressors and Coping Strategies Among Neonates' Mothers Admitted at Neonatal Intensive Care Unit

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Abstract: Back ground: The birth of a neonate that needs care in a neonatal intensive care unit (NICU) is one of the most stressful experiences for the mothers. The abrupt transition of baby from the protected environment of the womb to the pressured environment of neonatal intensive care unit present mother with a wide range of stressors. **Aim**: The study aimed to assess stressors and coping strategies among neonates' mothers admitted at Neonatal Intensive Care Unit. **Research Design:** The study followed a Descriptive research design to achieve the aim of the present study. **Setting:** The study was conducted at Neonatal Intensive Care Unit of Tanta University Hospital. **The study subjects:** The subjects of the study were Convenience sampling of 120 neonates' mothers admitted at Neonatal Intensive Care Unit. **Tools:** Data was collected by using two tools. 1) Parental Stressor Scale; 2) cope scale. **Results:** According to their total level of parental stressor. It found that about **half** of the studied mothers were moderately stressful, while **(1.7%**) Of the studied mothers were not at all stressful. The mean score of the total level of parental stressor is **(196.78±5.906)**. According to their total level of utilization of coping strategies. It found that more than half about **64.2%** of the studied mothers had moderate utilization of coping strategies. **Conclusion**: There was statistically Correlation between total score of Stressor domains and total utilization of coping strategies score among the studied mothers. **Recommendation:** Based on the result of this study, it was recommended that the nurses at all levels need to have specialized knowledge and training, Conducting training program for nurses about stressors facing mothers and different strategies to deal with it.

Key words: stress, stressors, and coping strategies.

Introduction

Motherhood is the most crucial and immediate environment in which the neonate survives and develops. The birth of neonate that requires neonatal care is the one that has the potential to cause considerable amount of stress and anxiety for mothers. The mother-infant bonding process that occurs during the newborn period establishes the foundation for a lifelong relationship. This typical process does not occur when the neonate spends the first several weeks or months in the Neonatal Intensive Care Unit (NICU) **(1).**

Mothers experience feeling of guilt, responsibility, failure, and shame about their neonate's hospitalization. As a result, they have a much more difficult time bonding with their neonate, since they were not the primary caretakers for them. Feelings of separation during their neonate's time in the NICU can lead to emotional distance as their neonate grows up, and even disturb neurological development of the neonate **(2).**

There are three broad categories of stressors that mothers experience while having a neonate infant in the NICU, these are psychological, social, and environmental.

stressors is the most common one which include emotional exhaustion as a result of birth of an ill neonate, which may lead to stress, loss of control, helplessness, changing mother role and lead to barriers in mothers-neonates interactions that appear to have a long-term impact on motherhood **(3).**

Stressors such as struggling to meet the demands of other children in the home, transfer of mother role to NICU medical team, transportation barriers, financial strain, and ineffective patterns of communication among health care providers**(4).**

While the environmental stressors of the neonatal intensive care unit (NICU) serves as a significant source of stress for mothers. Neonatal units are often burdened with loud sounds, unpleasant sights and procedures, and crowds of health care professionals **(5).**

Mother who had an experience in NICU, may use coping strategies to overcome the situation .The word coping generally refer to adaptive coping mechanism that helps to reduce stressors. Coping mechanism need to be positive to lead to a mentally healthy life style. However, some strategies may actually increase stress, and in turn may be

maladaptive[6].

Coping can be defined as an effort to manage and overcome demands and critical events that pose a challenge, threat, harm, loss, or benefit to a person .there are two types of coping but conceptual distinction is between assimilative and accommodative coping, Assimilative coping implies tenacious goal pursuit, and accommodative coping flexible goal adjustment. Similarly, the terms "primary control" versus "secondary control" or "mastery" versus "meaning" [7].

Coping process have important role that help to prevent possible trouble. Preventive coping is not born out of an acute stress situation. It is not sparked by state anxiety, but rather by some level of trait worry, or at least reasonable concern about the dangers of life. General “coping self-efficacy” seems to be a good personal prerequisite to plan and initiate successfully multifarious preventive actions that help build up resilience against threatening non normative life events in the distant future [8].

Among the unhealthy coping mechanisms are avoid the object of stressors, being passive aggressive, using suppression and going to the extreme with your emotions. While the positive coping mechanisms include seeking help from supportive people [9].

Nurses are identified as a source of support by mothers. As most mothers described themselves as dependent on the nurses to care for their neonate, determines role of the mothers that they are taking of neonate's management. Very important to include mothers into the creation of the care plan and decision making process which improve care provided to the neonates. Mother’s voice and soft music transfer love, emotions and wisdom and thus augur long term developmental benefits [10].

Mother stressors in NICU are often a neglected area. Most of the care giving is centered to neonates. Quantifying stressors levels of mothers and identifying the greatest environmental stressor by understanding the aspects of neonates, mothers and the environment that can cause stressors may be useful for assisting the health personnel in targeting a complete family centered care and thus improving quality of life of the neonates .The current study aimed to assess stressors and coping strategies among neonates' mothers admitted at Neonatal Intensive Care Unit [11].

Aim of the study

The aim of this study was to:

Assess stressors and coping strategies among neonates' mothers admitted at Neonatal Intensive Care Unit.

Research questions;

1. What are stressors and coping strategies of neonates' mothers admitted at Neonatal Intensive Care Unit?

Subjects and Method

Subjects

Research Design:

Descriptive research design was used.

Setting:-

The study was conducted at Neonatal Intensive Care Unit of Tanta University Hospital which affiliated to the ministry of High Education.

Subjects:-

Convenience sampling of 120 neonates' mothers admitted at Neonatal Intensive Care Unit.

Tools of data collection:-

To achieve the aim of this study, the following tools were used;

Tool I:- Structural interview schedule.

Socio-demographic data to collect information of neonate's mothers.

Tool II: - Parental Stressor Scale: [12]

The scale contains 46 items, corresponding to four subscales which are:

a) Unfamiliar Sights and sounds for equipment in ***Neonatal Intensive Care Unit***.
b) Appearance and behavior of the neonate.
c) Impact on parents' role and their relationship with their neonates.
d) Mothers' relationship and communication with the staff.

Mothers will be asked to rate each item according to how stressful the situation for them. It's scored on a 4-point Likert scale ranging from 1 point for "mild stress", 2 points for "moderate stress", 3 points for "severe stressful".

Each mother can receive score ranging from 46 to 230 degree, Evaluation of this questionnaire will be as follow:-

A- (46-100) ⟹ not at all stress
B- (101-150) ⟹ mild stress.
C- (151- 200) ⟹ fairly moderate stress.
D- (201-230) ⟹ severe stress.

Tool III: - cope scale :[13]

The cope scale is consisting of 28 items distributed in 14 sub items, each of which assesses the degree to which a respondent utilizes a specific coping strategy as:

- Factors related to active coping such as: Taking action to try to make the situation better.
- Aspects related to planning such as: Trying to come up with a strategy about what to do.
- Positive Reframing such as: Trying to see it in a different light, to make it seem more positive.
- Acceptance such as: Accepting the reality of the fact that it has happened.
- Humors such as: Making jokes about it.
- Religion such as: Trying to find comfort in my religion or spiritual beliefs.
- Using Emotional Support such as: Getting comfort and understanding from someone.
- Using Instrumental Support such as: Getting help and advice from other people.
- Self-Distraction such as: Turning to work or other activities to take my mind off things.
- Denial item such as: Saying 'this isn't red.
- Venting such as: Saying things to let my unpleasant feelings escape.
- Substance Use such as: Using alcohol or other drugs to make myself feel better.
- Behavioral Disengagement such as: Giving up trying to deal with it.
- Self-Blame such as: Criticizing myself.

Scoring system:

1- Each item is scored on a 3-point Likert scale, ranging from 1 (Not doing this at all) to 3 (Doing this a lot).

2- Each patient can receive score ranging from 28 to 112 grades, Evaluation of this questionnaire will be as follow:-

Level of utilization of coping strategies:-

- (< 60%) Mothers slight utilize of coping strategies.
- (60 to 75 %) Mothers have moderate utilize of coping strategies.
- (> 75%) Mothers have great utilize of coping strategies.

Method

1- An official permissions was obtained from Neonatal Intensive Care Unit of Tanta University.

2-Ethical considerations were obtained from neonates' mothers after explaining the aim of the study and their right to withdraw from the study at any time.

Confidentiality and privacy of the information obtained from them will be maintained.

3-**Tool (I, II, III)** was developed by the researcher after review of recent literature.

4-The tools of the study was tested for content and validity by a group of five experts in the psychiatric nursing field, required correction will be done until the used tools approved as being valid.

5- Pilot study was conducted on 10% of mothers after taking their approval to ascertain the clarity, applicability and feasibility of the study tools. The necessary modifications will be done according to pilot study. The pilot study will be excluded from the original sample.

6-The interview schedule was administered individually to each mother and interviewed in privacy by the researcher using **(three tools)** within 30 minutes.

7-The researcher was assessed stress level of neonates' mothers admitted at Neonatal Intensive Care Unit using **(tool II).**

8-The researcher was assessed coping of neonates' mothers admitted at Neonatal Intensive Care Unit using **(tool III).**

9-Data was collected within 6 months.

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).

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

Results

Table (1) shows Distribution of the studied mothers' sociodemographic characteristics. It showed that the majority of sample approximately 65.8% of mothers aged 20-<30 years old.

The mean age of the studied mothers is 27.03±4.278 year's .Regarding the gestational age the mean age. It was found to be**35.19±0.639**. Also, near half of the studied mothers (48.3%) had diplome in educational level. Regarding occupation the table showed that approximately (63.3%) of the studied mothers were house wife comparing (1.7%) of them were lawyers .Regarding age of neonates the majority of neonates

were 58.3% aged 7-<14 days compared with 5.8% aged <7 days .The mean age of neonates is 12.66±5.683day. the table showed that the majority of neonates Stay length in NICU (in days) is 46.7% of neonates were 7-<14 days compared with 5.8% were less than or equal 20 days. The mean of Days of hospitalization is 9.93±5.331 days .Regarding Pregnancy problems of studied mothers the majority 95.8% didn't have any problems .Regarding Child birth type 73.3% of studied mothers were Caesarean labor. The mean of Number of living children is 2.90±0.991 child .the mean of Birth weight is **1.93±0.127** kilo grams. The mean of Number of delivery is 3.25±1.117 time. Regarding Number of NICU visits the majority of studied mothers visits were 50.8% less than 7 days compared with 2.5% are ≥21 days. The mean of Number of NICU visits is 7.78±4.595 times. The majority of neonates diagnosis (60.8%) had breathing difficulty comparing with (3.3%) had Pneumonia.

table (2): This table illustrats The Total mean scores of parental stressor domains of the studied mothers. It shows that The Total mean scores of parental stressor domains of the studied mothers in relation to Un familiar Sights were (**22.21±1.587)** , Baby looks and behaves were **(86.31±3.159)** , Relations and parental role were (**42.16±2.738)** and **(50.17±2.985**) related to Staff behavior's and communications

Table (3): This table shows the Distribution of the studied mothers according to their total level of parental stressor. It found that half of the studied subjects **(50.0%)** were moderately stressful , While **(1.7%**)Of the studied mothers were not at all stressful. The mean score of the total level of parental stressor is (**196.78±5.906)**.

Table (4): This table reveales Distribution of the studied mothers according to their total level of utilization of coping strategies. It shows that less than half **34.2%** of the studied subjects**(34.2%)** had slight utilization of coping strategies level, while more than half of the studied subjects (**64.2%)** had moderate utilization of coping strategies and about (**1.7%)** of the studied mothers had great utilization of coping strategies about Coping Strategies Among Neonates' Mothers Admitted at Neonatal Intensive Care Unit. The mean score of Total

utilization of coping strategies level is **(80.46±4.463)**.

Table (5): this table illustrates the Correlation between total score of Stressor domains and total utilization of coping strategies score among the studied mothers. It found that there were a significant negative mild correlation between the total score of coping strategies and the two stressor domains (un familiar Sights and sounds, and Baby looks and behaves).on the other hand, there was non-significant positive mild correlation between the total score of coping strategies and Relations and parental role stressor domain .Also there was a negative non-significant mild correlation between the total score of coping strategies and Staff behavior's and communications Stressor domains .At the end there was a significant negative moderate correlation between the total utilization of coping strategies and the total stressor score of the studied mothers ($r=-0.341$, $p=0.026<0.05$).

Table (1): Distribution of the studied mothers' sociodemographic characteristics.

Characteristics	The studied mothers (n=120)	
	N	%
Mother's age (in years)		
▪ <20	5	4.2
▪ 20-<30	79	65.8
▪ ≥30	36	30.0
Range	**(18-38)**	
Mean ± SD	**27.03±4.278**	
Gestational age (in weeks)		
Range	**(34-36)**	
Mean ± SD	**35.19±0.639**	
Marital status		
▪ Married	120	100.0
Educational level		
▪ Read and write	2	1.7
▪ Secondary school	5	4.2
▪ Diplome	58	48.3
▪ Technical institute	18	15.0
▪ Bachelor	37	30.8
Occupation		
▪ House wife	76	63.3
▪ Teacher	17	14.2
▪ Nursing	15	12.5
▪ Engineer	3	2.5
▪ Technician	4	3.3
▪ Doctor	3	2.5
▪ Lawyer	2	1.7
Age of neonates (in days)		
▪ <7	7	5.8
▪ 7-<14	70	58.3
▪ 14-<21	27	22.5
▪ ≥21	16	13.3
Range	**(5-28)**	
Mean ± SD	**12.66±5.683**	
Days of hospitalization in NICU		
▪ <7	39	32.5
▪ 7-<14	56	46.7
▪ 14-<21	18	15.0
▪ ≥21	7	5.8
Range	**(3-28)**	
Mean ± SD	**9.93±5.331**	
Pregnancy problems		
▪ None	115	95.8
▪ Gestational diabetes	5	4.2

Child birth type		
▪ Normal	32	26.7
▪ Caesarean	88	73.3
Number of living children **Range** **Mean ± SD**	**(1-5)** **2.90±0.991**	
Birth weight (in Kg) **Range** **Mean ± SD**	**(1.00-2.00)** **1.93±0.127**	
Number of delivery **Range** **Mean ± SD**	**(1-6)** **3.25±1.117**	
Number of NICU visits		
▪ <7	61	50.8
▪ 7-<14	43	35.8
▪ 14-<21	13	10.8
▪ ≥21	3	2.5
Range **Mean ± SD**	**(2-24)** **7.78±4.595**	
# Diagnosis of infant		
▪ Pneumonia	4	3.3
▪ Breathing difficulty	73	60.8
▪ Weight loss	7	5.8
▪ Yellowish neonatal	39	32.5

 # More than one answer was chosen.

Table (2): Total mean scores of parental stressor domains of the studied mothers.

Parental Stressor domains	The studied mothers (n=120)	
	Range	**Mean ± SD**
1. Un familiar Sights and sounds	(17-24)	22.21±1.587
2. Baby looks and behaves	(79-92)	86.31±3.159
3. Relations and parental role	(38-47)	42.16±2.738
4. Staff behavior's and communications	(44-58)	50.17±2.985

Table (3): Distribution of the studied mothers according to their total level of parental stressor.

Total Stressor Level	The studied mothers (n=120)	
	N	**%**
▪ Not at all stress	2	1.7
▪ Mild stress	3	2.5
▪ Moderate stress	60	50.0
▪ Severe stress	55	45.8
Range **Mean ± SD**	**(175-213)** **196.78±5.906**	

Table (4): Distribution of the studied mothers according to their total level of utilization of coping strategies.

Total utilization of coping strategies level	The studied mothers (n=120)	
	N	%
▪ Slight ▪ Moderate ▪ Great	41 77 2	34.2 64.2 1.7
Range **Mean ± SD**	**(69-92)** **80.46±4.463**	

Table (5): Correlation between total score of Stressor domains and total utilization of coping strategies score among the studied mothers.

Stressor domains	Total utilization of coping strategies score	
	r	P
1. Un familiar Sights and sounds	**-0.184**	**0.044***
2. Baby looks and behaves	**-0.193**	**0.034***
3. Relations and parental role	0.096	0.297
4. Staff behavior's and communications	-0.104	0.260
Total stressor score	**-0.341**	**0.026***

DISCUSSION

The present study was carried out to assess stressors and coping strategies among neonates' mothers admitted at Neonatal Intensive Care Unit. Because of mother is the most caregiver parent for the baby .This could be due to that the mother traditionally take more physical and emotional responsibility of care ,also mother can tolerate her sons responsibility specially at the first year of age .this finding supported by Jackson,who stated that the mother experienced higher level of stress than any family members after birth of ill baby .this result in consistent with study conducted by matricardi&montorios, they showed that mother and father response for the same level of trauma and stress after neonate's admission to NICU.[14,15]

As regards to socio- demographic characteristics for mother of neonate admitted at Neonatal Intensive Care Unit.

Concerning to age group in the current study mean age group (18-38) most of age groups in current study 18 years old. Resulting in earlier and more frequent pregnancies. And also lack access to medical care may also result in premature birth and Neonatal Intensive Care Unit hospitalization [16].

As regard educational level ,the current study showed that ,the majority of mothers who had moderate level of education were likely increase risk of premature birth more than mothers of high education as they are more likely to increase gestational age ,this finding agreed with yang ,who showed that education is an indicator of socio-economic status of person ,when mother will educated influence her ability to access and use health care .Toward this respect, the current study showed more than half of studied subject had secondary school education ,this result agreed with petite 2016,and Welch halperin et al, 2016 ,who found that the high education play important role in healthy life style and prevent premature birth and his psychological effect on the mother [17].

As regards to job of mothers, the current study showed that more than half of studied mothers under this study was house wife that showed there weren't association between high physical work demand and low birth weight. This finding consistent with triche, who stated that strong associations between high physical work demand and low birth weight also point out that the premature birth due to poorer working condition and job insecurity [18].

Regarding to gestational age of infant ,the present study revealed that the majority gestational age of neonate was ranged from 34-36 week of gestation .This is confirmed with the study carried out by de magistris who stated that ,stressed symptoms are associated with lower gestational age ,length stay at neonatal intensive care unit and severity of illness [19].

Regarding the Parent stressors scale subscales, the highest mean score belongs to the subscale of the infant's appearance and behaves (86.31±3.159), followed by Staff behavior's and communications(50.17±2.985) ,the parents' role alterations subscale mean score (42.16±2.738) and then the sights and sounds subscale mean score (22.21±1.587). Based on the results of the present study, it was determined that the area that causes the most stress for parents is their infant's appearance and behaviors. This result was similar to the finding of Shields-Poe and Pinelli, who performed a study using the Parernt stressors scale: NICU and determined that the parents' greatest stress was due to their infant's appearance and behaviors. In another a study conducted by Preyda and Ardal**,** that different from our study, Preyda and Ardal determined that the factor that creates the most stress for parents is parental role alterations [20, 21].

Parents' mean score on the relation and parental role subscale was (42.16±2.738). In other study conducted Franck et al, the mean score on the parental role subscale was found to be more than the current one. Similar to the study of Franck et al., the area that causes the most stress for parents in the NICU is parental role alterations**.** It was determined that parental role alterations cause the highest stress among parents. That inconsistent with this results which the effective area causing stress for mothers babies appearance and behaviors [22].

Parents' mean score on the un familiar sights and sounds subscale was found to be (22.21±1.587)in the presented study, which is lesser than the scores found in other studies**.** In the other study conducted, the mean score on the un familiar sights and sounds subscale was found to be(2.08). Such high levels of stress reduced because of giving Knowledge of stress-related environmental resources in Tanta university neonatal intensive care units can help nurses reduce parents' levels of stress. For example, when parents are informed about the reasons for the use of monitors in

neonatal intensive care units and when monitor alarm sound levels are adjusted to appropriate levels, the stress experienced by parents in this regard will decrease [23].

The stress levels of parents who received information from different sources about the condition of their babies were found to be lower than the stress levels of those who did not. In the study carried out by Turan et al .parents were encouraged by nurses to receive information from different sources. It was determined at the end of the study that stress levels of parents who received information from different sources decreased. Knowledge acquisition is a strategy that reduces the fear and anxiety caused by obscurity. Knowledge acquisition also provides the opportunity to establish control over the situation, and it is a good way to reduce mothers' stress levels. Another study determined that parents' understanding of quality nursing care included predictions and provisions by nurses of information that parents may need and the establishment of a positive relationship between them for this purpose. Regarding coping strategies employed by mothers of newborn babies when admitted to a neonatal care unit. The study revealed that mothers of preterm babies used praying, attachment to baby and acceptance of the situation as coping strategies [24].

Regarding this study, Participants of this study expressed faith that God could increase their strength to care for their babies, as well as overcome the stress caused by preterm delivery. It can be mentioned that participants of this study demonstrated personal prayers for thanksgiving and for God to relieve them of stress as well as healing their babies [25].

The study revealed that believing in the supernatural God can be used as one of the coping strategies at the time of difficulties. Mothers with new born babies admitted to NICU prayed to requesting grace and strength to take them through such hopeless experiences for their premature babies. This is consistent with the results of a study reported by Arzani et al, who found that prayer was the most important strategy that mothers of new born ill babies used to cope. Participants asked God to intercede and provide good health to their preterm babies [26].

The majority of these participants relied on God's mercy; hence, this was reflected in the religious background of the participants. Every participant expressed that they were either Christian or Muslim. This explained why they all depended on

God to relieve them of the trauma they were going through. This is also in accordance with the study by Wachholtz, Morgantown, which found that dependence on prayer by individuals who are facing a stressful event is very useful coping strategies [27].

Regarding coping with the infant's hospitalization, faith and trust in God seem essential for helping these women to bear the suffering they experience as a result of having an infant at the NICU . Among the mothers' coping, the *Self-Reliance* mediated by religious beliefs stands out. The use of such strategies allowed them to remain optimistic and continue to hope for the baby's recovery despite adversities. Religiosity was a resource for emotion regulation in relation to the stressors, as was positive self-talk [28].

Subjects in the present study found that attachment to their babies was through seeing their babies frequently as well as evidence of life, progress on babies and no regrets. The attachment to a baby differs from mother to mother. For admitted neonate to NICU, mother–baby bonding is usually interrupted by the baby's admission to a neonatal care unit, and this separation can affect the mother's attachment to the baby. Some mothers would prefer to stay away, because of fear and uncertainty, others would prefer seeing and touching their babies as well as looking after the treatment their babies receive from health care professionals. In this study, attachment was very important to mothers as these mothers demonstrated preference to remain beside their babies [29].

This current study revealed that closeness with the newborn has enormous benefits for the mothers' coping strategies. Flacking et al. mentioned that attachment of mothers to their baby increases and secures mother–infant bonding. Bonding also augments mothers' confidence and competence in the care of their preterm babies. This reduces chances of high levels of stress and anxiety as well as prevents depression in subjects. Mothers in this study experienced attachment to their babies by touching, seeing and cuddling their babies. These participants experienced joy and happiness, which helped to reduce fear in them a as well as prevent rejection of their ill new born babies; this is confirmed by a study which found that attachment of mother to baby leads to well-being of the mother as well as better growth and development in the

preterm baby**.** However, participants in this study remained in the hospital, in the neonatal care unit, to bond with their babies. This is because they understood their responsibilities in the lives of their babies. Acceptance of the situation was matched to the concept of acceptance in the Brief COPE model by **(Carver ,1997).** This means that participants tend to accept the realism of the situation, and accept living with the stressful situation, which enables coping **(13).**

According to literature, it is clearly stated that the use of preterm labour and delivery is unknown . Therefore, mothers who deliver preterm babies should be prepared in order to be ready to accept the event of preterm delivery and hospital admission. This will enable them to cope better than when it happens when the mothers are unaware of the expectations. It becomes the responsibility of the health care staff to educate mothers during antenatal periods to educate and prepare mothers for unforeseen circumstances such as preterm labor, delivery and admission. This is noted by a researcher **(30).**

Concerning stress levels experienced by parents of premature infants hospitalized in neonatal intensive care units is crucial for healthcare professionals working in intensive care units. Determining the factors that cause stress among parents and developing appropriate intervention protocols will help reduce the stress levels of parents and give parents the ability to cope with the complex neonatal intensive care environment **(31).**

Conclusion and Recommendations

Conclusion

The study result concluded that, majority of staff mothers had high level of stress. Specifically, the highest mean scores belongs to the subscale of the infant's appearance and behaves (86.31±3.159), followed by Staff behavior's and communications(50.17±2.985) ,the parents' role alterations subscale mean score (42.16±2.738) and then the sights and sounds subscale mean score (22.21±1.587). Based on the results of the present study, it was determined that the area that causes the most stress for parents is their infant's appearance and behaviors. There was statistically significant Correlation between stress and coping strategies 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 (**).These findings answer all research questions.

Recommendations

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

At mothers' level

-The present study provides important information for mothers for newborn baby in NICU at Tanta university Hospital. This information can be used to prevent stress or facilitate adaptation and coping with regard to stress.

-Stress could potentially be reduced for mothers by health care providers giving more realistic estimates of when test or procedures will take place, and having a plan for how and when the results will be communicated.

-The mother have been educated on her infant's condition, treatment options, and ethical issues, so she was involved as much as possible in the decision making regarding her infant. Attention has been given to teaching the mother specific NICU care skills and techniques for use with her infant.

At staff nurses' level

-Staff should be educated on principle and methods of supporting mother during staying period in neonatal intensive care unit.

-The results of this study gave us a better understanding of what is stressful to parents and what they do to cope with these stressors while their child is hospitalized. This information can be used to help parents identify coping strategies and to develop interventions to help parents with coping.

-This study has identified strategies used by mothers to cope with stressors, and this information could be used to inform the development of an instrument to identify and evaluate the effectiveness of coping strategies for use in a larger population.

-It is unnecessary to provide a general intervention, further to what is already being practiced in the unit, with all parents. There are, however, some parents that do find the NICU environment more stressful, and they may benefit from increased clinical attention. Justification was provided for specific clinical attention to be targeted to the following areas.

-Engage in support group to help mother to connect with other who have similar problem and concern is very important issue.

-Appropriate and warm welcome for mother from the time of baby admission and teach some practice of special care , staff role and simple explanation of equipment .

Further researches need to be conducted to regarding how to measure parent coping during this time. The technology and availability of the Internet and social media has continued to advance. It is becoming increasingly common for mothers to share their stories on Facebook, Instagram, Twitter, and other platforms creation and sustain a healing environment with respect sensory exposure and experience.

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Effect of Educational Intervention Based on Health Belief Model for Mothers about Prevention of Sudden Infant Death Syndrome

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Abstract

Background; Sudden infant death syndrome is the sudden unexplained death of an infant less than one year of age which remains unexplained after a thorough investigation of clinical history. **The aim of this study was to** evaluate the effect of educational intervention based on Health Belief Model about prevention of sudden infant death syndrome. **Subjects and Method:** A convenience sampling of sixty mothers and their infants participated in the study. The study was conducted at Pediatric Medical Department and Pediatric Outpatient Clinic of Tanta Main University Hospital. **Three tools** were used to collect data: Sociodemographic characteristics and structured interview schedule, Reported Safe Sleep Questionnaire, and Health Belief Model of mothers related to sudden infant death syndrome. **The results revealed that** there was a statistically significant improvement of mothers' knowledge about Sudden Infant Death Syndrome after health education. The mean scores of mothers' total health belief constructs increased after health education. **The study concluded that** there was a positive significant improvement in mothers' knowledge, reported sleep practices as well as health beliefs about sudden infant death syndrome after health education. **Recommendations:** Nurses should provide mothers with information about safe sleep recommendations to prevent sudden infant death syndrome especially young and inexperienced mothers.

Keywords: Educational Intervention, Health Belief Model, Mothers, Prevention, Sudden Infant Death Syndrome.

Introduction

Sudden infant death syndrome, known as cot death or crib death, is the sudden unexplained death of an infant less than one year of age. Sudden infant death syndrome usually occurs during sleep. There is usually no evidence of struggle and no noise produced. About 90% of cases occur before six months of age, it is most frequent between two and four months of age. It is more common in boys than girls. [1,2]

Predisposing factors for sudden infant death syndrome include premature birth, infant age, gender, ethnicity, and maternal exposure to smoking during and after pregnancy. Accidental suffocation from bed sharing or soft objects may also play a role. Other factors include socioeconomic status of parents, clinical problems during pregnancy and childbirth, sleeping in prone position, increased environmental temperature during sleep, infection, and stress. [3,4]

The recommendations of American Academy of Pediatrics include supine positioning, use of a firm sleep surface, breastfeeding, room-sharing without bed-sharing, routine immunization, a pacifier use during bed time, and avoidance of soft bedding, overheating, and exposure to tobacco smoke and alcohol. Mothers' adherence to these recommendations depends on their knowledge and beliefs about SIDS. Thus, it is highly important to recognize mothers' beliefs and perceptions and how this may impact their behavior. The current study was conducted to evaluate the effect of educational intervention based on health belief model about prevention of sudden infant death syndrome. [5,6]

Health Belief Model is a psychological health behavior change model developed to explain health-related behaviors such as being screened for the early detection of asymptomatic diseases and receiving immunization. It was developed in 1950 by social psychologists at the United States Public Health Service and remains one of the best known and most widely used theories in health behavior research. It suggested that people's beliefs about health problems explain engagement or lack of engagement in health-promoting behaviors. [7]

Health Belief Model was used to develop effective interventions to change health-related behaviors. These Interventions aimed to increase perceived susceptibility and perceived seriousness of a health condition by providing information about prevalence, incidence, risk factors and the consequences of health condition. [8]

It also aimed to increase perceived benefits and decrease perceived barriers by providing information about the efficacy of various behaviors to reduce risk of health condition, identifying common perceived barriers, providing cues of action to encourage individuals to engage in health-promoting behaviors. So, HBM can be modified and used to modify mothers' beliefs regarding SIDS. [9]

Significance of the study

Despite the release of guidelines by the AAP on safe infant sleep and public service campaigns aimed at reducing risk factors over the past 25 years, deaths due to SIDS and SUID are still the 4th leading causes of infant death in the United States. In 2001, SIDS becomes the third leading cause of post neonatal deaths that occur between the ages of 28 days and one year. According to the Centers for Disease Control and Prevention (CDC), the incidence of SIDS in 2017 was 35.4 per 100,000 live births in the United States. In 2018, there were about 1,300 deaths due to SIDS, about 1,300 deaths due to unknown causes, and about 800 deaths due to accidental suffocation and strangulation in bed. [10,11,12]

There is scarcity of knowledge about SIDS in Egypt despite the worldwide recognition of this syndrome. Few records about the magnitude of the problem in Egypt are available as its diagnosis requires a complete autopsy which is difficult to be done for various reasons. Also estimation of the number of cases will not be accurate especially in places where recording of infant deaths isn't prevalent. There is a significant drop in infant mortality rates in Egypt from 63 deaths per 1000 live births in 1995 to 22 deaths per 1000 live births in 2014. [13, 14]

Aim of the study

The study was conducted to evaluate the effect of educational intervention based on Health Belief Model about prevention of Sudden Infant Death Syndrome.

Subjects and Method

A quasi-experimental research design was used in the present study. The study was carried out at Pediatric Medical Department and Pediatric Outpatient Clinic of Tanta Main University Hospital.

Sample: A convenience sample of 60 mothers and their infants were included in the study. The sample size calculation based on type I error 0.05 and power of test 90%.

Three tools were used in the current study as follows:

Tool I: Sociodemographic characteristics and structured interview schedule: It was developed by the researcher after reviewing the related literature to collect information about mothers and their infants. It consisted of four main parts: **Part I:** Characteristics of the studied infants such as age and gender. It also included the physical measurements of the infant such as weight, length, head and chest circumference. **Part II:** Characteristics of the studied mothers such as age, level of education, occupation, and parity. **Part III:** Medical history of mothers including their present and past medical history. **Part IV:** Mothers' knowledge about Sudden Infant Death Syndrome as definition, risk factors, and prevention.

Scoring system:

Correct and complete answers were given a score (2). Correct and incomplete answers were given a score (1). Wrong and/or no answer were given a score (zero). The total level of mothers' knowledge was scored as follows: Less than 60% was considered "poor". From 60% to less than 75% was considered "fair". From 75% and more was considered "good".

Tool II: Reported Safe Sleep Questionnaire: It was modified based on the American Academy of Pediatrics' recommendations for safe sleep and SIDS risk reduction to measure safe sleep practice recommendations among mothers such as: use of a firm sleep surface, the infant in supine position, avoid bed toys with infant, pacifier use during bed time, room sharing without bed sharing, avoid overheating, avoid smoking around the infant [(15)].

Scoring system:

The Questionnaire consisted of 7 items and mothers were asked to use a Likert scale from 1to 3 as follows: never was scored (1), sometimes was scored (2), and always was scored (3). The total reported safe sleep practices recommendations was divided as follows: the total score above 75% was considered safe sleep practices. The total score less than 75% was considered unsafe sleep practices.

Tool III: Health Belief Model of mothers related to SIDS: It was developed by Hochbaum 1958, subsequently modified by the researcher, it consisted of five main constructs; including perceived susceptibility,

perceived severity, perceived barriers, perceived benefits and cues to action. The original health belief model consisted of the following main constructs [6,7,16]:

a. Perceived susceptibility: which included five items: the chances of SIDS affecting an infant are high, worry a lot about SIDS, SIDS is a big problem, know that infants die from SIDS, within first year, know that an infant could die of SIDS, and there is a good possibility that an infant may die from SIDS.

b. Perceived severity: which included five items: afraid to even think about SIDS, the thought of SIDS scares a lot, the SIDS is hopeless condition, thinking about SIDS makes heart beats faster, and SIDS is a big deal.

c. Perceived benefits: which included four items: Placing infants on their back to sleep prevents SIDS, it's best for infants to sleep in crib or bassinet to prevent SIDS, don't worry so much about SIDS when infants sleep on their back, and not anxious about SIDS when an infant sleeps in own crib.

d. Perceived barriers: which included six items: can't reduce the chance of infants dying from SIDS, the best place for infants to sleep is in the bed with their mother, infants are more comfortable in sleeping on their stomach, family/friends would make fun if put infants to sleep on their back, putting an infant on their back to sleep would require starting a new habit, which is difficult, and prefer placing an infant on their stomach to sleep because it's easier.

e. Cues to action: which included three items: receiving much of infant care information from health professionals such as doctors and nurse, receiving much of infant care information from family members, and receiving much of infant care information from friends.

Health Belief Model scoring system:

The Questionnaire consisted of (23) items Used five point Likert scale (ranging from strongly agree to strongly disagree) to measure perceptions of behavior related to Sudden Infant Death Syndrome.

The scoring system for perceived benefits and cues to action: Strongly agree (5), agree (4)**,** natural (3), disagree (2)**,** and strongly disagree (1).

The scoring system for perceived susceptibility, perceived severity, and perceived barriers was reversed coded: Strongly agree was scored (1), agree, natural (3), disagree (4), strongly disagree(5).

Each item of Health Belief Model was scored as follows: Perceived susceptibility included five questions with a minimum score of (5) and a maximum score of (25). Perceived severity included five questions with a minimum score of (5) and a maximum score of (25). Perceived benefits included four questions with a minimum score of (4) and a maximum score of (20). Perceived barriers included six questions with a minimum score of (6) and a maximum score of (30). Cues to action included three questions with a minimum score of (3) and a maximum score of (15).

The total score of all items of Health Belief Model was calculated and classified as follows: Negative belief if the total score of mothers' health beliefs was less than 60% of the total belief scores and positive belief if the total score of mothers' health beliefs was more than 60% of the total belief scores.

Method:

Mothers' consent to participate in this study was obtained after explaining the aim of the study and receiving explanation about the nature of the study; their participation in the study was voluntary.The obtained information was confidential and used only for purpose of the study. The tools of the study were tested for its content validity by five experts in the pediatric nursing field. Modifications were carried out accordingly. A pilot study was carried out on 10% of the study sample to test clarity and applicability of the study tools then, the necessary modification was done. The pilot study was excluded from the study sample.

Implementation of the study: The study was conducted through four phases:

1. **Assessment phase** :It was carried out by the researcher to:

- Collect information about the studied mothers and their infants .
- Assess mothers' knowledge about SIDS, reported safe sleep practices, and their health beliefs about SIDS (Tool I, II, III). In this phase, the researcher interviewed the mothers to collect baseline data. At the beginning of the interview the researcher greeted the mothers, introduced herself to each mother, explained all information about the study purpose, duration, and activities and took their oral consent to participate in the study .

2. Planning phase: Educational intervention was developed after extensive review of the related literature. It was

designed according to mothers' educational needs assessment which included the following:

-Setting objectives.

-Preparation of the content which covered the reason behind the application of the educational intervention .

-The educational intervention module was designed by the researcher in the form of booklet. It was written in English then translated into simple Arabic language to be suitable to all mothers' level of understanding and education. It was given to all mothers who participated in the study .

- Different methods and materials for educational intervention were used including lectures, group discussion, PowerPoint, and colored posters.

3. Implementation phase: The studied mothers were divided into six subgroups, with ten mothers in each subgroup. The educational intervention was carried out for each subgroup separately through conduction of successive sessions. The average time for the completion of each session was 30 minutes. Sometimes, it was difficult to collect ten mothers at the same time. In this case, the sessions were given to the available number of mothers according to their attendance to the Pediatric Medical Department or Pediatric Outpatient Clinic and their follow up schedule. Each session started with a feedback about the previous session and the objectives of the new session. All mothers' questions were answered throughout the sessions.

The educational intervention sessions were carried out as follows:

a. The first session: It focused on definition, most common age of occurrence and incidence of SIDS.

b. The second session: It focused on causes, risk factors, and prevention of SIDS .

c. The third session: It focused on safe sleep recommendations according to the American Academy of Pediatrics' recommendations for safe sleep and SIDS risk reduction.

d. The fourth session: It focused on the health beliefs, assumptions and incorrect beliefs about SIDS and its effect on prevention of SIDS. This session also focused on issues that may be a barrier to safe sleep practices and proper position for sleep to prevent SIDS.

4. Evaluation phase: The researcher assessed mothers' knowledge, reported safe sleep practices, and health beliefs

regarding SIDS three times before the educational intervention, immediately after (immediate follow up), and one month after the implementation of health education (short term follow up) by using (Tool I, II, III). The evaluation was done one time before the implementation of health education to assess mothers' knowledge, reported safe sleep practices, and health beliefs regarding SIDS. It was done immediately after the implementation of health education to assess mothers' feedback and level of understanding of the given knowledge. Reevaluation was done for the 3rd time after one month of implementation of the health education to evaluate the mothers' retention of knowledge, their consistency in following safe sleep practices, and to evaluate any change of their health beliefs regarding SIDS with time as well.

Statistical analysis:

The collected data was organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 16, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison between two groups and more was done using Chi-square test (X2). For comparison between means of two groups of parametric data of independent samples, student t-test was used. For comparison between more than two means of parametric data, F value of ANOVA test was calculated for parametric data, where Scheffe test was performed to compare between each two means if F value was significant. Significance was adopted at $P< 0.05$ for interpretation of results of tests of significance [17].

Result

Table (1): In relation to age, it was observed that 38.3% of the studied infants' age was from 5 to less than 9 months, while 35% of them were from 9 to less than 12 months old with mean age 6.70 ± 3.033. Regarding sex of the studied infants, half of them (50%) were males. In relation to birth order, 40% of the studied infants were the 2nd birth in their family, while 31.7% were the 1st birth.

Regarding gestational age of the studied infants, nearly two thirds (63.3%) of them were delivered at 37-39 weeks of gestation, while 36.3% of them were delivered at 40-42 weeks of gestation with mean gestational age 39.20 ± 1.204. It was observed that half of the studied infants' weight at birth was from 2 to less than 3 kg, while 46.7% was from 3 to less than 4

kg with mean birth weight 3.01 ± 0.493. The majority (81.7%) of the studied infants-had not exposed to any problems during labor, but 13.3% of them had exposed to cyanosis due to prolonged labor.

Table (2): The table reveals that the age of nearly three quarters of the studied mothers (70%) was > 20 – 30 years old, while one quarter of them (26.7%) were more than thirty years old with mean age 28.066 ± 4.47. In relation to the educational level of the studied mothers, almost one third of them (35%) had secondary education and one third of them (30%) can read and write.

More than half of the studied mothers didn't work. As regards parity of the studied mothers, the majority of mothers were multiparous. Less than half of them (46.7%) were multiparous who had given birth two times. One quarter of them had given birth three times, while one third of them (21.6%) were primiparous.

Table (3) It was evident that all mothers (100%) had poor knowledge about SIDS before health education compared to 100% and 95% of them had good knowledge immediately and one month after health education respectively with highly significant difference (P- value 0.0001 and x^2 value 184.62). The table reveals that the total knowledge mean scores were 18.91±9.78, 56.05±1.56, and 49.15±2.94 before, immediately, and one month after health education respectively with statistically significant difference (P- value 0.0001).

The table also reveals that there was change in total knowledge mean scores immediately after than before health education with mean ± SD was 37.14 ± 9.82 with statistically significant difference (P- value 0.0001). In addition, there was change in mothers' total knowledge mean scores one month after than before health education with mean ± SD was 30.24 ± 10.07 with statistically significant difference (P- value 0.0001).

Table (4): The table reveals that more than half of mothers (58.3%) stated that they sometimes use firm sleep surface before health education, while 100% and 76.7 % of them viewed that the always use firm sleep surface immediately and one month after health education respectively with statistically significant difference (P value 0.0001 and x^2 value 76.233).

It was found that 88.3% of mothers sometimes put the infant in supine position before health education, compared to 88.3% and 73.3% of them always put the

infant in supine position immediately and one month after health education respectively. More than one third of mothers (41.7%) stated that they never avoid bed toys with infant during sleep before health education. On the other hand, most of mothers (91.7%) stated that they always avoid bed toys with infant during sleep immediately and one month after health education with statistically significant difference (P value 0.0001 and x^2 value 63.333).

Nearly two thirds of mothers (70%) said that they never use pacifier to infant during bedtime before health education. on the other hand, one third of them (30%) always use pacifier during bedtime immediately after health education, and 63.4% of them stated that they sometimes use pacifier during bed time with statistically significant difference (P value 0.0001 and x^2 value 147.633). It was evident that 38.3% of mothers stated that they share room and bed with their infants, while 55% of them sometimes share room without bed sharing before health education. More than two thirds of mothers (73.3% and 71.7%) are always sharing room without bed sharing immediately and one month after health education with statistically significant difference (P value 0.0001 and x^2 value 82.861).

Regarding overheating, 40% of mothers stated that they use overheating during sleep before health education while 81.7% of them stated that hey always avoid overheating during sleep immediately and one month after health education with statistically significant difference (P value 0.0001 and x^2 value 98.800).

In relation to negative smoking, 71.7% of mothers exposed to negative smoking around their infants before health education, while 96.7% and 95% of them always avoid smoking around infants immediately and one month after health education with statistically significant difference (P value 0.0001 and x^2 value 158.48).

Table (5): It was evident that the majority (98.3%) of reported sleep practices of the studied mothers were unsafe before health education compared to 100% and 91.6% them were safe immediately and one month after health education respectively with statistically significant difference (P-value 0.0001).

The table reveals that there was change in total practice mean scores immediately after than before health education with

mean ± SD was 7.72 ± 1.85 with statistically significant difference (P- value 0.0001). In addition, there was change in mothers' total practice means scores one month after than before health education with mean ± SD was 6.73 ± 2.32 with statistically significant difference (P- value 0.0001 and x^2 value 155.706).

Table (6): It was observed that all mothers (100%) had negative beliefs about SIDS before health education. All mothers' beliefs (100%) had changed to positive immediately and one month after health education with statistically significant difference (P- value 0.0001 and x^2 value 180.00). The mean scores of total mothers' beliefs were 48.96±2.84, 109.2±2.04, 106.75±2.43 before, immediately, and one month after health education respectively.

The table reveals that total mothers' health belief scores had changed immediately after than before health education with mean ± SD is 60.25 ± 3.07 with statistically significant difference (P- value 0.0001). Finally, total mothers' health belief scores had changed one month after than before health education with mean ± SD is 57.78 ± 3.43 with statistically significant difference (P- value 0.0001).

Figure (1): It was found that the majority of mothers (98.3%) had poor knowledge and followed unsafe sleep practices before health education, compared to all mothers (100%) had good knowledge and followed safe sleep practices immediately after health education.

Figure (2): It was observed that all mothers (100%) with poor knowledge had negative health beliefs about SIDS before health education, while all of them (100%) had good knowledge and positive health beliefs immediately after the health education. On the other hand, the majority of mothers (95%) had positive health beliefs and good knowledge one month after health education.

Figure (3): It was found that there was a negative non- significant correlation total mothers' knowledge and total safe sleep practices before health education but the correlation became positive and significant immediately after health education (P- value 0.046).

A negative significant correlation was observed between total mothers' knowledge and total health beliefs before health education (P- value 0.006), while it became positive and significant immediately and one month after health education where P- value = 0.003 and 0.022-respectively

Table (1): Percentage distribution of the studied infants according to their sociodemographic characteristics.

Sociodemographic characteristics	(n=60)	
	No	%
Age (Month):		
1 - < 5	16	26.7
5 - < 9	23	38.3
≥9 - 12	21	35.0
Range	**1 – 12**	
Mean ± SD	**6.70 ± 3.033**	
Sex:		
Male	30	50.0
Female	30	50.0
Birth order:		
First	19	31.7
Second	24	40.0
Third	13	21.7
Fourth	4	6.7
Gestational age (Weeks):		
37 - 39	38	63.3
40 – 42	22	36.7
Range	**37 – 42**	
Mean ± SD	**39.20 ± 1.204**	
Birth weight (Kg):		
2 - < 3	30	50.0
3 - < 4	28	46.7
≥4 – 5	2	3.3
Range	**2 – 4.5**	
Mean ± SD	**3.01 ± 0.493**	
Problems during labor:		
No problems	49	81.7
Cyanosis due to prolonged labor	8	13.3
Head trauma	3	5.0

Table (2): Percentage distribution of the studied mothers according to their sociodemographic characteristics.

Sociodemographic Characteristics	(n=60)	
	No	**%**
▪Age (years):		
≤ 20	2	3.3
> 20 - 30	42	70.0
>30	16	26.7
Range	**19 – 38**	
Mean ± SD	**28.066 ± 4.47**	
▪Educational level:		
Illiterate	4	6.7
Read and write	18	30.0
Secondary education.	21	35.0
University education.	17	28.3
▪Mothers' occupation:		
Working	29	49.3
Not working	31	51.7
▪Parity:		
One	13	21.6
Two	28	46.7
Three	15	25.0
Four	4	6.7

Table (3): Percentage distribution of the studied mothers according to levels and mean scores of total knowledge about Sudden Infant Death Syndrome.

Total knowledge items mothers about Sudden Infant Death Syndrome	(n=60)						χ^2	P
	Before		Immediate after		One month after			
	No	%	No	%	No	%		
Levels of total knowledge:								
Poor knowledge	60	100.0	0	0.0	0	0.0	**184.62**	**0.0001***
Fair knowledge	0	0.0	0	0.0	3	5.0		
Good knowledge	0	0.0	60	100.0	57	95.0		
Total knowledge scores:								
Range	0 - 32		51 - 58		42 - 56			
Mean ± SD	18.91±9.78		56.05±1.56		49.15±2.94			
F value	**657.261**							
P	**0.0001***							
Changes of total knowledge scores immediate after than before health education:								
Range	23 - 57							
Mean ± SD	37.14 ± 9.82							
Z value	**6.738**							
P	**0.0001***							
Changes of total knowledge scores one month after than before health education:								
Range	12 - 55							
Mean ± SD	30.24 ± 10.07							
Z value	**6.737**							
P	**0.0001***							

Table (4): Percentage distribution of the studied mothers according to reported safe sleep practices.

Mothers' reported safe sleep practices	(n=60)																		χ^2	P
	Before						Immediate						After one month							
	Never		Sometimes		Always		Never		Sometimes		Always		Never		Sometimes		Always			
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%		
Use of a firm sleep surface	17	28.4	35	58.3	8	13.3	0	0.0	0	0.0	60	100.0	6	10.0	8	13.3	46	76.7	**76.233**	**0.0001***
The infant in supine position,	5	8.3	53	88.3	2	3.4	2	3.4	5	8.3	53	88.3	6	10.0	10	16.7	44	73.3	**15.38**	**0.0001***
Avoid bed toys with infant.	25	41.7	27	45.0	8	13.3	0	0.0	5	8.3	55	91.7	0	0.0	5	8.3	55	91.7	**63.333**	**0.0001***
Pacifier use during bed time.	42	70.0	15	25.0	3	5.0	5	8.3	37	61.7	18	30.0	5	8.3	38	63.4	17	28.3	**147.633**	**0.0001***
Room sharing without bed sharing.	23	38.3	33	55.0	4	6.7	0	0.0	16	26.7	44	73.3	2	3.3	15	25.0	43	71.7	**82.861**	**0.0001***
Avoid overheating.	25	40.0	16	26.7	20	33.3	0	0.0	11	18.3	49	81.7	0	0.0	11	18.3	49	81.7	**98.800**	**0.0001***
Avoid smoking around the infant.	43	71.7	16	26.7	1	1.7	0	0.0	2	3.3	58	96.7	0	0.0	3	5.0	57	95.0	**158.48**	**0.0001***

Table (5): Percentage distribution of the studied mothers according to levels and mean scores of total reported safe sleep practices.

Total Mothers' reported safe sleep practices	(n=60)						χ^2	P
	Before		Immediate		One month			
	No	%	No	%	No	%		
Levels of total practice:								
Safe sleep practices	1	1.7	60	100.0	55	91.6		
Unsafe sleep practices	59	98.3	0	0.0	5	8.4	**155.706**	**0.0001***
Total practice scores:								
Range	10 - 16		17 - 21		14 - 21			
Mean ± SD	11.78 ±1.41		19.50±1.17		18.51±1.68			
F value	**608.824**							
P	**0.0001***							
Changes of total practice scores immediately after than before health education:								
Range	2 - 11							
Mean ± SD	7.72 ± 1.85							
Z value	**6.779**							
P	**0.0001***							
Changes of total practice scores one month after than before health education:								
Range	0 - 10							
Mean ± SD	6.73 ± 2.32							
Z value	**6.770**							
P	**0.0001***							

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

Table (6): Percentage distribution of levels and mean scores of total mothers' health beliefs about Sudden Infant Death Syndrome.

Total mothers' health beliefs about Sudden Infant Death Syndrome	(n=60)						χ^2	P
	Before		Immediately after		One month after			
	No	%	No	%	No	%		
Levels of total health belief:								
Negative belief	60	100.0	0	0.0	0	0.0	**180.00**	**0.0001***
Positive belief	0	0.0	60	100.0	60	100.0		
Total health belief scores:								
Range	42 - 56		104 - 114		101 - 112			
Mean ± SD	48.96±2.84		109.2±2.04		106.75±2.43			
F value	**11501.9**							
P	**0.0001***							
Changes of total health belief scores immediate after than before health education:								
Range	52 - 66							
Mean ± SD	60.25 ± 3.07							
Z value	**6.745**							
P	**0.0001***							
Changes of total health belief scores one month after than before health education:								
Range	49 - 65							
Mean ± SD	57.78 ± 3.43							
Z value	**6.754**							
P	**0.0001***							

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

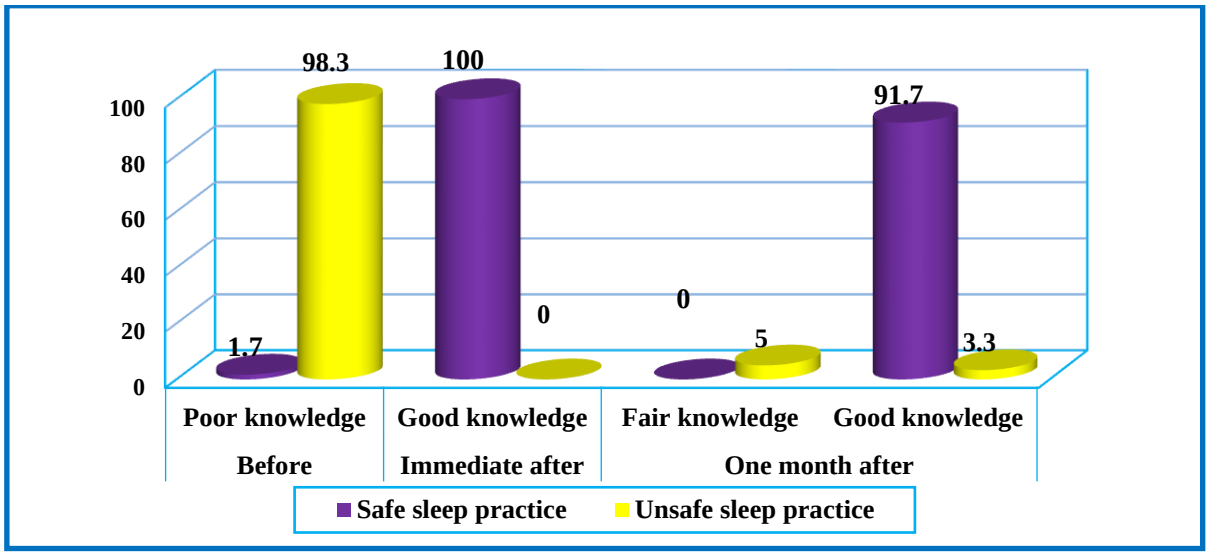

Figure (1): Relation between total mothers' knowledge and total reported safe sleep practices about Sudden Infant Death Syndrome.

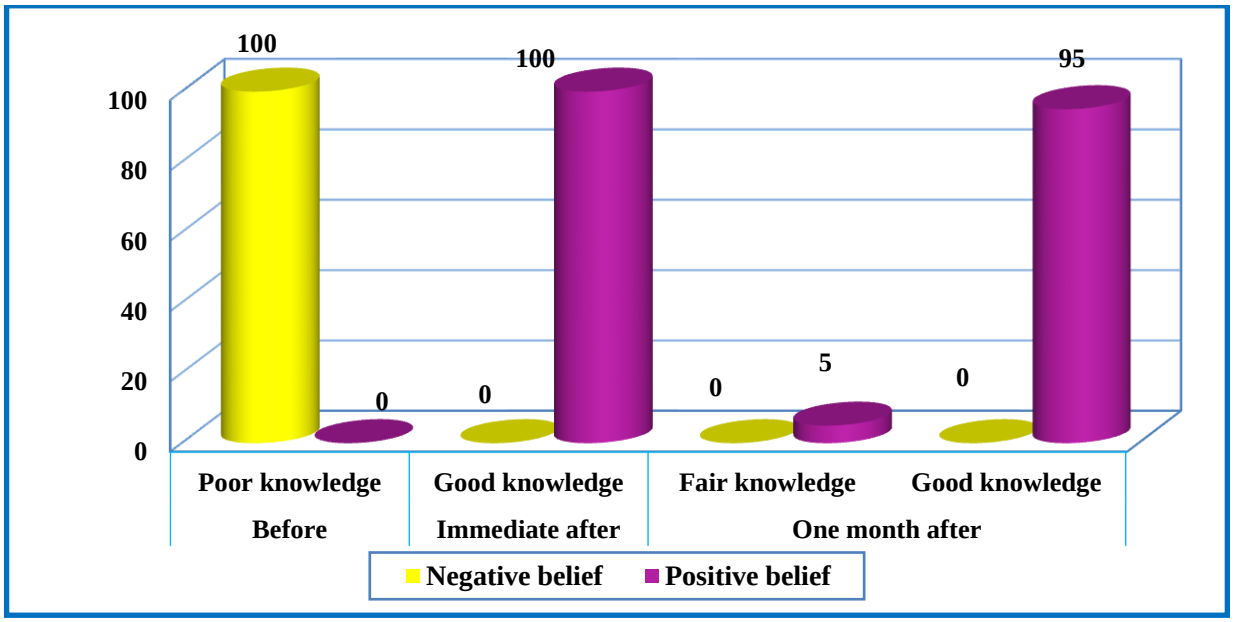

Figure (2): Relation between total mothers' knowledge and health beliefs about Sudden Infant Death Syndrome.

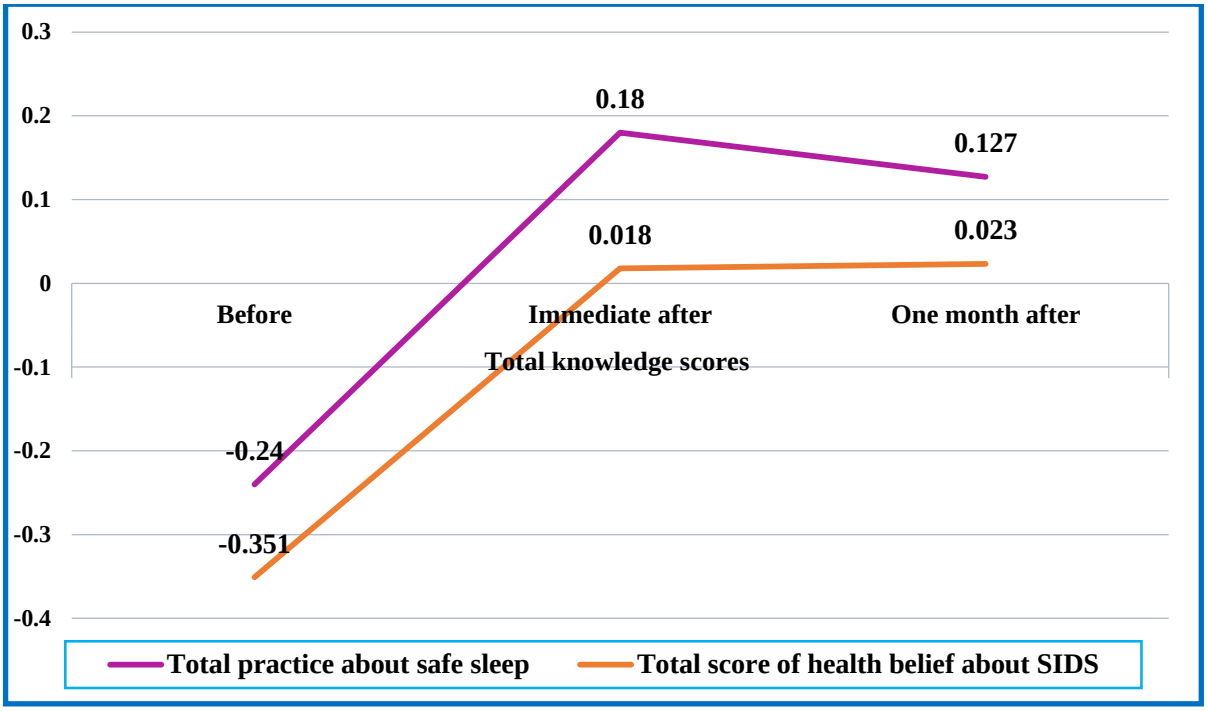

Figure (3): Correlation between total mothers' knowledge, total reported safe sleep practices and health beliefs about Sudden Infant Death Syndrome.

Discussion

Sudden Infant Death Syndrome is the third leading cause of infants' mortality. It is the most common cause of death in infants from one month to one year. SIDS is not a new problem, it occurs worldwide across many different cultures. It is a serious problem, and in spite of all the research conducted in recent years, it remains to be unpredictable. There are no tests can predict that an infant may die from SIDS. The World Health Organization developed a category for SIDS, recognizing it as an official international cause of death in 2011. [18]

Although the exact cause remains unknown, SIDS occurs due to an interaction among intrinsic vulnerability, development, and environmental challenges. There is a relationship between SIDS and prone sleep position. It has been identified as an important risk factor for SIDS. The American Academy of Pediatrics (AAP) defined standard guidelines for infant positioning and sleep environment to reduce the risk of SIDS. Their recommendations are expanded from being only SIDS-focused to focus on a safe sleep environment that can reduce the risk of all sleep-related infant deaths including SIDS Mothers should be aware of such problem and its relation to prone sleep position. [19,20]

Regarding sociodemographic characteristics of the studied infants, in relation to age, the present study revealed that the majority of the studied infants' age was from five to less than twelve months. From the researchers' point of view, this is because the age of the studied subjects were infants less than one year which is the common age for SIDS. This result of **Botia et al (2020)** was in agreement with the present study as they found that nearly half of infants were aged six to eleven months. [21]. The result of **Caraballo et al (2016)** was also congruent with the present study as they found that most of infants' age ranged from two to twelve months. [22]

Regarding sex of the studied infants in the current study, it was observed that half of them were males. From the researcher's point of view, they were the available infants in the pediatric medical department and pediatric outpatient clinic and their mothers accepted to participate in the study and this occurred by chance. The result of **Bezerra et al (2015)** was in agreement with the present study as they reported that nearly half of infants were males [23]. The result of **Isezuo et al (2017)** was also congruent with the current study as they

found that more than half of infants were males [24]. On the other hand, **Elsobkey (2018) was** incongruent with the present study result and reported that the majority of the studied infants were males. [25]

As for sociodemographic characteristics of the studied mothers, the present study reported that nearly three quarters of mothers were aged > 20- 30 years old. This may be due to early marriage of most studied mothers. The result of the current study is the same as **Bezerra et al (2015)** who found that the majority of mothers were aged 20 years old and over. [23] On the contrary, the present study was incongruent with **Elsobkey (2018)** who found that the age of the majority of mothers was 18- <23 years old. [25] **Botia (2020)** also was against the present study and found that the majority of mothers were aged 34 years old and over. [21]

In addition, **Isezuo et al (2017)** found that the mothers' age was ranging from 17- 45 years old [24]. Another study conducted by **Park (2012)** showed that the age of the mothers ranged from 17 to 39 years old. [26] The result of the current study also stands in contrast to **Caraballo (2016)** who stated that nearly all mothers were teenage mothers. [22]

Regarding mothers' level of education, the current study concluded that the studied mothers' educational level was divided into three levels. One third of them can read and write, one third of them were secondary education, and nearly one third of them were university education. This can be explained that marriage occurred early for all levels of education of the studied mothers. These study results were in accordance with the findings of **Park (2012)** who reported that one third of mothers were secondary education, but nearly half of them were university education. [26]

Caraballo (2016) and **Mims (2014)** results were against the current study results as they found that the majority of mothers who participated in their studies were secondary education [22,16]. **Mims (2014)** stated that only one third of mothers were university education [16]. **Botia et al (2020)** also disagreed with the results of the current study and found that two thirds of mothers had university degree. [21] The current study result was also incongruent with **Isezuo et al (2017)** who found that the majority of mothers were secondary education. [24] Another study conducted by **Elsobkey (2018)** showed that more than half of mothers were secondary education. [25]

As regards parity of the studied mothers, nearly three quarters of mothers were

multiparous and nearly one quarter of mothers were primiparous. This result stands in contrast to **Elsobkey (2018)** who found that 80% of the mothers were primiparous while 20% of them were multiparous. [25] **Mims (2014)** reported that the majority of mothers had one child, while small percentage of mothers had 3-5 children. [16]

Before the health education almost all mothers had poor knowledge about sudden infant death syndrome. The researcher interpreted this as it is uncommon terminology and mothers didn't receive any health teaching about sudden infant death syndrome during pregnancy and after delivery. **Bezerra et al (2015)** supported the current study; they found that the majority of mothers had no knowledge about sudden infant death syndrome. [23] The result of **Elsobkey (2018)** was consistent with the current study and indicated that the majority of mothers had poor knowledge and weren't aware of the risk factors before the health education. [25] Another study carried out by **Isezuo et al (2017)** revealed that mothers had poor knowledge as only one third of them heard about sudden infant death syndrome. [24]

The current study figured out that there was a significant improvement in mothers' total knowledge about sudden infant death syndrome after the implementation of health education. From the researchers' point of view, this improvement in mothers' knowledge was due to their urgent desire to know more information about this syndrome, its risk factors, and prevention of its occurrence to their infants.

From the researchers' point of view, the mothers' educational level played an important role in improvement of their knowledge as more than two thirds of them were secondary and university education. The majority of mothers had good knowledge after one month of health education. **Abdeyazdan et al (2017)** reached the same result and showed that the mean score of knowledge in mothers had increased immediately after health education, and this increase continued to 2 months after the intervention. [27] In addition, a study conducted by **Rungtiwa et al (2012)** supported the current study and demonstrated that mothers involved in the education program had increased knowledge and skills about how to care for their infants. [28] Furthermore, **Elsobkey (2018)** agreed with the present study and stated that mothers had good knowledge after health education. [25]

Safe sleep practices are very important factors to prevent sudden infant death

syndrome based on the American Academy of Pediatrics' recommendations for safe sleep. Safe sleep practices includes supine sleep position, using firm sleep surface, avoiding bed toys with infant, pacifier use during bed time, room sharing without bed sharing, avoiding overheating, and avoidance of smoking around the infant. Supine sleep position is the most important sleep practice; it did not increase the risk of aspiration and choking in infants, even those with gastroesophageal reflux, because infants have airway anatomy and mechanisms that protect against aspiration. Preterm infants should be placed supine as soon as possible more than full term infants. [29]

The present study clarified that the majority of mothers did not follow safe sleep practices before health education. Regarding sleep position, the majority of studied mothers preferred non supine sleep positions for their infants such side lying or prone sleeping position. Reasons for practicing non supine sleep positions reported by mothers in the current study were fear of choking, for infant comfort, and safety on supine position. Mothers also mentioned that placing the infant to sleep on non-supine positions decreases the risk of aspiration in case of regurgitation and vomiting.

The researcher illustrated this as the source of information in those mothers was not from medical personnel and they had poor knowledge about safe sleep position to prevent sudden infant death syndrome. Few mothers reported that their physician had recommended side lying position for sleep as a treatment for reflux.

Bezerra et al (2015) agreed with the present study as they mentioned that the majority of mothers practiced prone or side position for sleep. [23] **Botia et al (2020)** also agreed with the present study, they found that more than half of the infants did not sleep in the supine position because the pediatricians did not recommend this position for mothers during discharge of infant from hospital. [21] **Elsobkey (2018)** was in accordance the present study and indicated that majority of mothers never follow safe sleep practices especially supine position before health education. [25]

In addition, **Isezuo et al (2017)** clarified that sleep position in half of infants was side lying, while the others practiced no particular position for their infants during sleep. [24]

Moon et al (2016) stated that mothers who reported seeing nurses placing infants on prone position were most likely to imitate them and placed their infants to sleep in prone position as well. [30] **Fox et al (2014)**

mentioned that mothers were most likely to practice sudden infant death syndrome prevention behavior when they seeing it practiced by nurses in hospitals [31].

Caraballo et al (2016) disagreed with the current study result and indicated that almost all mothers were aware of and practiced supine sleep to avoid the risk for suffocation if placed face-down, only a few mothers practiced prone sleeping position for their infants. [22] **Park (2012)** disagreed with the present study as he indicated that more than two thirds of mothers used supine position, whereas only one third of them practiced either side-lying, prone, or a combination of two or three positions. [26]

A recent study conducted by **Frey et al (2020)** revealed that most infants were placed to sleep in the supine position before the health education, which is inconsistent with the current study result [32]. **Bartlow et al (2016) and Laporte et al (2020)** also were in contrast to the present study, they stated that the majority of infants were placed to sleep in supine position exclusively all the time. [33,34]

In relation to room sharing without bed sharing, the present study revealed that the majority of mothers put infants to sleep in their own bed before health education. From the researchers' point of view, mothers explained that they need to be close to the infant for breast feeding and to stop infants' cries, while others mentioned that a separate bed for their infant was not safe and expensive. **Isezuo et al (2017)** mentioned that the majority of infants shared bed with their parents or sibling, which supported the current study result. [24]

The result of **Fowler et al (2013)** was congruent with the present study as they revealed that many mothers reported their feeling that infants are safer in the same bed with them than in a separate bed. [35]

The result of **Caraballo et al (2016)** was the same as the current study result; they reported mothers shared bed with their infants regularly. [22]

The present study revealed that there was a significant improvement of total reported safe sleep practices after implementation of health education. This result may be explained that mothers became aware of relation between sudden infant death syndrome and sleep practices after health education. The findings of **Frey et al (2020)** were similar to the present study as they found that there was post intervention adherence and a significant improvement of mothers' safe sleep practices [32]. **Barsman (2015)** clarified that there was a link between mothers' sleep practices and sleep practices that they saw in hospital

setting because of role modeling and they were unable to change their practices in spite of health education. (36)

The present study clarified that mothers health beliefs about SIDS changed from negative beliefs before health education to positive beliefs after health education with statistically significant difference. This result can be clarified by the researcher that mothers had negative beliefs about sudden infant death syndrome before health education due to lack of knowledge about risk factors and prevention so, the believed that it is a hopeless condition. On the other hand, mothers' knowledge increased after health education so, their beliefs became positive. The result of **Hidarnia et al (2016)** was the same as present study; they concluded that there was a significant improvement in the health beliefs of women after intervention.(37)

The present study revealed that there was a relation between mothers' knowledge about sudden infant death syndrome, their health beliefs and safe sleep practices. Mothers who had good knowledge about SIDS had positive health beliefs and followed safe sleep practices for their infants. As a result, those mothers can reduce the risk of occurrence of SIDS to their infants. **Kamal et al (2017)** agreed with the current study; they found that the hygienic behavior of mothers was markedly influenced by their beliefs about the relation between childhood infections and hygiene. (38)

The findings of the present study clarified that there was a positive significant correlation between total mothers' knowledge and total reported safe sleep practices immediately after health education. There was a positive significant correlation between mothers' knowledge and total health beliefs about SIDS after health education. The researcher can illustrate this result as knowledge improvement after health education led to change of their beliefs from negative to positive and following safe sleep practices to prevent sudden infant death syndrome.

Conclusion and recommendations

Based on the results of the present study, it can be concluded that there was a positive significant effect of educational intervention on improving mother's knowledge, reported sleep practices as well as health beliefs about Sudden Infant Death Syndrome. Mothers' knowledge had a positive significant effect on their health beliefs. In addition, the mean scores of mothers' total health beliefs increased after health education. Mothers' health beliefs about Sudden Infant Death Syndrome changed from negative beliefs before

health education to positive beliefs after health education. The improvement of knowledge and health beliefs motivated mothers and helped them follow safe sleep practices to reduce the risk of Sudden Infant Death Syndrome.

Recommendations:

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

1. Educational training programs should be conducted for nursing staff in all hospital departments especially pediatric and obstetric departments about safe sleep recommendations to prevent SIDS.
2. Nurses should follow safe sleep recommendations especially supine sleep position in NICUs as they are role models for parents after discharge and they should provide mothers with information about these recommendations during antenatal period and after birth especially young and inexperienced mothers.
3. Future studies should investigate the efficacy of alternative educational programs for grandmothers who had a significant influence over adolescent mothers .
4. The media plays an important role in the change of knowledge and health beliefs so, it should be used to increase the awareness about SIDS and safe sleep recommendations.
5. Maternal and Child Health Centers should establish public health measures and educational programs about SIDS awareness, risk factors, preventive measures, and safe sleep recommendations for mothers or other caregivers .
6. This study should be replicated with more mothers at different geographical areas to generate larger statistical power with a diverse group of mothers and attain more generalization of rest

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Effect of an Educational Program on Gynecological Nurses′ Performance Pre and Post Hysterectomy Surgery

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Abstract

Background: Hysterectomy is the most common gynecological surgical procedure among reproductive age women. The nursing care plan for a woman undergoing hysterectomy should reflect nurse's awareness of the physical care required, as well as her emotional needs and anxiety levels. **The aim of this study:** was to determine the effect of educational program on gynecological nurses′ performance pre and post hysterectomy surgery. **Subjects and method:** The study was conducted at the gynaecological inpatient unit of obstetric and gynaecological department at Tanta University Hospital and El-Menshawy Hospital affiliated to Ministry of Health and Population. All nurses (40 nurses) who were working in the previously mentioned settings and provided care to women undergoing hysterectomy were included in the study. **Two tools** were used for data collection; **Tool (I):** Structured interview schedule for nurses. **Tool (II):** An observational checklist for nurse′s performance. **Results:** The results revealed that majority of the studied nurses had low level of knowledge and unsatisfactory performance regarding hysterectomy preprogram, which significantly improved immediately and one month post program with a significant statistical difference P <0.05. **Conclusion and recommendations:** The findings of present study revealed that the implementation of the educational program resulted in a significant improvement of nurses' performance regarding pre and post hysterectomy surgery immediately and one month after program compared to preprogram. Planned sustainable training program to upgrade nurse's skills and knowledge to care for women with hysterectomy.

Keywords: Hysterectomy, educational program, performance and evidence based practices.

Introduction

Hysterectomy is the second most common operative procedure performed worldwide following cesarean section [1- 3]. It is the most commonly performed gynecological surgical procedure in both developed and developing countries. Worldwide, the annual hysterectomy rates vary among different countries ranging from 1.2 to 4.8/1000 women. In the USA, hysterectomy is the most common non-pregnancy related major surgery done. About 600,000 hysterectomies are performed annually in the United States [4-6]. In Nigeria, 28% of all major gynecological operations performed are hysterectomies. While in Egypt, the incidence of hysterectomy at El kaser Al Eini hospital in 2009 was (0.66 %), this incidence was doubled year by year to be (1.15%) in 2010 according to (Kaser Al Eini hospital statistical sinuses, 2010) [7-9] .

Hysterectomy is the surgical removal of the uterus which may also involve removal of the cervix, fallopian tubes, ovaries and other surrounding structures depending on the type of procedure that is performed [10, 11]. There are three main types of hysterectomy namely: total, subtotal and radical hysterectomy. In a total hysterectomy, the uterus and cervix are completely removed. While, in a subtotal hysterectomy only the uterus is removed leaving the cervix in situ. On the other hand, in a radical hysterectomy the uterus, cervix, upper vagina and parametrium, ovaries, oviducts, lymph nodes and lymph channels are removed. The type of hysterectomy performed depends on the reason for the procedure [12, 13].

There are different reasons for performing hysterectomy including both benign and malignant conditions of the uterus. Benign indications for hysterectomy include uterine fibroids, menstrual disorders, adenomyosis of the uterus, endometriosis, uterine prolapse, abnormal uterine bleeding, chronic pelvic pain, uterine leiomyomas, septic abortions, pelvic inflammatory disease, ectopic pregnancy and precancerous lesions of the endometrium and the cervix [14, 15]. On the other hand, malignant indications for hysterectomy include cervical cancer, endometrial carcinoma, malignant ovarian tumor and malignant disease of other adjacent organs. Hysterectomy can be performed abdominally, vaginally, laparoscopy or the combination of both vaginal and laparoscopy procedures. The consequences of this surgical procedure can affect the health of many women [16, 17].

Hysterectomy has intense effect on a women's health as the women stand facing physical, psychological, emotional and

social problems after the operation. The possible physical complications of hysterectomy include problems with anesthesia, surgical wound infection, fever, wound hematoma, excessive bleeding, risks of blood transfusion, urinary and bowel injuries and injury to a major blood vessel. Physical complications also include urinary tract infection, nerve damage, loss of ovarian function, postoperative thromboembolism, early onset of menopause, myocardial infarction, pneumonia, sepsis, fluid and metabolic imbalance [18, 19]. Additionally, some women may suffer from psychological problems as anxiety, depression and psychosexual problems. While at the social effect of hysterectomy on women's quality of life include marriage problems which in some cases ended by divorce. So, gynecological nurses can play a vital role in improving the quality of life among women undergoing hysterectomy, if they were prepared to perform high quality care pre and post hysterectomy surgery [20, 21].

Gynecological nurses are responsible for many aspects of care for women undergoing hysterectomy. This includes assessment, analysis, planning, implementation and evaluation of the women. Nurses are the primary caregivers once a patient is admitted to the hospital, throughout hospital stay and even after discharge [22]. Providing education for nurses regarding pre and postoperative care of women undergoing hysterectomy is a very important issue of nursing care. It can improve nurses' knowledge and performance through implementation of a high quality, cultural sensitive and evidence based nursing practice to hysterectomy women. Proper nursing performance can affect the patients coping pre and post hysterectomy surgery. Studies show that patients who have been prepared and trained well before operation need fewer analgesics, antiemetic and sedatives. Moreover, they recover faster after the operation, with a shortened hospital stay and early discharged [23, 24].

Consequently, gynecological nurses can provide preoperative education for hysterectomy patients in order to increase their sense of self-respect and psychological well-being and to decrease their anxiety. On the same line, implementation of postoperative care given by well-trained and skilled nursing staff will ensure restoration of physiological functions, promoting healing of tissues and recognizing and managing complications [25] .Additionally, the gynecological nurse's role is extended to preparing the patient and her family for discharge through an

on-going process that takes place among the whole period of hospitalization [26]. Prior to discharge, verbal and written instructions are to be provided to the patient and her family, including nutrition, wound care, personal hygiene, activity restrictions, guidelines for medication administration, signs and symptoms of infection to report, and follow up appointments [27, 28].

Provision of comprehensive nursing care before and after hysterectomy by a skilled nurse is the single most important way of reducing post-hysterectomy complications and saving women's lives. Provision of comprehensive pre and postoperative nursing care is also a moral and ethical issue, as the right to life and health is a social human right. Thus, all women should be guaranteed the right to comprehensive gynecological nursing care especially pre and post hysterectomy surgery [29, 30]. Hence, this study was conducted to determine the effect of educational program on gynecological nurses′ performance pre and post hysterectomy surgery.

The aim of this study was to:

Determine the effect of educational program on gynecological nurses′ performance pre and post hysterectomy surgery.

Research Hypothesis:

Nurses who attend an educational program regarding on gynecological nurses performance pre and post hysterectomy surgery exhibit higher knowledge and level of performance than those who did not attend.

Subjects and method:

Study Design:-

A quasi-experimental research design was used to conduct this study.

Setting:-

The study was conducted at the gynaecological inpatient unit of obstetric and gynaecological department at Tanta University Hospital and El-Menshawy Hospital affiliated to Ministry of Health and Population.

Subjects:-

All nurses (40 nurses) who were working in the previously mentioned settings and provided care to women undergoing hysterectomy were included in the study and they were classified as follow:

• Nurses who were working at Tanta University Hospital (30 nurses).

• Nurses who were working at EL-Menshawy Hospital (10 nurses).

Tools of data collection:

Two tools were developed and used by the researcher to achieve the aim of the study:

Tool I: Structured interview schedule for nurses:

This tool was developed by the researcher after reviewing the recent related literature [8, 24] to assess socio-demographic characteristics and knowledge of the nurses regarding hysterectomy and pre and post-operative care of women undergoing hysterectomy. It comprised the following parts:

Part (1): Socio - demographic characteristics of nurses:

This part included: (name, age, marital status, workplace, phone number, educational level, occupation, years of experience and previous training courses regarding care of women undergoing hysterectomy, last course and organization that organized this course and if the department has any teaching aids (its type).

Part (2): Nurses′ Knowledge Assessment Sheet:

It was developed by the researcher to assess nurses' knowledge before and after implementation of the educational program. It included:

a- Nurses′ knowledge regarding hysterectomy: It included nurse′s knowledge about female reproductive system, hysterectomy surgery and knowledge about health education of self-care for women undergoing hysterectomy before discharge from the hospital.

b- Nurses′ knowledge regarding pre and post-operative care of women who undergo hysterectomy as follow: nurse′s knowledge about nursing care before & after hysterectomy.

Scoring system of knowledge-:

Correct and complete answers were scored as two points, Correct and incomplete answers were scored as one point and incorrect answers and didn't know were scored as zero point.

The total score for knowledge was calculated as follows:

- High level of knowledge ≥ 75%.
- Moderate level of knowledge 60 % - <75%.
- Low level of knowledge <60%.

Tool II: An observational checklist for nurse′s performance: This tool was developed by the researcher after reviewing the recent related literature [22, 29] to assess nurses' performance regarding hysterectomy before and after implementation of the educational program. It comprised the following parts:

Part (a): Pre-operative assessment of nurse′s performance: It was developed by the researcher to assess nurses' performance regarding pre-operative care.

It included pre-operative nursing care and procedures provided by nurses to women during pre-operative period. These included: assessment of fundamental procedure, admission procedure, preoperative psychological and physical preparations, vital signs monitoring, routine preoperative screening tests, omission of mechanical bowel preparation before surgery, preoperative fasting instructions, administration of preoperative intravenous fluids, skin preparation and cleansing, record voiding time and amount as bladder preparation, remove makeup, nail polish, dentures and jewelers and post procedure tasks.

Part (b): Post-operative assessment of nurse′s performance: It was developed by the researcher to assess nurses' performance regarding post-operative care and procedures provided by nurses given to women during post-operative period. It included assessment of nurses' performance of the following: immediate postoperative care, vital signs monitoring, assessment of signs of hemorrhage, the incision site, bowel sound, enhancement of early ambulation, provide respiratory care, early urinary catheter removal, enhancement of early fluid intake, early oral feeding , methods to control nausea and vomiting, measures to relief post-operative pain, deep vein thrombosis prophylaxis, physical and psychological teaching and support and post procedure tasks.

The total score level of the nurses' performance was classified as follows:

Done correctly and completely were scored as two point, done correctly and incompletely were scored as one point and done incorrect or not done at all were scored as Zero.

The total score for practice was calculated as follows:

-Unsatisfactory performance < 60%.

- Satisfactory performance ≥ 60 %.

Method

The study was conducted according to the following steps-:

1) Official letter clarifying the purpose of the study was obtained from the Faculty of Nursing, Tanta University and submitted to the responsible authorities of the selected settings for permission to carry out the study.
2) Ethical and legal considerations:
   a. Approval of ethical committee of Faculty of Nursing, Tanta University was obtained.
   b. All participants were informed about the purpose of the study.
   c. An informed consent was taken from every participant in the study

included the right to withdraw at any time.

d. The researcher ensured that the nature of the study didn't cause any harm or pain for the entire sample.
e. Confidentiality and privacy were taken into consideration regarding data collection.

3) **Tool I** was developed in Arabic and **Tool II** was developed in English after reviewing recent related literature and were tested for content and construct validity by 5 experts in obstetric and gynaecological nursing field. Accordingly corrections and modifications were done. The validity of the expertise judgments of the questions of the Arabic translated version of the studied nurses knowledge and performance regarding hysterectomy surgery was 0.98 and 0.96 respectively. The reliability of the translated Arabic tools was done by using Cronbach's Alpha which was 0.87 and 0.88 respectively.

4) A pilot study was carried out on 10% of the sample (4 nurses) of the proposed sample after taking their approval to test the feasibility, and applicability of the developed tools and to determine obstacles that may be encountered during period of data collection. According to the results obtained, some statements of **Tool I and II** were rephrased and the obtained data were excluded from the study sample .

5) **Tool I and Tool II** were used to assess nurses′ knowledge and performance before, immediately and one month after implementation of the educational program.

6) Data collection was conducted in a period ranged from the beginning of December 2019 to the end of May 2020. Data were collected from EL-Menshawy Hospital followed by Tanta University Hospital in morning and afternoon shifts, until the predetermined sample size was collected. The researcher attended 2-3 days per week in the study setting.

7) **The educational program was conducted through four phases:**

Phase I: Assessment phase:

- This phase was done before giving sessions. The researcher met with nurses at morning and afternoon shifts at the gynecological ward of Tanta University Hospital and EL-Menshawy Hospital. Nurses were asked to participate in the study after explaining the aim of the study. After that, nurses were assessed using **Tool (I) part 1** to collect baseline data (socio-demographic characteristics) and **Tool (I) part 2 and Tool II** were used to assess nurses' knowledge and performance related to hysterectomy

surgery before, immediately and one month after implementation of the educational program .

- Nurses' pre-test was distributed at the beginning of the session using **Tool I Part II** to assess nurses' knowledge regarding hysterectomy surgery in the presence of the researcher for necessary clarification. **Tool II** the observational checklist **parts a and b** (pre and post-operative procedures) was used to assess nurses' performance regarding hysterectomy surgery before, immediately and one month after implementation of the educational program.
- Nurses' knowledge was assessed individually for each nurse by an interview lasted 15-20 minutes for each nurse .

-Nurses' performance was assessed by the researcher individually for each nurse for every procedure.

Phase II: Planning phase:

a- Preparation of the educational program sessions:

- The teaching program included 4 sessions for each group. It was carried out in the previously mentioned settings. The total number of nurses was (40 nurses), they were divided into 4 main groups. Each group included 10 nurses which divided into two equal sub-groups (5 nurses) due to the effect of COVID 19 Pandemic; six sub-groups at Tanta University Hospital and two sub-groups at El-Menshawy Hospital. The content was presented during 2-3 days per week. The duration of each session ranged from one and half hour to two hours including periods of discussion.

b- Setting the goals and objectives of the program:

- The goal of the program was to:

- Enhance nurses' performance pre and post hysterectomy surgery.

- Objectives of the program:

-Improving the knowledge and performance scores of nurses.

c- Preparing the content of the program:

-An educational booklet was developed by the researcher based on nurse′s needs and data from the assessment phase, using recent relevant literature available locally and internationally (books, magazines). The booklet was distributed to every nurse to increase nurses' knowledge about hysterectomy and care measures needed, as well as for encouragement and being a reference. The program included: different methods of teaching as lecture, group discussion, posters, power point

presentation and demonstration and re-demonstration .

Phase III: Implementation phase:

- The educational program was implemented by the researcher through the following four sessions .

First Session:

- The researcher explained parts and functions of external and internal female reproductive system and provided knowledge regarding hysterectomy surgery which included definition, indications, types, methods, complications, effect of hysterectomy and role of the nurse in caring for women undergoing hysterectomy, definition and objectives of preoperative care, types of data and examinations on admission, assessment of fundamental and admission procedures, preoperative psychological and physical preparations and vital signs monitoring.

Second Session:

- This session included the implementation of nursing care during pre-operative period through demonstration and re-demonstration of the following procedures: routine preoperative screening tests, omission of mechanical bowel preparation before surgery, preoperative fasting instructions, administration of preoperative intravenous fluids, skin preparation and cleansing, record voiding time and amount as bladder preparation, remove makeup, nail polish, dentures and jewelers and post procedure tasks.

Third Session:

- This session included knowledge about post-operative care such as definition and objectives of postoperative care, position after hysterectomy, complications after the operation and implementation of post-operative nursing care through demonstration and re-demonstration of immediate postoperative care, vital signs monitoring, assessment of signs of hemorrhage, incision site and bowel sound, enhancement of early ambulation, provide respiratory care, early urinary catheter removal, enhancement of early fluid intake and oral feeding and measures to relief post-operative pain .

Fourth Session:

- During this session the implementation of post-operative nursing care was continued through demonstration and re-demonstration which included methods to control nausea and vomiting, deep vein thrombosis prophylaxis, physical and psychological

teaching and support and post procedure tasks. Then the researcher explained health education given to women before hospital discharge regarding self-care measures needed for post hysterectomy women. This included correct nutrition, the importance of cleaning of the perineum, special care for the perineum, hysterectomy exercise, avoidance of physical activities, wound care, methods used to relieve pain in the wound area, signs of wound infection, methods used to reduce anxiety and nervous pressure, sexual intercourse, causes of pain during sexual intercourse and warning signs that require the patient to go immediately to the hospital.

- The educational program was presented through open discussion, demonstration and re-demonstration between the researcher and nurses, visual aids, power point presentation, video presentation, self-learning module, and actual situation .
- In each session a theoretical part was explained followed by demonstration of the nursing procedures by the researcher of the above mentioned practices and re-demonstration by nurses was carried out.

Phase IV: Evaluation phase:

The evaluation of the implemented program was done through:

- Assessment of nurses' knowledge individually by self-filling **Tool I part II** before, immediately and one month after implementation of the educational program.
- Assessment of nurses' performance by using **Tool II part a and b** (observation checklist) while conducting nursing care for hysterectomy women, each nurse was observed individually three times to assess their performance before, immediately and one month after implementation of the educational program .
- Comparison was done three times before, immediately and one month post program to identify the effect of the educational program on nurses' knowledge and performance regarding hysterectomy surgery.
- **Statistical Analysis:** The collected data were organized, coded, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 19, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard

deviation were calculated. For qualitative categorical set of the data frequency, percentage or proportion of each category and comparison between two groups were done using Chi-square test (χ^2). Significance was adopted at $p<0.05$ for interpretation of the results and tests of significance.

Results:

Table (1): Shows socio-demographic characteristics of the studied nurses at gynecological inpatient unit. It was observed that nurses' age ranged from 28-57 years, with a mean age of 41.65±8.25. As regards to their marital status, the majority (90.0%) of the studied nurses were married, while the minority (10.0%) of them was widow. Concerning their workplace, three quarter (75%) of the studied nurses work at Tanta University Hospital and one quarter (25%) of them work at El Menshawy Hospital. Regarding educational level of the studied nurses, slightly more than two third (67.5%) completed nursing technical diploma, and 27.5%, and 5 % respectively completed nursing technical institute and bachelor of nursing. In relation to their occupation, the vast majority (95%) of the studied nurses were nurse, while the minority of them (5%) was nursing specialists. Moreover, the table also demonstrate that (62.5%) of the studied nurses had 20 years of experience or more, (25%) had 10 years to less than 20 years of experience and (12.5%) had 5 years to less than10 years of experience, and the vast majority (92.5%) of the studied nurses didn't take any training courses regarding care for women undergoing hysterectomy.

Figure (1): Shows percent of the studied nurses' total score level about overall knowledge subitems questions for women undergoing hysterectomy pre and post educational program at gynecological inpatient unit. It clarifies that (12.5%) of the studied nurses had high level of knowledge about overall knowledge subitems questions pre educational program implementation. This increased to (92.5%) immediately after educational program implementation and (85%) one month post educational program implementation

Figure (2): Shows percent distribution of the total score level of observed performance of the studied nurses at gynecological inpatient unit about preoperative care for women undergoing hysterectomy pre and post educational program. It displays that (35%) of the studied nurses had satisfactory practice regarding preoperative care of women

undergoing hysterectomy pre educational program implementation, which increased to (92.5%) immediately after educational program implementation, and (87.5%) one month post educational program implementation.

Figure (3): Shows percent distribution of the total score level of observed performance of the studied nurses at gynecological inpatient unit about postoperative care for women undergoing hysterectomy pre and post educational program. It illustrates that (25%) of the studied nurses had satisfactory practice regarding postoperative care for women undergoing hysterectomy pre educational program implementation, which increased to (87.5%) immediately after educational program implementation , and (80%) one month post educational program implementation.

Figure (4): Shows percent distribution of the total score level of the studied nurses at gynecological inpatient unit about overall performance regarding pre and post - operative care pre and post educational program. It reveals that (27.5%) of the studied nurses had satisfactory practice regarding pre and post - operative care for women undergoing hysterectomy pre educational program implementation, which increased to (90%) immediately after educational program implementation and (85%) one month post educational program implementation.

Table (2): Shows correlation between socio- demographic characteristics and total knowledge and total performance pre, immediately and one-month post educational program implementation among the studied nurses at gynecological inpatient unit. A significant correlation was found between total score of knowledge and nurses' age pre and one month post educational program implementation where r=0.354 and P=0.022* and r=0.534 and P=<0.001**respectively. A significant correlation was also found between total score of knowledge and years of experience immediately after educational program implementation and one month post educational program implementation where r=0.627 and P=<0.001**and r=0.362 and P=<0.001**respectively. Moreover, A significant correlation was noticed between total score of performance and nurses' age pre educational program implementation and one month post educational program implementation where r=0.248 and P=0.039* and r=0.490 and P=<0.001** respectively and also between years of experience one month post educational program implementation where r=0.755 and P=<0.001**.

Table (1): Socio-demographic characteristics of the studied nurses at gynecological inpatient unit (n=40).

Socio-demographic characteristics	N=40	%
Age (years)		
<40	15	37.5
40- <50	18	45.0
50 or more	7	17.5
Range	28-57	
Mean±SD	41.65±8.25	
Marital status		
Married	36	90.0
Widow	4	10.0
Workplace		
Tanta University Hospital	30	75.0
El Menshawy Hospital	10	25.0
Educational level		
Nursing technical diploma	27	67.5
Nursing technical institute	11	27.5
Bachelor of nursing	2	5.0
Occupation		
Nurse	38	95.0
Nursing specialist	2	5.0
Experience years		
5-<10	5	12.5
10- <20	10	25.0
20 or more	25	62.5
Participate in training courses		
Yes	3	7.5
No	37	92.5
If yes, how long:		
Two years	3	100
If yes, the organization that organized this course:		
University	3	100
The department have teaching aids (booklet - poster - brochure) that contain the role of nursing in caring for women who undergo hysterectomy		
No	40	100

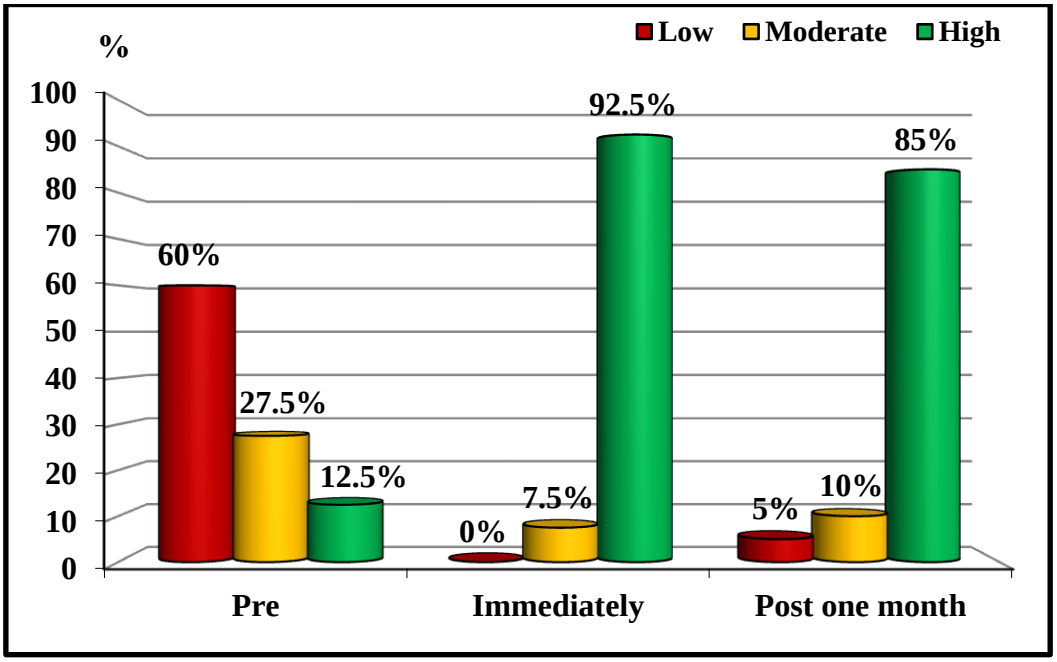

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Fig (1): Studied nurses' total score level about overall knowledge subitems questions for women undergoing hysterectomy pre and post educational program at gynecological inpatient unit (n=40).

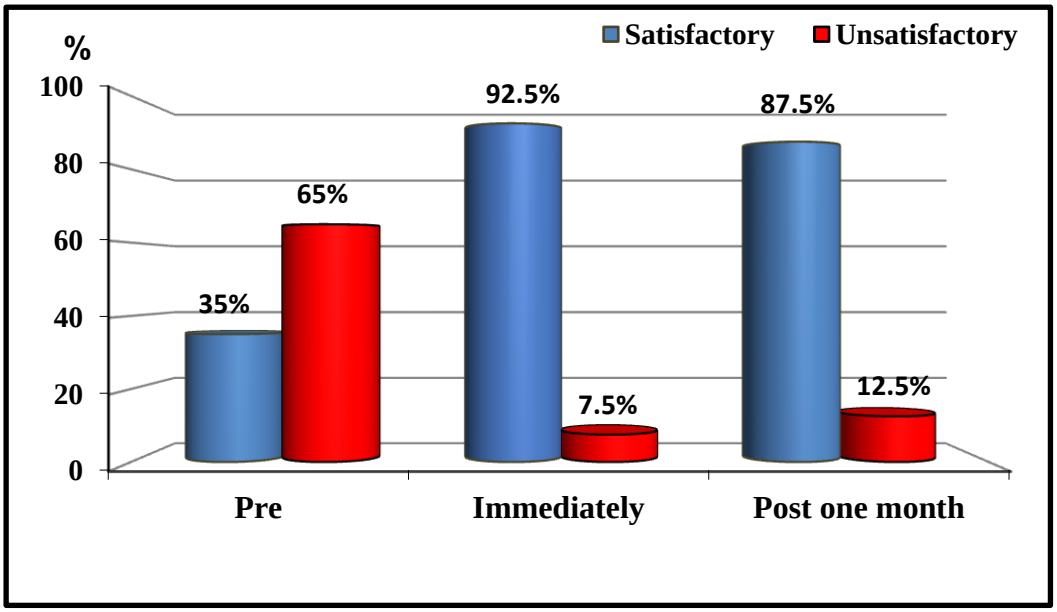

Fig (2): Total score level of observed performance of the studied nurses at gynecological inpatient unit about preoperative care for women undergoing hysterectomy pre and post educational program (n=40).

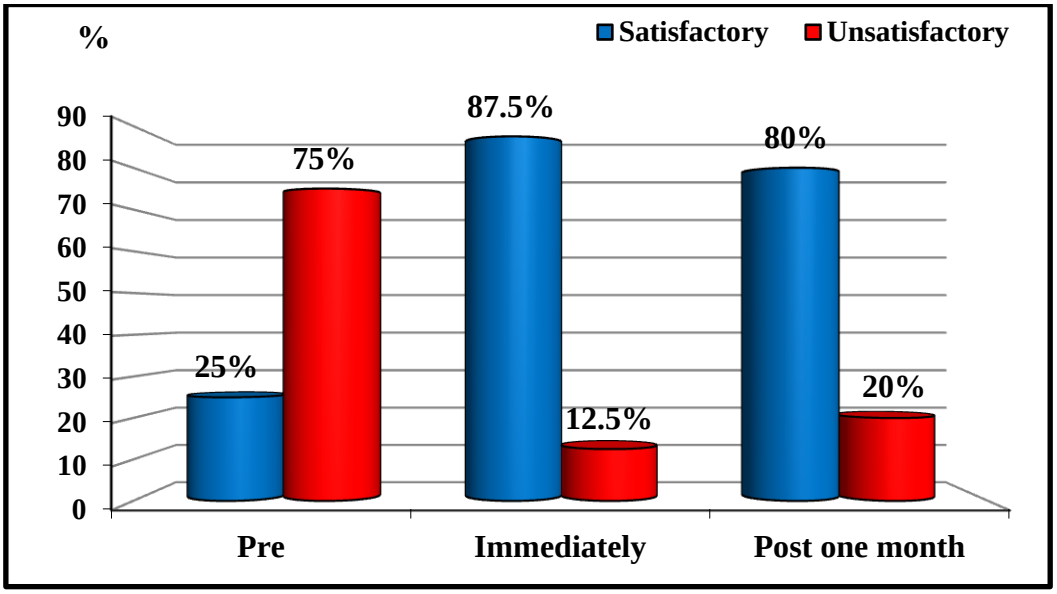

Fig (3): Total score level of observed performance of the studied nurses at gynecological inpatient unit about postoperative care for women undergoing hysterectomy pre and post educational program (n=40).

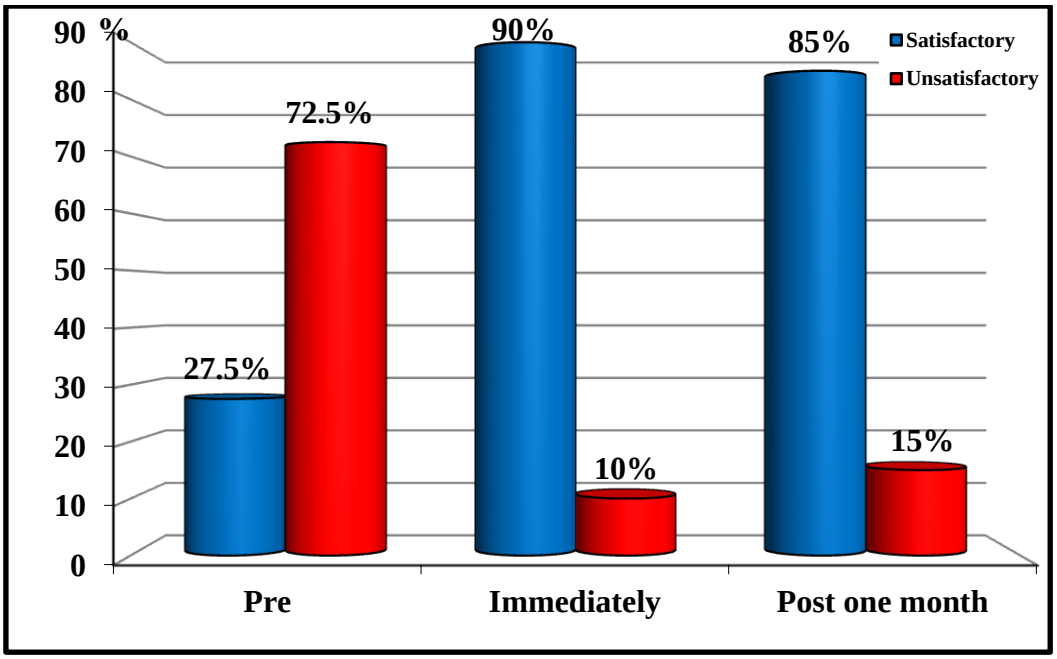

Fig (4): Total score level of the studied nurses at gynecological inpatient unit about overall performance regarding pre and post - operative care pre and post educational program (n=40).

Table (2): Correlation between socio- demographic characteristics and total knowledge and total performance pre, immediately and one-month post program among the studied nurses at gynecological inpatient unit (n=40).

Socio- demographic data		Total knowledge		Total performance	
		r	P-value	r	P-value
Age (years)	Pre	0.354	0.022*	0.248	0.039*
	Immediately	0.126	0.096	0.240	0.064
	Post one month	0.534	<0.001**	0.490	<0.001**
Years of Experience	Pre	0.152	0.125	0.047	0.723
	Immediately	0.627	<0.001**	0.158	0.432
	Post one month	0.362	<0.001**	0.755	<0.001**

Discussion

Reproductive health of women is considered an issue of vital importance. It has a wide spread implications on health, wellbeing and development of the entire population. The concept of total reproductive health includes prevention and treatment of gynecological problems such as uterine fibroids, uterine adenomyosis, uterine prolapse, cervical cancer and endometrial carcinoma [31,32].

Gynecological health is the cinderella of women health promotion. Awareness of gynecological disease is very important for every woman to be able to detect any abnormality or symptoms of gynecological diseases and to seek methods of treatment [33,34]. Hysterectomy is the surgical removal of the uterus and cervix, which is the commonest major gynecological operation used for treatment of many gynecological diseases worldwide. The indications for hysterectomy have changed over the last decade. There are different reasons for performing hysterectomy including both benign and malignant conditions of the uterus. Gynecological nurses are responsible for many aspects of care for women undergoing hysterectomy. This includes assessment, analysis, planning, implementation and evaluation of the women [35, 36].

Gynecological nurses should provide both physical and psychological interventions for women undergoing hysterectomy to assist them return to their normal wellbeing as quickly, safely and comfortably as possible, and to prevent complications post hysterectomy surgery**.** The trend of hysterectomy has been studied by many researchers for many aspects such as indications, approaches, types, new evidence based practice in nursing intervention and pattern of morbidity [37, 38].Unfortunately, scarce research exists regarding effect of educational program on nurses' performance pre and post hysterectomy surgery. Thus the aim of this study was to determine the effect of educational program on gynecological nurses′ performance pre and post hysterectomy surgery.

Concerning the socio-demographic characteristics of the studied nurses, the findings of the present study revealed that almost two fifths were 40 to less than 50 years old, the vast majority of them were married, and almost two thirds of them had completed nursing technical diploma. Regarding years of experience, less than two thirds of the studied nurses had 20 years of experience or more. Additionally, the vast majority of the studied nurses

didn't take any training courses regarding care for women undergoing hysterectomy that may be due to lack of in-service education program. These finding align with **Belal Gh et al., (2016)** [39] who found that almost half of the studied nurses were 30-45 years old, the majority of them were married, near three quarters of them had secondary technical nursing diploma in nursing and the vast majority of the studied nurses didn't attend any training courses in obstetrical and gynecological nursing. The similarity between both studies may stem from the ignorance of the importance of updating and refreshment courses for nurses to increase their knowledge in maternity hospitals.

On the other hand, this finding is dissimilar to **Abd Elhakam E (2010)** [40] and **Ebrahim E (2016)** [41], they pointed out that almost half and slightly less than three fifths of the studied nurses were less than or equal 30 years old respectively, the majority had secondary nursing education and almost two fifths had 10 to 20 years of experience. The finding of the present study also contradicts with **Kreem M & Hamza R (2019)** [42] who revealed that two fifths of the studied nurses had (1-5) years of experience and three quarter of them attended training session in nursing. These contradictions may be due to the health setting where the previous studies were conducted enabled their nurses to have refreshing and updating in-service health educational sessions .

Implementation of the present study showed an improvement in the nurses' level of knowledge which is consistent with **Hojatallah etal., (2012)** [43] **Mohamed N (2015)** [44]. **Regarding total level of knowledge**, the current study revealed that three fifths of the studied nurses had low knowledge level pre educational program implementation. This result is supported by **Abd Elhakam E (2010)** [40], who studied the effect of training program for nurses on nursing intervention for women undergoing hysterectomy and showed that about three fifths of the studied nurses had low knowledge level pre educational program implementation. This might be related to the fact that the majority of the nurses had only nursing technical diploma in which the content was limited in their curriculum and did not receive any previous in-service training program regarding care of women undergoing hysterectomy. In addition, reduction of nurses' knowledge could be due to lack of updating knowledge and overloaded area of working.

Additionally, the majority of the studied nurses in the present study had high level

of knowledge immediately and one month post educational program implementation. This result is supported by **More U et al., (2020)** [45] and also **Jacobs K et al., (2018)** [46] who revealed that the majority of the studied subject had good knowledge level regarding hysterectomy post educational program implementation. This improvement might be related to the majority of nurses were excited to learn and have highly expressed their need to learn more about hysterectomy. This finding shows that the educational program had a good impact on improving nurses' knowledge, which could be due to the very focus power point presentation used in each session, as well as using simple Arabic language, clear educational methods and instructional media, in addition to availability of the researcher in the field for more clarification, and frequent repetition of the information of the topic under study.

The gynecological nurse should take an active role in providing patients undergoing hysterectomy with the needed support and care during preoperative period to maximize the benefits and ensure woman's safety [47].**In relation to total score level of the studied nurses' performance regarding preoperative care**, the present study findings revealed that slightly less than two thirds of the studied nurses had unsatisfactory performance score pre educational program implementation, while immediately and one month post educational program implementation the performance score level was significantly improved. The present study findings strongly agrees with **Ebrahim E (2016)** [41] who studied professional nurses practical skills regarding women undergoing hysterectomy. The study demonstrated that slightly less than two thirds of the studied nurses had unsatisfactory level of performance score during the assessment of their performance regarding preoperative care. Moreover **Abd Elhakam E (2010)** [40] revealed that the majority of the studied nurses had significant improvement in performance level about preoperative care with Mean ± SD 89.6±5.1post educational program implementation. Un satisfactory performance of the studied nurses preprogram may be due to that they have poor level of knowledge and lack of updating in-service educational program and improved after program due to frequent demonstration and providing better teaching and learning materials that enabled learning and better communication about hysterectomy surgery.

The postoperative period is the final period of the surgery which is a critical time for post hysterectomy women. The nursing care provided to women after operation is a second importance to the operation itself. The objective of postoperative nursing care is to assist women to return to their normal physical and psychological conditions as quickly, safely and comfortably as possible [48]. **Concerning, the studied nurses' performance regarding postoperative care,** the present study findings revealed that three quarters of the studied nurses had unsatisfactory level of performance score pre educational program implementation, while immediately and one post educational program implementation their performance is significantly improved. The present study findings strongly agrees with **Ebrahim E (2016)** [41] who demonstrated that almost two thirds (67.8%) of the studied nurses had unsatisfactory level of performance score during the assessment of their performance regarding postoperative care pre educational program implementation and **Abd Elhakam E (2010)** [40] also revealed that the majority of the studied nurses had significant improvement in performance level about postoperative care with Mean ± SD 77.9±6.4 post educational program implementation**.** The similarity between these studies pre educational program implementation may be due to lack of a system for supervision and evaluation of nursing practice which significantly improved post educational program implementation due to the use of different audiovisual material, colored booklet and power point presentation, which enhanced the retention of the information and has positive impact on their performance**.**

As regarding total nurses' performance scores level about pre and post-operative care for women undergoing hysterectomy, the findings of the present study revealed that less than three quarters of the studied nurses had unsatisfactory level of performance pre educational program implementation. Un satisfactory total nurses' performance about pre and post-operative care for women undergoing hysterectomy owing to lack of orientation and periodic training programs for newly employees nurses **.** While immediately and one month post educational program implementation the majority of the studied nurses had significant improvement in their performance. This result is supported by **Gouda E (2017)** [49] who showed that less than three quarters (70%) of the studied nurses had unsatisfactory level of performance pre educational program implementation. Moreover, **Abd Elhakam**

E (2010) [40] revealed that the majority of the studied nurses (89.1%) had significant improvement in total performance score level post educational program implementation.

Finally, regarding correlation between socio- demographic characteristics and total knowledge and total performance pre, immediately and one-month post program, the present study illustrated that a positive statistically significant correlation between total score of knowledge, total score of performance and the studied nurses age pre and one month post educational program implementation. It was also found that there is a positive statistically significant correlation between total score of knowledge and the studied nurses years of experience immediately and one month post educational program implementation. Additionally, a positive statistically significant correlation was found between total score of performance and years of experience one month post educational program implementation. This result is consistent with **Abd Elhakam E (2010)** [40] who demonstrated a positive statistically significant correlation between total score of knowledge, total score of performance and the studied nurses age pre and one month post educational program implementation. On contrary **More U et al., (2020)** [45] demonstrated that there were no correlation between the total score of knowledge, total score of performance and studied nurses age pre and one month post educational program implementation**.**

So, based on the findings of the present study, the research hypothesis has been achieved after implementation of the educational program regarding hysterectomy surgery which resulted in statistically significant improvement of gynecological nurses' performance immediately and one month later compared to pre educational program implementation**.**

Conclusion

- The implementation of the educational program resulted in a significant improvement of nurses' performance pre and post hysterectomy surgery compared to pre educational program implementation**.**
- This proves that the present study is greatly important for nurses, patients and the overall nursing profession.

Recommendations

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

- Holding weekly meetings for nurses with their supervisors to exchange ideas and discuss the difficulties which

face them in the management of the gynecological patients including hysterectomy women .

- Planning in-service training programs for all nurses regarding hysterectomy surgery must be conducted in order to improve, update and refresh their knowledge and qualify their practices dependent on recent evidence based practices in gynecological area.
- Written policies, protocol of care and guidelines should be developed for improving the quality of hysterectomy care.
- Facilities, equipment and supplies should be available to enable nursing staff to perform their role effectively.
- Studies on the effect of educational programs for nurses on postoperative outcome among women undergoing hysterectomy to improve the quality of care in the gynecological wards could be evaluated in another research.
- Reapplication of the study should be done under different circumstances including (large sampling, other settings, measurements and duration of management) in Egypt to ensure the generalization of the findings.

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Self-Care Practices of Primipara Women Regarding Breast Engorgement

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Abstract: Breast engorgement is a painful condition affects postnatal women, and lead to unsuccessful breastfeeding. So, there is urgent need to increase women's knowledge and to improve their self-care practices regarding breast engorgement**.** ***Aim*:** The present study aimed **to** assess self-care practices of primipara women regarding breast engorgement. ***Materials and method:*** The study was conducted at postpartum departments, outpatient clinics and Neonatal intensive care units affiliated to Tanta University Hospital, El-Menshawy General Hospital and El-Mabara Hospital, in addition to Maternal and Child Health Centers at Botros and Sager. Convenience sample of 200 women were included in the study. **Four tools** were used for the collection of data: **Tool I: Structured interview schedule,** consisted of two parts: **Part (1):** Socio-demographic data of the women. **Part (2):** Reproductive history. **Tool II:** Knowledge of primipara women regarding breast engorgement. **Tool III:** Self-care practices of primipara women regarding breast engorgement. **Tool IV:** LATCH Breastfeeding Charting Scale. **Results**: The study revealed that almost three quarters (77.5%) of women had poor level of knowledge followed by (17.0% and 5.5% respectively) of them had fair and good level of knowledge. The entire of the studied women with breast engorgement had unsatisfactory practices. It also illustrated that, only 27.0% had well breastfeeding. ***Conclusion****:* There was poor knowledge, as well as unsatisfactory level of self -care practices regarding breast engorgement among primipara post-natal women. ***Recommendations:*** the study recommended developing antenatal classes for all women to increase their knowledge and enhance their self-care practices regarding breast engorgement.

Keywords: Self-Care Practices, Primipara, Breast Engorgement.

Introduction

Puerperium is the period following childbirth during which the woman's body in general and the genital organs in particular return to the pre-pregnant state. During puerperium the women experience many physiological and psychological changes and problems. The most significant problem observed at this time is breast engorgement (BE) especially among primipara women [1, 2]. The breast is an accessory organ of female reproductive system, which is concerned with lactation [3]. Breast engorgement and nipple trauma are the most common problems associated with breast feeding and considered as a most significant factors that interfere with breast feeding during the first weeks of motherhood[4].

Breast engorgement can be defined as painful sensation due to expansion and pressure exerted by the synthesis and storage of breast milk usually during the third day after childbirth [5]. The prevalence of breast problems during the postpartum period is very high. It is evidenced that the incidence rate of breast engorgement throughout the world in 2019 was 65% -75% among lactating women but in Egypt it was 82% [6, 7].

There are many common causes of breast engorgement, some are related to the women such as inverted and flat nipple, inappropriate feeding technique, imbalance of hormones production and increase breast vascularity. Others are related to infant such as prematurity, congenital anomalies as cleft lip and palate, poor attachment and ineffective suckling [7].

The common signs and symptoms of breast engorgement are enlarged, heavy, swollen and painful breast, the nipple may be stretched flat, low grade fever; less than 39°c and shiny breast [8]. Nurses who work at obstetrical departments have a great role in to providing health education for women during antenatal and post-natal period regarding the importance of breast feeding for both women and infants, proper breast feeding technique and the most common problems which can occur during lactation[9].

Breast engorgement has a serious effect on milk production as it causes milk stasis inside the breast, increases pressure in the milk ducts, which decrease the flow of blood and milk production. Increased milk pressure can cause some alveolar cells and myoepithelial cells to shrink and die off. This atrophy of milk producing cells can permanently compromise the milk producing ability of the breast which results in permanent harming for breast tissue. So the risk for infection will

increase because bacteria are not being removed by the lymphatic system at the normal rate. It also has adverse effect on the letdown mechanism; as a result of poor latch which cause severe breast problems such as sore nipples, mastitis, breast abscess and plugged milk ducts [10, 11]. Although the breast engorgement cause severe consequence for the mother and her infant, the studies have shown that women's awareness regarding breast engorgement is low especially among primipara women. So, it is very important to assess self-care practices of primipara women regarding breast engorgement.

Aim of the Study

The aim of this study was to assess self-care practices of primipara women regarding breast engorgement.

Research question:

What are the self-care practices of primipara women regarding breast engorgement?

Subjects and Method

Study Design:

Descriptive research design was used in this study.

Setting:

This study was conducted in the following settings:

- Postpartum departments, outpatient clinics and neonatal intensive care units at Tanta University Hospital, El-Menshawy General Hospital and El-Mabara Hospital affiliated to Ministry of Health and population.
- Maternal Child Health Centers at Botros and Siger affiliated to the Ministry of Health and population.

Subjects:

- Total convenient sample of 200 women were selected from the previously mentioned settings within 6 months.
- The subjects of this study were selected according to the following inclusion criteria:
  - Women at post-natal period.
  - Age range from 20-35 years old.
  - Breastfeed their infants within the first 6 weeks after delivery.
  - Free from breast infection.
  - Willing to participate in the study.
  - No neonate congenital malformation interferes with breast feeding (cleft lip and cleft palate).

Tools of data collection:

Four tools were designed based on the recent related literatures [2, 8, 10-12] to collect the required data regarding the study elements.

Tool I: Structured interview schedule:

This tool was developed by the researcher to collect basic data. It included two parts as follows:

Part (1): Socio-demographic data of the women:

This part assessed the socio-demographic data of the women such as age, educational level, occupation, residence, marital status, age at marriage, duration of the current marriage, type of family, number of family members and family income.

Part (2): Reproductive history:

This part included two parts:

A. Obstetric history: It included gravidity number, gestational age, time of initial antenatal visit, number and place of antenatal follow up visits, attendance, number, and place of antenatal care classes, topics of health education, the mode of delivery, type of anesthesia if used, length of labor, presence of episiotomy, any problem during labor and previous history of breast engorgement.

B. Clinical data of women: It included number of postpartum days, breast feeding initiation time, duration and frequency of breast feeding, maternal position during breast feeding and uses of both breasts for infant feeding.

Tool II: Knowledge of primipara women about breast engorgement.

This tool was developed and used by the researcher to assess knowledge of primipara women about breast engorgement. It included 7 items (definition, risk factors, signs and symptoms, complications, women's practices to relief breast engorgement, source of knowledge and the role of nurse to relief breast engorgement).

The scoring system regarding women's knowledge about breast engorgement was as follow:

- Incorrect answer or didn't know was given a score of (0).
- Correct and incomplete answer was given a score of (1).
- Correct and complete answer was given a score of (2).

The total knowledge score level was calculated by (7 questions x 2 = 14 point). This was categorized as follows:

- Poor level of knowledge < 60%. = (0-8 scores)
- Fair level of knowledge 60% <75%. = (9-10 scores)
- Good level of knowledge ≥ 75%. = (11-14 scores)

Tool III: Self-care practices of primipara women regarding breast engorgement:

This tool was developed and used by the researcher to assess self-care practices that should be done by primipara women regarding breast engorgement. It included the following:

- Use of moist heat on breasts for few minutes before breast feeding.
- Take a brief hot shower before breast feeding.
- Use cold compresses for 10 minutes after feeding.
- Gently massage and compress the breast when the neonate pauses between sucking.
- Wear well fitted supportive brassiere.
- Breast massage or relaxation technique.
- Use of breast pump.
- Apply cold cabbage leaves on the breasts.
- Nurse on neonate's cues "on demand".
- Express breast milk manually before putting the neonate to the breast.
- Increase frequency of breast feeding.
- Feed the neonate at least 15 to 20 minutes at each breast or until the breast becomes soft.
- Ensure correct latch and positioning of the neonate during breast feeding.
- Use gel packs on the breast.
- Use scraping technique (Gua Sha therapy).
- Take analgesic drug to reduce pain.
- Apply lavender or fennel oil to the breast to enhance milk flow and prevent or alleviate risks of mastitis or clogged ducts.

Scoring system of women's self-care practices regarding relieve of breast engorgement was as the following:

- Responses were ranged from (1:2) where 1 referred to not done and 2 referred to done.

The total score of women practices was calculated as follows:

- Unsatisfactory practice <60%. (≤ 27)
- Satisfactory practice ≥60%. (28≤ 34)

Tool IV: LATCH Breastfeeding Charting Scale:

This tool was adopted from **Jensen D., Wallace S., & Kelsay P (1994)** [12] to assess effectiveness of breast feeding. The system assigned a numerical score (0.1.2) to five key breast feeding component identified by the letters of the acronym LATCH:"L" for how well the infant latches onto the breast, "A" for the amount of audible swallowing noted, "T" for the women nipple type / condition, "C" for the women level of comfort and "H" for the

amount of help the woman needs to hold her infant to the breast. The total score ranged from 0 to 10, with the higher score represented successful breastfeeding.

The total scoring system ranked as follows:

- Poor breast feeding…… (0-3)
- Fair breast feeding…….... (4-7)
- Well breast feeding…… (8-10)

Method

1. Administrative design:

Written approvals: official letter clarifying the purpose of the study was obtained from the Faculty of Nursing and submitted to the responsible authorities of the selected settings to obtain their approval and cooperation for carrying out the study.

2. Ethical considerations:

Informed consent was obtained from women who accepted to participate in the study after explaining the purpose of the study, confidentiality of information was maintained, benefits and right of women to withdraw from the study at any time if desired. The nature of the study did not cause any harm and/or pain for the subjects.

3. Developing the tools:

- Tools (I, II, and III)) were developed by the researcher after reviewing recent related literature [2, 8, 10, 11].
- Tool IV was adopted from **Jensen D., Wallace S., & Kelsay P (1994)** [12].
- The study tools were translated into Arabic language and then tested for face and content validity by jury of five professors expertise in the field of Obstetrics and Gynecological nursing before conducting the study.
- The study tools were tested for its reliability by using Cronbach's Alpha test. The reliability of tool II which assessed knowledge of primipara women about breast engorgement was 0.948, the reliability of tool III which assessed self-care practices done by primipara women regarding breast engorgement was 0.806 and the reliability of tool IV which assessed effectiveness of breast feeding was 0.801 indicating high reliability of the study tools.

4. Pilot study

After development of the tools, a pilot study was carried out on 10% of the sample "20" primpara postnatal women from the previously mentioned settings. This pilot study was conducted before the actual data collection.

The purposes of the pilot study were to:

- Ascertain the feasibility and applicability of the developed tools.

- Detect any problem peculiar to clarity of the statements that might interfere with the process of data collection.

Results of the pilot study:

- The pilot study revealed that the sentences of the tools were clear and relevant. Few words and statements were rephrased and /or modified. Then, the tools was reconstructed and made ready for use. Data obtained from the pilot study were excluded from the actual study sample.

5. Actual study (field work)

- Data were collected at the morning shifts in Postpartum departments and outpatient clinics of the previously mentioned hospitals and from Maternal and Child Health Centers from 9:00 a.m. to 1.00 p.m. But data were collected from 1.00 p.m. to 3.00 p.m. in neonatal intensive care units at the time of maternal visiting. The process of data collection began from January 2020 until the end of June 2020, three times per week until the predetermined sample size were collected.
- The structured interview schedule was applied individually for each woman at the postpartum outpatient clinics, maternal and child health centers (MCH), postpartum departments, and the neonatal intensive care units.
- All subjects who had the inclusion criteria at the time of data collection were included in the study. Data were collected within 15-20 minute. Firstly, the researcher introduced herself to each woman and explained the aim of the study. Then, the researcher measured the women's body temperature and examined their breast to exclude the cases of breast infection.
- Data were collected by the researcher using the previously mentioned tools, **Tool I**: used to collect data about socio-demographic characteristic and reproductive history of the women, **Tool II: used** to assess knowledge of primipara women about breast engorgement, **Tool III:** used to assess self-care practices of primipara women regarding breast engorgement, **Tool IV:** LATCH Breastfeeding Charting Scale was used to assess the effectiveness of breast feeding.
- Instructional booklet was prepared by the researcher and given to women to help increase their knowledge and promote their practices regarding breast engorgement.

6. Limitation of the study:-

This study had some limitations

- From January to March the researcher collected data from all previously

mentioned setting, while from April the researcher found difficulties in collecting data from outpatient clinics, maternal and child health centers and neonatal intensive care units due to coronavirus; Therefore the researcher collected the remaining data from postpartum departments only.

7. Statistical analysis:

- The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 19, SPSS Inc. Chicago, IL, USA).
- For quantitative data, the range, mean and standard deviation were calculated. For qualitative categorical set of data frequency, percentage or proportion of each category, comparison between two groups and more was done using Chi-square test($\chi 2$).
- For comparison between means of two groups of non-parametric data of independent sample, Z value of Mann-whitney test was used. For comparison between more than two means of non-parametric data, Kruskal-Wallis ($\chi 2$ value) was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p < 0.05$ for interpretation of results of the tests[13].

Results:

Table (1): Shows the distribution of the studied primipara post-natal women according to their socio-demographic characteristics. It is noticed that slightly more than four fifth of women (81.5%) were 20 to less than 30 years old with mean age **25.19 years ±4.18**. The table also reveals that slightly less than three fifth of the women (56.0%) were from rural areas. Also it is found that nearly three quarter of women (72.5%) were married at age of 18 to less 25 with mean age at marriage of **22.94 years ±4.08.** The mean duration of current marriage was **1.94 years ±1.09.** Regarding the educational level, 37.0% of the women had secondary school and only 8.0% were illiterate. Concerning occupation, the vast majority of them were housewife (90.0%). The table also illustrates that nearly three fifth of women (58.0%) were from nuclear families and had three family members, and slightly more than four fifth (82.0%) had enough family income.

Table (2): Shows the distribution of the studied primipara post-natal women according to their Obstetric history. The majority of women (86.0% and 84.0%

respectively) were primigravida and attended for antenatal care regularly. Concerning the time of initial antenatal visit, the vast majority of the women (98.0%) had initial antenatal visit at the first trimester. As regard the number and place of antenatal follow up visits, the majority of the women (84.0% and 83.0% respectively) had four or more times antenatal visits and had antenatal care at the private hospitals or clinics.

Concerning antenatal care classes; the majority of the women (88.0%) didn't attend antenatal care classes. As regarding to the number of antenatal care classes' attended, 62.5% attended one to two times and received the educational classes by doctors and 66.7% attended antenatal care classes at health centers and MCH centers. Breast feeding education was the most common topic of health education classes that was mentioned by 83.3% of women. As regard to the mode of delivery, almost three quarters (77.0%) had cesarean section and 23.0% had normal vaginal delivery; 91.3% of normal vaginal delivery had episiotomy. The vast majority of the women (97.4%) had spinal anesthesia during cesarean section. The mean length of normal vaginal delivery was **13.37 hours ± 5.89,** but the mean length of cesarean section labor was **1.37 hours ± 0.53.**

Regarding the presence of complications during labor, the vast majority of the women (97.0%) hadn't complication during labor and only 3.0% of women had complications such as a result of normal vaginal delivery and half of them had intrapartum hemorrhage.

Table (3): Shows the distribution of the studied primipara post-natal women according to their reproductive clinical data. The mean number of postpartum days is **5.84 ± 8.57.** Concerning the breast feeding initiation time, nearly half of women (49.0%) initiated breast feeding within two hours after delivery. Regarding the duration of breast feeding, the vast majority of women (98.0%) reported that the duration of breast feeding was 10 minutes. As regard the frequency of breast feeding, slightly more than four fifth of the women (81.5%) fed their infants on demand. All women used sitting position while feeding their infants and only 3.5% used both sitting and lying positions. The vast majority of them (96.0%) fed their infants from both breasts.

Figure (1): Shows the distribution of the studied primpara post-natal women according to their total score level of

knowledge regarding breast engorgement. More than three quarters of women (77.5%) had poor level of knowledge followed by 17.0% of them had fair level of knowledge and only 5.5% of them revealed good level of knowledge with range 3-13 and Mean ± SD **6.76 ± 2.38.**

Figure (2): Shows the distribution of the studied primpara post-natal women according to their source of knowledge. The table reveals that nearly half (46.5%) of women mentioned that their family was the primary source of knowledge regarding breast engorgement, while 31.9% of them stated that friends, as well as doctor or nurse, media, books and magazine were other sources of their knowledge (reported by 19.3%, 5.7% and 2.3% respectively).

Table (4): Shows the distribution of the studied primpara post-natal women according to their self-care practices regarding breast engorgement. The majority of the women (85%) didn't suffer from breast engorgement during post-natal period and only 15% of them actually suffered from breast engorgement during post-natal period. Regarding their practices that were performed to relief breast engorgement, all women (100%) mention that they express their breasts manually before putting the infant to the breast, 96.7% increased the frequency of breastfeeding, 93.3% used breast pump, 90.0% nursed their infants on demand, used correct latch and positioning of infant during breastfeeding and fed their infants at least 15 to 20 minutes from each breast or until breast become soft. On the other hand, (23.3%, 20.0% and 20.0% respectively) of them used moist heat on breast for few minutes before breastfeeding, made gently massage, compressed the breast when the infant pauses between sucking, and took analgesic to reduce pain.

In relation to the anticipated practices that should be done by women who didn't experience breast engorgement, about 70.0% didn't know specific measures, 33.5% increased frequency of breastfeeding, and 32.3% squeezed the breast by hands. The table also shows that (2.4%, 1.2%, 1.2% and 1.2% respectively) of them reported using hot compression, breast massage by hand, frequent breast suction and using sedation.

Figure (3): Shows the distribution of the studied primipara post-natal women according to total level of LATCH Breastfeeding Charting Scale. It was illustrated that, 63.5% of women were fair breastfeeding, 27.0% were well breastfeeding and only 9.5 were poor breastfeeding.

Table (5): Shows the relationship between studied primipara post-natal women's socio-demographic data and their total knowledge scores about breast engorgement. The table revealed that there are significant relationship between women's occupation, family income and their total knowledge scores (P= 0.027* and 0.039* respectively). On the other hand, there was no significant relationship between women's age, residence, age at marriage, educational level, type of family, number of family members and their total knowledge scores (P= 0.654, 0.254, 0.313, 0.371, 0.430 and 0.613 respectively).

Table (6): Shows the relationship between studied primipara post-natal women's with breast engorgement socio-demographic data and their total self-care practice scores regarding breast engorgement. The table revealed that there were significant relationships between total self-practice scores about breast engorgement and both women's educational level and occupation (P= (0.007* and 0.001* respectively). On the other hand, there was no significant relationship between women's age, residence, age at marriage, type of family, number of family members and their total self-care practice scores about breast engorgement (P= 0.249, 0.153, 0.516, 0.291 and 0.077 respectively).

Table (7) shows the relationship between studied primipara post-natal women's socio-demographic data and their total Latch Breastfeeding Scale Scores. The table illustrated that there were significant relationships between total Latch Breastfeeding Scale scores and the following; women's age (P= 0.017*), educational level (P= 0.0001*) occupation (P= 0.016*), type of family (P= 0.039*) and number of family members (P=0.0001*). On the other hand, there was no significant relationship between women's residence, age at marriage, family income and their total Latch Breastfeeding Scale scores (P= 0.527, 0.965 and 0.503 respectively).

Table (1): Distribution of the studied primipara post-natal women according to their socio-demographic characteristics (n=200).

Variables	The studied post-natal women (n=200)	
	N	%
•Age: (years)		
20-<30	163	81.5
30-35	37	18.5
Range	20-35	
Mean±SD	25.19±4.18	
•Residence:		
Urban	88	44.0
Rural	112	56.0
•Age at marriage:		
18-<25	145	72.5
25-32	55	27.5
Range	18-32	
Mean±SD	22.94±4.08	
•Duration of current marriage: (years)		
Range	0.83-5.00	
Mean±SD	1.94±1.09	
•Educational level:		
Illiterate	16	8.0
Read and write	42	21.0
Primary school	41	20.5
Secondary school	74	37.0
College	27	13.5
•Occupation:		
House wife	180	90.0
Worked	20	10.0
•Type of family:		
Nuclear family	116	58.0
Extended family	84	42.0
•Number of family members:		
3	116	58.0
4	56	28.0
5	16	8.0
6 & 8	12	6.0
•Family income from women view:		
Enough	164	82.0
Not enough	36	18.0

Table (2): Distribution of the studied primipara post-natal women according to their Obstetric history (n=200).

Obstetric history data	The studied post-natal women (n=200)	
	N	%
•Gravidity number:		
Primigravida	172	86.0
Multigravida	28	14.0
• Gestational age (weeks):		
Range	36-42	
Mean±SD	39.32±1.30	
•Follow up during pregnancy:		
Regularly	168	84.0
If necessary	32	16.0
•Time of initial antenatal visit:		
At the first three months of pregnancy	196	98.0
At the second three months of pregnancy	4	2.0
•Number of antenatal visits:		
< 4 times	32	16.0
≥ 4 times	168	84.0
•Place of antenatal follow up visits:#		
Governmental Hospitals	12	6.0
Private hospitals or clinics	166	83.0
Health Center / MCH Centers	29	14.5
•Attendance of antenatal care classes:		
Yes	24	12.0
No	176	88.0
▫If yes, number of antenatal care classes:	(n=24)	
1-2 times	*15*	*62.5*
3-4 times	*5*	*20.8*
>4 times	*4*	*16.7*
▫If yes, who gave antenatal care classes:	(n=24)	
Nurses	*9*	*37.5*
Doctors	*15*	*62.5*

▫Place of antenatal care classes:	(n=24)	
Private hospitals or clinics	*8*	*33.3*
Health centers/ MCH Centers	*16*	*66.7*
•Topics of health education classes: #	(n=24)	
Nutrition during pregnancy	*12*	*50.0*
Regular follow-up during pregnancy	*5*	*20.8*
Vaccination during pregnancy	*1*	*4.2*
Rest and Sleep during pregnancy	*7*	*29.2*
Breastfeeding education	*20*	*83.3*
•Mode of delivery:		
Normal vaginal delivery	46	23.0
Cesarean section (CS)	154	77.0
▫If CS, Type of anesthesia used:	(n=154)	
Spinal anesthesia	*150*	*97.4*
General anesthesia	*4*	*2.6*
•Length of labor (Hours):		
-Normal vaginal delivery:		
Range	9.00-25.00	
Mean±SD	13.37±5.89	
-Cesarean section (C.S) (Hours):		
Range	1.00-3.00	
Mean±SD	1.37±0.53	
• If normal vaginal delivery, "episiotomy was performed":	(n=46)	
Yes	42	91.3
No	4	8.7
•Complications during labor:		
Yes (of normal labor)	6	3.0
No	194	97.0
▫If yes, what are these complications?	(n=6)	
Intrapartum hemorrhage.	*3*	*50.0*
Fetal distress	*2*	*33.3*
Umbilical cord prolapse	*1*	*16.7*

#More than one answer

Table (3) Distribution of the studied primipara post-natal women according to their reproductive clinical data (n=200).

Reproductive clinical data	The studied post-natal women (n=200)	
	N	%
•Number of postpartum days:		
Range	0.5-32.00	
Mean±SD	5.84±8.57	
•Breast feeding initiation time:		
Immediately after delivery	21	10.5
Two hours after delivery	98	49.0
More than two hours	81	40.5
•Duration of breast feeding:		
10 minutes	196	98.0
20 Minutes	4	2.0
•Frequency of breast feeding:		
As infant demand	163	81.5
Every two hours	16	8.0
Every three hours or more	21	10.5
•Maternal position during breast feeding: #		
Sitting position	200	100
Side lying position	7	3.5
• Feeding the infant from the both breasts:		
Yes	192	96.0
No	8	4.0
▫If no, mention the causes:	(n=8)	
Inverted nipple	*7*	*87.5*
Unable to feed from other side	*1*	*12.5*

More than one answer

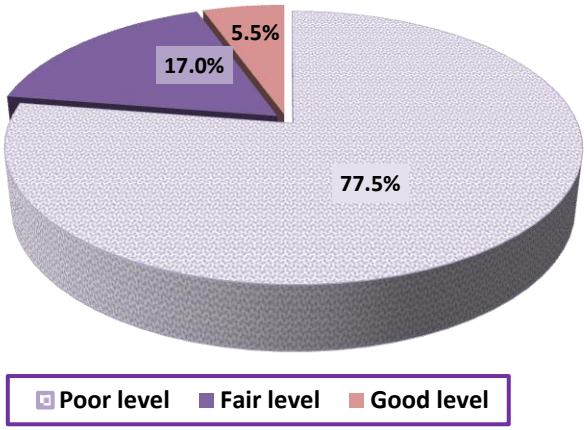

Figure (1): Distribution of the studied primpara post-natal women according to their total score level of knowledge regarding breast engorgement (n=200).

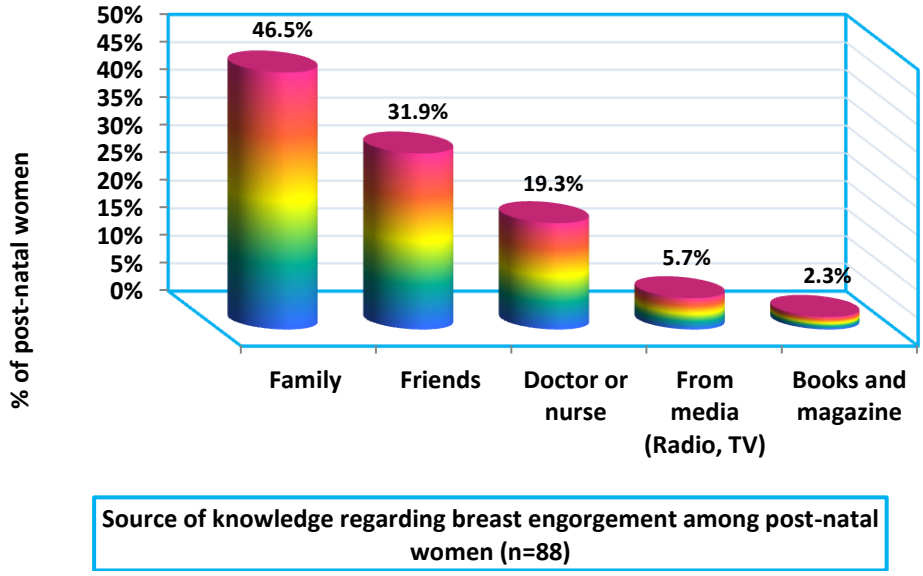

Figure (2): Distribution of the studied primpara post-natal women according to their source of knowledge regarding breast engorgement (n=88).

Table (4): Distribution of the studied primpara post-natal women according to their self-care practices regarding breast engorgement (n=200).

Self-care practices' items (Each item was scores 1-2)	The studied post-natal women (n=200)	
	n	%
•Occurrence of breast engorgement during post-natal period:		
No	170	85.0
Yes	30	15.0
▫If yes, what did the measures you did to relief breast engorgement? #	(n=30)	
-Use of moist heat on breast for few minutes before breastfeeding	*7*	*23.3*
-Do gently massage and compress on the breast when the infant pauses between sucking	*6*	*20.0*
-Use breast pump	*28*	*93.3*
-Nurse on infant's cues (on demand)	*27*	*90.0*
-Correct latch and positioning of infant during breastfeeding	*27*	*90.0*
-Express breast manually before putting the infant to the breast	*30*	*100*
-Increase frequency of breastfeeding	*29*	*96.7*
-Feed the infant at least 15 to 20 minutes from each breast or until breast become soft	*27*	*90.0*
-Take analgesic to reduce pain	*6*	*20.0*
•Total self-practice scores:		
Range (18-36)	19-26	
Mean±SD	23.23±1.79	
•Total self-practice level:		
Unsatisfactory (<60%) (18-28)	30	100
Satisfactory (60%-100%) (29-36)	0	0
▫If no, what do you do if you have breast engorgement? #	(n=170)	
-Don't know specific measures	*119*	*70.0*
-Breast massage by hand	*2*	*1.2*
-Sedation	*2*	*1.2*
-Frequent squeezing of breast by hand	*55*	*32.3*
-Hot compressions on the breast	*4*	*2.4*
-Frequent breast suction	*2*	*1.2*
-Frequent breastfeeding	*57*	*33.5*

 # More than one answer

NB. All women with breast engorgement (n=30) had unsatisfactory practices <60% of total scores)

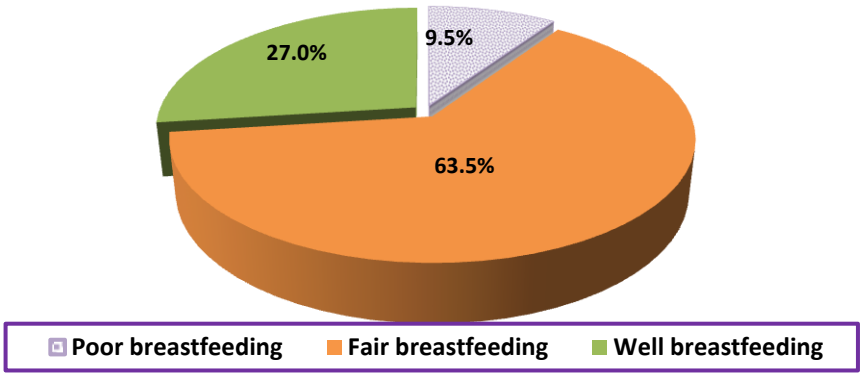

Figure (3): Distribution of the studied primipara post-natal women according to total Level of LATCH Breastfeeding Charting Scale (n=200).

Table (5): Relationship between studied primipara post-natal women's socio-demographic data and their total knowledge scores (n=200).

Socio-demographic data	Total knowledge scores among the studied post-natal women			
	Mean±SD	χ^2 value	Z value	P
•Age: (years)				
20-<30	6.72±2.34		0.449	0.654
30-35	6.92±2.60			
•Residence:				
Urban	6.98±2.52		1.145	0.254
Rural	6.59±2.26			
•Age at marriage:				
18-<25	6.65±2.32		1.011	0.313
25-32	7.04±2.54			
•Educational level:				
Illiterate	6.81±2.26	4.265		0.371
Read and write	6.43±2.00			
Primary school	6.39±2.55			
Secondary school	6.77±2.16			
College	7.78±3.09			
•Occupation:				
House wife	6.59±2.26		2.216	0.027*
Worked	8.30±2.90			
•Type of family:				
Nuclear family	6.65±2.38		0.791	0.430
Extended family	6.92±2.38			
•No. of family members:				
3	6.65±2.38	2.676		0.613
4	7.09±2.19			
5	6.62±3.52			
6	7.00±2.45			
8	6.25±0.46			
•Family income from women view:				
Enough	6.94±2.46		2.061	0.039*
Not enough	5.92±1.79			

Table (6): Relationship between studied primipara post-natal women's with breast engorgement socio-demographic data and their total self-care practice scores regarding breast engorgement (n=30).

Socio-demographic data	Total self-care practice scores of the studied post-natal women with breast engorgement (n=30)			
	Mean±SD	χ^2 value	Z value	P
•Age: (years)				
20-<30	23.04±1.60		1.178	0.249
30-35	24.00±2.45			
•Residence:				
Urban	22.90±1.89		1.467	0.153
Rural	23.90±2.02			
•Age at marriage:				
18-<25	23.05±1.86		0.658	0.516
25-32	23.50±1.73			
•Educational level:				
Read and write	22.20±1.79	12.226		0.007*
Primary school	22.00±2.00			
Secondary school	23.00±2.00			
College	24.87±3.84			
•Occupation:				
House wife	22.65±1.46		3.468	0.001*
Worked	25.14±1.46			
•Type of family:				
Nuclear family	23.56±1.21		1.077	0.291
Extended family	22.86±2.28			
•No. of family members:				
3	23.56±1.21	5.130		0.077
4	22.00±1.85			
5	24.00±2.45			
•Family income from women view:				
Enough	23.23±1.79		-	-

NB. All women with breast engorgement (n=30) had unsatisfactory practices <60% of total scores)

*Statistically significant (P<0.05) . χ^2 value= Kruskal Wallis test.

Table (7): Relationship between studied primipara post-natal women's socio demographic data and total LATCH Breastfeeding Scale Scores (n=200).

Socio-demographic data	Total LATCH breastfeeding scale scores among the studied post-natal women (n=200)			
	Mean±SD	χ^2 value P	Z value P	P
•Age: (years)				
20-<30	6.81±2.19		2.387	0.017*
30-35	5.67±1.49			
•Residence:				
Urban	6.51±2.36		0.527	0.527
Rural	7.00±1.92			
•Age at marriage:				
18-<25	6.65±2.18		0.043	0.965
25-32	6.45±1.97			
•Educational level:				
Illiterate	6.00±1.26	25.120		0.0001*
Read and write	5.95±2.03			
Primary school	5.71±1.32			
Secondary school	7.11±2.30			
College	7.17±2.21			
•Occupation:				
House wife	5.60±1.39		2.407	0.016*
Worked	6.71±2.16			
•Type of family:				
Nuclear family	6.33±2.20		2.068	0.039*
Extended family	6.98±1.96			
•No. of family members:				
3	6.33±2.20	9.873		0.0001*
4	7.82±1.72			
5	4.75±1.34			
6	6.00±0.00			
8	6.00±0.00			
•Family income from women view:				
Enough	6.66±2.07		0.669	0.503
Not enough	6.30±2.35			

Discussion:

Breastfeeding is important for women and their infants. This is based on the recommendation of major medical organizations; American Academy of Pediatrics (AAP), American Association of Family Physicians (AAFP) and Department of Health and Human Services (DHHS) who are recommended that infants should receive nothing rather than breast milk during the first 6 months of the infant's life, and continue receiving it for at least the first year [(14)]. Breast engorgement can occur any time during lactation but it is most common within the first three to six days after delivery. Following proper breastfeeding technique is very important to prevent breast engorgement. The high incidence rate of breast engorgement is due to that women have poor knowledge regarding proper breastfeeding technique and breast engorgement. Previous studies recommended that, it is important to assess the knowledge level of the postnatal women regarding breast engorgement [(15)]. So, the present study aimed to assess self-care practices of primipara women regarding breast engorgement.

Concerning socio-demographic characteristics of the studied primipara postnatal women, the current study revealed that slightly more than four fifth of women age ranged from 20-30 years, with mean age **25.19 years ± 4.18**. This finding is in line with **Hassan H., EL-Kholy G., Ateya A., & Hassan A (2020)** [(16)] who implied that the women age ranged from 20-30 years with a mean age **23.25 years ± 5.75** in their study of breastfeeding knowledge and practices among primiparous women with caesarean section: impact on breast engorgement in upper Egypt. From the researcher point of view these similarity may be due to that it is the normal age of childbirth.

Regarding women residence, the present study declared that slightly less than three fifth of women were from rural areas. This result was in agreement with **Abdallah N., Eldin S., & Gad A (2018)** [(17)] who studied breast and nipple problems encountered among puerperal primipara women in Zagazig, they mentioned that the majority of the studied women were from rural areas. The present study is on contrast with **Jhade J., & Shiju D (2019)** [(18)] who assessed the effectiveness of the structured teaching program on knowledge regarding prevention and management of post-natal breast complications among primigravida mothers. They demonstrated that nearly three quarters of the studied women were from urban areas and the rest of them were

from rural areas. This discrepancy may be related to different setting where the study was conducted.

In relation to women's age at marriage and duration of current marriage, the present study revealed that the mean age at marriage was **22.94 years ± 4.08** and the mean duration of current marriage was **1.94 years ± 1.09.** These results are contradicted with **Hassan H., EL-Kholy G., Ateya A., & Hassan A (2020)** [16] who clarified that the studied women mean age at marriage was **21.62 ± 6.25** years and the duration of current marriage was **4.05 ± 3.05.** This difference may stem from **Hassan H., EL-Kholy G., Ateya A., & Hassan A (2020)** [16] study conducted in Upper Egypt where the phenomenon of early marriage is widespread.

According to the women's educational level, the findings of the present study revealed that nearly two fifth of them had secondary school**.** These findings are in line with **Pardeshi P., Pathak N., Patil A., Shaikh T., Raut S., & Bera L (2019)** [19], who mentioned that the majority of the studied women had secondary education**. In contrast with Varghese B., & Patwa A (2020**) [20] who assess the effectiveness of hospital based teaching program on knowledge regarding home management for breast engorgement among postnatal mothers. They reported that the majority of the studied women had primary education**.** This difference may be due to different study settings. As regards to the women's occupation, the findings of the present study revealed that the vast majority of women were housewife. This result is in agreement with **Prasad Y., Chandrakala P., & Manasa G (2017)** [21]**,** who stated that the higher percent of the studied women were house wives. On the other hand, these findings are inconsistent with **Abd El-Salam A., & Ashour E (2020)** [22] who illustrated that most of the studied women were working. This may be due to the majority of the studied women have a low level of education and from rural areas, which leads to decrease their work opportunities.

Concerning the type of family**;** the current study revealed that nearly three fifth of women were from nuclear family. This study is in match with **Aneesha V., Baby M., Neena K., Sunny R., & Souparnika P (2019)** [23] who mentioned that half of studied women belong to nuclear family. On the other hand, the result is contradicted with **Hassan H., EL-Kholy G., Ateya A., & Hassan A (2020)** [16] who reported that more than half of studied women were from extended families. From the researcher point of view; this may be

justified by diversity in customs and beliefs between the studies settings, as people in Upper Egypt prefer to live in extended family to be supported by each other, while in Lower Egypt they prefer living in nuclear family to avoid the family conflicts.

Regarding the number of family members; the present study showed that nearly three fifth of women had three family members. It is contradicted with **Hassan H., EL-Kholy G., Ateya A., & Hassan A (2020)** [16] who reported that more than half of the women had more than five family members. From the researcher point of view this discrepancy may be related to that the studied women belong to extended family. Concerning the family income; the present study revealed that more than four fifth of women had enough income. This finding is in line with **Ebrahim R., & Esmat O (2018)** [24] who reported that the higher percent of studied women had enough income which covers family needs. On the other hand, this finding is inconsistent with **Hassan H., EL-Kholy G., Ateya A., & Hassan A (2020)** [16] who mention that most of the studied women haven't enough income. This may be explained from the researcher point of view due to different of socioeconomic circumstance among the studied groups.

Concerning women's reproductive history, the result of the present study clarified that the majority of women were primigravida, such result agrees with **Salgaonkar R (2019)** [25] who assessed the effect of chilled cabbage leaves application on breast engorgement among post-natal mothers admitted in selected hospital of Navi Mumbai. He reported that the majority of studied sample were gravida one. As regards to the gestational age, the finding of the present study demonstrated that the mean of gestational age was 39.32 weeks ±1.30. This finding is in accordance with Alekseev N et al., (2015) (27) who studied pathological postpartum breast engorgement: prediction, prevention, and resolution. They indicated that the mean gestational age was **39 weeks ± 1.4.**

In relation to attendance of antenatal care, majority of the women attended antenatal care regularly, sought initial antenatal visit at first trimester and had more than four antenatal visits through the pregnancy course. The present study findings is in harmony with **Hassan S., NourEldin S., & Abd-Allah I (2019)** [28] who stated that the majority of the studied women received antenatal care during the first trimester and had more than four visits through the pregnancy course. On the other hand, this finding is inconsistent with **Hassan H.,**

EL-Kholy G., Ateya A., & Hassan A (2020) [16] who mentioned that nearly two third of women didn't receive antenatal care. This may be due to lack of health center services that provide antenatal care for pregnant women in Upper Egypt.

Regarding the place of antenatal care, the majority of women had antenatal care at the private clinics or hospitals. This finding is contradicted with **Varghese B., & Patwa A (2020)** [20] who mentioned that most women went to governmental hospitals for antenatal care. From the researcher point of view the result in the present study may be due to the antenatal care and facilities which provided to pregnant women at private clinics and hospitals are better than care provided at the governmental hospitals.

Concerning the attendance of antenatal care classes; the present study revealed that the minority of the women attended antenatal care classes and more than three fifth of them received classes by doctor one to two times at the health and MCH centers. This finding is supported by **Prasad Y., Chandrakala P., & Manasa G (2017)** [21] who showed a great deficiency in the health education received during antenatal visits. On the other hand, this finding is inconsistent with **Abdallah N., Eldin S., & Gad A (2018)** [17], who reported that the main source of women's antenatal health education was from families and friends. This may be due to that the majority of the studied women in the present study had antenatal care at private clinics or hospitals.

In relation to topics of health education classes, the present study revealed that the majority of women who received antenatal classes mentioned that breastfeeding education is the most common topic received. This finding is contradicted with **Karatay G., Gurarslan N., & Orhan Ergin I (2018)** [29] who mentioned that most women didn't receive health education regarding breastfeeding during their antenatal visits. This result is accepted because the majority of the studied women were housewives, living in rural area, and lacking awareness about breastfeeding problems and their management. This may also reflect the deficiencies at health institutions regarding their roles in health education as the health care providers focus mainly on serious cases and neglect health teaching about such topics for pregnant women, especially primiparae. So, this may lead to various breast problems which interfere with the establishment and continuation of breastfeeding.

As regards to the mode of delivery, more than three quarters of women had cesarean section with spinal anesthesia, **1.37 hours ±0.53** mean length of labor and nearly one quarter of women had normal vaginal delivery with episiotomy, **13.37 hours ±5.89** mean length of labor. These results are similar with **Karatay G., Gurarslan N., & Orhan Ergin I (2018)** [29], who reported that nearly three quarter of women had cesarean section. On the other hand, the present study contradicted with **El-Saidy T., & Aboushady R (2016)** [30] who reported that nearly three quarter of women had normal vaginal delivery and the rest of them had cesarean section. In relation to the number of postpartum days, the present study findings clarified that the mean number of postpartum days was **5.84 ± 8.57.** This finding contrasts with **El-Saidy T., & Aboushady R (2016)** [30] who reported that mean number of postpartum days was **3.8 ± 0.7.** This difference may be due to that the researcher in the present study selected the studied women within the first 40 days after delivery according to the study inclusion criteria.

Regarding the breastfeeding initiating time, the finding of the present study revealed that minority of the studied women initiated breastfeeding immediately after delivery and nearly half of them initiated within two hours. This finding is in the same line with **Shrooti S., Prativa D., & Devkumari S (2016)** [31] who mentioned that half of studied women initiated breastfeeding within 2 hours after delivery. On the other hand, the finding disagrees with **Ebrahim R., & Esmat O (2018)** [24] who reported that more than of women initiated breastfeeding after more than two hours. From the researcher point of view, this difference may be due to lack of anticipatory guidance and support to initiate breastfeeding immediately after delivery, in addition to the pain resulted from caesarian section and episiotomy among the studied women who had vaginal delivery. This is may be attributed to delay in establishing breastfeeding.

Regarding the duration of breastfeeding, the vast majority of women reported that the duration of breastfeeding was 10 minutes. This finding matched with **Abdallah N., Eldin S., & Gad A (2018)** [17] who reported that most of studied women fed their infants for less than 15 minutes. On the other hand, the present study contradicted with **Hassan H., EL-Kholy G., Ateya A., & Hassan A (2020)** [16] who reported that more than half of women fed their babies for less than 10 minutes. From the researcher point of view, these results may be due to lack of

primpara women's experience and knowledge regarding breastfeeding technique.

As regard to the frequency of breastfeeding, slightly more than four fifth of women fed their infants on demand. This finding is in contrast with **Ebrahim R., & Esmat O (2018)** [24] who reported that more than two thirds of the studied women fed their infants four times per /day. The result of the present study was accepted because the World Health Organization and the United Nations Children's Emergency Fund recommended that breastfeeding should be on-demand not on any strict schedule [32].

The result also showed that the entire study women used sitting position during breastfeeding. This result contrasts with **Angeline A., Yesudas M., & John N (2020)** [33] who reported that nearly three quarters of the studied women used sitting position and the rest of them used side lying position. Regarding feeding the infant from both breasts, the finding of the present study revealed that the vast majority of women fed their infants from both breasts. This is in line with **Hassan S., & Abdelwahed W (2015)** [34] who mentioned that most of the participants used both breasts to feed their infants.

As regard to total score level of knowledge regarding breast engorgement. It is noticed that more than three quarters of women exhibited poor level of knowledge regarding breast engorgement. This study finding is similar to **Sunita K., & Deepika R (2020)** [35] **& Hemavathy V., Sarathi S., & Shekharan G (2019)** [36]**,** who reported that there was low level of women's knowledge regarding breast engorgement. On the other hand, the results were contradicted with **Aneesha V., Baby M., Neena K., Sunny R., & Souparnika P (2019)** [23] who reported that the majority of women had good knowledge. This discrepancy with the current study may be related to different educational level among the studied women.

Regarding the source of knowledge, the current study revealed that nearly half of women mentioned that family were a primary source of knowledge regarding breast engorgement, while the minority of them receives their knowledge from books and magazines. This study finding is supported by **Abd El-Salam A., & Ashour E (2020)** [22] who demonstrated that family members were the most common source of women's knowledge. While **Hassan H., EL-Kholy G., Ateya**

A., & Hassan A (2020) [16]**,** declared that midwifes were the most common sources of women's knowledge. From the researcher point of view; this may be attributed to that the majority of the studied women were primipara who were dependent on their families to gain knowledge and this is serious, because such knowledge may be inadequate, inaccurate and incomplete.

The study also shows that only less than one fifth of women actually suffered from breast engorgement during postnatal period. This result matched with **Angeline A., Yesudas M., & John N (2020**) [33], who clarified that less than one fifth had breast engorgement as abreast complication occur among postnatal women. On the other hand, this finding is inconsistent with **Karatay G., Gurarslan N., & Orhan Ergin I (2018)** [29] who stated that three fifth of postnatal women had breast engorgement during postnatal period.

In relation to women's self-care practices that were performed to relief breast engorgement; all women expressed their breast manually before putting the infant on breast and the vast majority of them increased frequency of breastfeeding, used breast pump, nursed their infants on demand, used correct latch and positioning of infant during breastfeeding and fed the infants at least 15 to 20 minutes at each breast or until breast become soft. This result is matching with **Pustotina O (2016)** [12] who founded that the pumping of breast milk is effective method to prevent breastfeeding problems. Also **Myles K., Weiss J., Dunn S., Peterson W., & Cotterman K (2015)** [37] reported that use of breast pumps reduced the postpartum breast engorgement. On the other hand, the study finding is not matching with the finding of **Karatay G., Gurarslan N., & Orhan Ergin I (2018)** [29], who stated that only one fifth of the studied women expressed their breast manually or used breast pump.

Furthermore, less than one quarter of women used moist heat on breasts for few minutes before breastfeeding, made gentle massage and compressed the breast when the infant pauses between sucking. This result is supported by **Witt A., Bolman M., Kredit S., & Vanic A (2016)** [38] who found that the therapeutic breast message during the lactation period was useful in reducing breast engorgement.

Regarding the total score level of **LATCH** Breastfeeding Charting Scale; the present study showed that nearly two thirds of women had fair level of breastfeeding. This finding is similar to **Abbas I., &**

Hasan R (2015) [39] who assess the LATCH score regarding breastfeeding among women after child birth. They reported that the highest percentages of the study sample had fair score of LATCH breastfeeding assessment. This may stem from the enrolled postnatal women in this study were primipara with lack of experience.

As regard to relationship between studied primipara post-natal women's socio-demographic data and their total knowledge scores about breast engorgement, the current study reported statistical significant relation between women's occupation, family income and their total knowledge scores. These results are similar to the finding of the study done by **Pardeshi P., Pathak N., Patil A., Shaikh T., Raut S., & Bera L (2019)** [19], who stated that there was a statistical significant relation between women's total knowledge and occupation. On the other hand, the current study finding is contradicted with **Aneesha V., Baby M., Neena K., Sunny R., & Souparnika P (2019)** [23]**,** who mentioned that there was no significant associations between occupation and women's total knowledge scores.

Concerning the relationship between socio-demographic data and total self-care practice score of the studied women, the current study revealed that there was a statistical significant relationship between total self-practice scores and both women's educational level and occupation. These results were matched with **Aalrazek A (2013)** [40] who mentioned there was a significant association between performance score regarding self-care during postnatal period and the educational level of the studied women.

Moreover, the current study revealed presence of significant relationships between total Latch Breastfeeding Charting Scale scores and the following; women's age, educational level, occupation, type of family and number of family members. This result is in the same line with **Abbas I., & Hasan R (2015)** [39], who reported that there was a statistical significant relationship between age of women and LATCH Breastfeeding Charting Scale. In the same time, it is in contrast with **Abbas I., & Hasan R (2015)** [39]**,** who reported that there was no statistical significant relationship between educational level and LATCH Breastfeeding Charting Scale. From the researcher point of view, educational level plays an important role which influences the women's ability for effective and exclusive breastfeeding. Women with a

higher education level tend to initiate breastfeeding more often, and also tend to breastfeed their child for a longer period of time and more effectively than women with low education. Maternal employment is also an important factor as women who work have better chances to gain valuable health and social information.

Conclusion

Based on the findings of the present study, it can be concluded that primpara postnatal women had a poor level of knowledge as well as unsatisfactory level of self -care practices regarding breast engorgement. Furthermore, this study also revealed that the total level of LATCH Breastfeeding Charting Scale was significantly fair among nearly two thirds of the studied women.

Recommendations

Based on the findings of the present study, the following recommendations are derived and suggested

- Planning and developing antenatal classes for all women to increase their knowledge and enhance their self-care practices regarding breast engorgement.
- Additionally, supportive care should be available to lactating primipara women within the first 24 hours after birth and throughout the early postpartum period.

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Effect of Implementing Evidence Based Nursing Guideline on Nurses' Performance Related to Care Providing for Children at Pediatric Intensive Care Unit

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Abstract. Evidence-based nursing guideline increases the quality of patient care and closes the gap between research outcomes and practice, Evidence Based Practice (EBP) is the use of current research evidence combined with clinical expertise as well as patient values to formulate sound interventions that ultimately improve the quality of patient care .A**im of the study** was to determine the effect of implementing evidence based nursing Guideline on nurses' performance related to care providing for children at Pediatric Intensive Care Unit. A quasi-experimental research design.. **was used. Subjects and Method**: A conveniences sampling of 40 nurses. Two t**ools** were used to collect the data**:** Sociodemographic characteristic ,nurses' knowledge of Evidence Based Nursing guideline and nurses' practice of Evidence Based nursing by using observational check list. **The results** revealed that significant improvement in nursing knowledge and practice after the implementation of Evidence Based nursing guideline. **conclusion** most of the nurses have poor knowledge and practice score pre implementation and significant increase post implementation . **Recommendation** : Nurses should provide knowledge and practice in accessing and appraising research that is relevant to their practice guideline. Besides, it is also crucial that the organizations should provide the facilities and support in implementing evidence-based performance guidelines to optimize child nursing care.

Keywords: Evidence Based Nursing Guideline, performance, pediatric intensive care unit.

Introduction

Evidence-based practice is important to provide safe, quality care and improved patient outcomes [(1)]**.** Evidence based practice is considered to be an important aspect of quality care and therefore' an essential requirement for Magnet designation [(2)]**.**

The evidence based process is to identify a problem in current practice which would represent a trigger for change in practice. The first step is followed by the second step which entails a review and critique of relevant literature. The third step is to identify research evidence that supports the change in clinical practice. The final step is to implement the change in practice and monitor the outcomes [(3)]**.**

Evidence based practice and nursing can be embraced and linkage practised without losing the art and the caring side of nursing while providing care that is still individualized and patient centered. Evidence-based practice is regard as foundational to quality care and has been shown to low costs and variability in care [(4)]**.** Healthcare leaders recognize EBP as an complementarity part of achieving quality outcomes and attaining a high reliability.

Evidence-based practice is much broader. It sets out to answer a clinical question by exploring all available research evidences, and then merged the clinician's expertise with the patients' preferences and values before recommending a practice change [(4)]**.** Process of evidence based practice similar the components of the nursing process which include: Identifying the clinical practice question or problem; Assessing the clinical appraisal components; Planning the implementation; Implementing the practice change; and evaluating the practice change[(5).] Evidence-based practice enables nurses to provide a high-quality patient care based on research and knowledge rather than because "this is the way we have always done it" or based on traditions, myths, hunches, advice of colleagues, or outdated textbooks. For example, when clinical questions arise, should one look to a nursing textbook for the answers [(4).]**.** To improve EBP application, factors such as ability to review EBP literature, nurse education (qualification) and nurses' attitudes to EBP application should be given substantial attention in order to complete quality patient care [(6,7)]**..**Implementation must not only consider what knowledge to be implemented, but how knowledge is also facilitated in the context where it will be used [(8)]**.**Successful implementation is the function of knowledge, context and

facilitation according to the frame work "Promoting action on Research Implementation in Health Care [9].

Significant of the problem

Nursing is the backbone of most health care systems and core and specialist nursing practice needs to be evidence-based to ensure delivery of quality patient care. There is a significant gap between research and practice most of the nursing practices are based on ward routine and hospital guidelines rather than on the latest evidence. The Institute of Medicine [10] has established a goal that 90% of healthcare decisions will be evidenced based by the year 2020[10, 11]. Despite the confirmation on EBP, there is often a delay between research and implementation at the bedside. Barriers to research utilization and EBP adoption have been identified over the years. Assessing organizational culture has been identified as a necessary first step in to overcoming common barriers [12].

Aim of the study was to:

Determine the effect of implementing evidence based nursing guideline on nurses' performance related to care providing for children at Pediatric Intensive Care Unit.

Research hypothesis:

Implementation of Evidence Based Nursing guideline expected to be improved nurses 'knowledge and practice related to care providing for children at Pediatric Intensive Care Unit

Subjects and Method

Research design:

A quasi-experimental research design was used

Setting:

This study was carried out at Pediatric Intensive Care Units of Menoufia University Hospital.

Subject: conveniences sampling composed of 40 nurses were included in the present study.

- Age from 1 to 18 years
- Sepsis.
- Traumatic Injury.
- Shock.
- Stroke.
- Ruptured Brain Aneurysm.

Tools of Data Collection

Two tools were used in the present study:

Tool I: **Part I** Nurses' Socio demographic assessment tool which included; nurses' years of experience at pediatric intensive care unit, age in years, educational degree, current position, sex and attendance of previous training courses related to evidence based performance.

Part II: Nurses' knowledge of Evidence Based Nursing Guideline assessment Tool: prepared by researcher after review of

recent and relevant research[13,14].to assess nurses' knowledge related to evidence based nursing related to caring of children. It comprises 10 questions in a form of multiple choice questions such as; evidence-based practice in nursing is considered as a guide to successful implementation ,definition evidence based performance understanding ,evidence based practice information, process of EBP implementation steps ,the patient ,intervention, compare, outcome and time PICOT framework guides , lower body temperature , endotracheal intubation route, ventilator humidifier change ,blood sample pain control and Kinetic versus standard beds

Nurses knowledge was be scored as following:

- Correct and complete answer was scored(2)
- Correct and incomplete answer was scored (1)
- Wrong answer or don't know was scored(0)

The total score of nurses' knowledge was calculated and classified into three levels as follows:

Less than 60% was considered as poor knowledge.

60- 74% was considered as fair knowledge.

75-100 % was considered as good knowledge.

Tool II: Nurses performance of Evidence Based nursing guidelines by using observational check list. This tool was used to assess nurses' performance related to pediatric intensive care children care as follows: hand washing, use of a protective, use of open circuit aspiration system, use of closed circuit aspiration system ,use of oral route for endotracheal intubation, use of nasal route for endotracheal intubation, exercise frequency, breathing exercise, use of spirometer therapy, , frequency of ventilator circuit changes time ,blood and fluid warmer machine or traditional warmer methods ,frequency of bacterial filter changes, open versus closed suction systems with sterile water or saline , cold compressor sites or warm compressor , bladder training vacation with urinary catheter or not, Kinetic vs. standard beds ,replacement of humidifiers, axillary temperature measurements and venipuncture or drawing all blood sampling from central line

.Some procedures was recommended and others was not be recommended.

The total score of nurses' performance was calculated and classified into three levels as follows:

Complete and correct done was given score (1)

Incorrect or not done was given score (0)

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

Less than 75% was considered unsatisfactory practice.

From75to 100 was considered satisfactory

Method

1. An official Permission was carried out the study from the responsible authorities
2. Ethical and legal consideration :

   a-Ethical committee approval was obtained

   b-Natural of the study was not cause harm or pain for the entries sample .

   c-Privacy and confidentiality was put into consideration regarding data collection
3. Study tools was developed by researcher based on review of related literature to assess nurses 'performance of evidence based nursing.
4. Tools Validity**:** Tools of data collection were translated into Arabic and investigated for content validity by three juries (two in Pediatric nursing from the Faculty of Nursing, Tanta University, and one of Medicine, Menoufia University who are experts' in such related field and selected to test the content validity of the instruments and to judge its clarity, comprehensiveness, relevance, simplicity, and accuracy. All of the remarks were taken into consideration; some items were re-phrased to reach the final version of the tools. The tools were regarded as valid from the experts' point of view.
5. . A pilot study was carried out on (4)(10%) of nurses to test the tool for its clarity, applicability, feasibility and theses nurses will be excluded from the study and the necessary modification was done A Pilot study.
6. The suitable statistical test was used for testing questionnaire reliability.
7. Nurses' knowledge assessment tool was filled in the clinical area by the studied nurses in presence of the researcher (Tool I part II).
8. Nurses' performance Observation checklist was filled out by the researcher who will be available 2 days per week alternatively in different study settings to assess the actual nurses' performance before, immediately from application of intervention (Tool II).
9. Study phases: the present study was conducted within four phases:

1-Assessment phase: It included assessment of nurses' knowledge and performance of evidence based nursing related to high risk children care using Tools I(part II) & II

2-Preparatory phase: It involves reviewing the national and international related literature concerning the studied topic and gathering the tools of the study.

3-Implementation phase: The intervention guidelines implementation included the following steps:

a. Setting objectives of the intervention guidelines.

b. Preparation of the content which covered the reasons behind the application of the session.

c. The evidence based guideline was conducted in the 4th sessions; two sessions per week. The time of each session was about 45-60 minutes.

d. Different methods and media of teaching was used including lectures, group discussion, demonstrations and hand outs

e. The nurses were divided into four subgroups and every group consist of 10 nurses

Evidence Based Nursing Guideline recommended practice at pediatric intensive care unit.

To identify relevant evidence, databases were searched (MEDLINE, EMBASE, PubMed, text book, CINAHL, Cochrane collaboration, a Database of Systematic Reviews and Register for Controlled Trials) .There are 15 strategies on the guidelines:

(1): Hand washing and use of A protective gloves every approach child found a direct relationship between hand washing and protective gloves responses and participation in infection control projects. Increased hand washing and use of protective gloves frequency was found amongst those participating in such projects which may stem from heightened awareness about infection control measures [(15)].

(2): Use of closed circuit aspiration system, Preventing the healthcare worker from being exposed to aerosolized secretions, nurses answered that closed suction as the recommended suction system in prevention of spread of infection[(16)]..

(3) : Oral route for endotracheal intubation effect for drainage of subglottic secretions are specialized tubes with a separate dorsal lumen which suctioning through the lumen removes

oral and gastric secretions from the subglottic space, preventing micro aspiration that could lead to a decrease in chest infection . Subglottic secretion drainage is associated with a decrease in infection incidence and the incremental cost of these tubes is considered to be reasonable given the burden of illness associated [16].

(4) Incentive Spirometry is a good idea to practise deep breathing and coughing, less pain, discomfort from wound following operation, reduce chances of chest infection, give patients a chance to involve in care and save staff time and costs [17].

(5) The available evidence suggests no patient harm and considerable cost savings associated with extended ventilator circuit change intervals. The maximum duration of time that circuits can be used safely is changes every week, which is the commonly practised; and change for every new patient as the same circuit should not be used on two different patients. The other participants mentioned that current guidelines suggest changes only for new patients or when circuits are soiled [18].

(6) Intravenous fluid or blood warmer machine used for emergency situations and even potential dangers. Using warm water to heat fluid bags may take more time to reach the required temperature and carries a risk of bacterial contamination. Electric warmers often need external batteries that take vital time to assemble and need to be kept. Some chemical reactions can heat fluid above normal body temperature, potentially damaging the blood product [19].

(7) Using of a breathing system filter, placed between the patient and the Y-piece of the breathing system, as the sole means of humidification in patients receiving mechanical ventilation in the ICU is based on a reduction in infection and colonization of patients with Pseudomonas aeruginos[20].

(8) Sterile water is more safe in maintaining patient electrolyte, especially on the first days of operation, nurses agree because sterile water more saves for electrolyte balance, save stock of fluid and money for patient[21].

(9) Warm water is widely used by the public to lower body temperature of children who have fever and could prohibit febrile seizures, warm stimulus on the surface of the skin is

able to change the set-point in the hypothalamus; especially, the anterior causing vasodilation, also the warm compress can increase evaporation, conduction and even radiation . Compresses with warm water using a temperature of (34- 37º) or lukewarm can make the outside temperature be felt warm and the body will interpret that the outside temperature is hot enough .Thus, the body will lower the thermostat controls in the brain so as not to increase the body temperature again which is also called the heat transfer by conduction system [22-23].

(10) Bladder and catheter patency solutions are used to protect the patency of bladder and catheter lumen that can become blocked by debris or encrustation. It is instilled into the bladder to dissolve alkaline crystals or remove debris from bladder and catheter lumen to remain patent and draining [24].

(11) Kinetic bed therapy decreases the incidence of nosocomial pneumonia and improves outcomes in critically ill mechanically ventilated child, decreases duration of mechanical ventilation and ICU length of stay as well as hospital length of stay complications[26].

(12) Replacement of humidifiers is safely for at least 48 hours and may be able to be used for one week .These humidifiers provide active humidification of air in which the inspired gases pass across or over a heated water bath. Heated humidifiers may also contain heated wired circuit to avoid formation of ventilator tubing condensate. These humidifiers need their water bath to be constantly refilled when the water solution finished. These humidifiers allow condensation of patient's expired air to be evaporated during inspiration [27].

(13) Axillary temperature is an evidence of child comfort and preference. Oral temperatures are difficult to get in children less than in five years age, rectal temperatures are not recommended for premature infants and potential for bleeding, altered immune systems and rectal abnormalities [28].

(14) Drawing all blood sampling from central line Majority of nurses use a stopcock on the central line as a part of daily lab sample routine because it minimizes time, pain and lower cost. It was observed that painful procedures can alter brain structure, behavioral and hormonal response to pain

children who were in high risk disease [29].

(15) The return of flatus first postoperative bowel movement were more helpful than bowel sounds in determining the return of gastrointestinal mobility after abdominal surgery .This evidence-based project resulted in saving nursing time[30] .

Teaching sessions for nurses was conducted as the follows:

The first session: Definition of Evidence Based Performance, Evidence based practice information as a guide to implement, infection control by hand washing.

The second session: The PICOT framework guides, lower body temperature, endotracheal intubation.

The third session: Ventilator humidifier changes , blood sample pain control and Kinetic versus standard beds

The fourth session: Application of evidence based performance.

The application of EBP Process is an inquisitive approach to clinical care. Evidence based practice performance beginnings with a clinical question and seeks to know the evidence that backing the care delivered. Evidence-based practice involves a process that can be described in a number of steps as outlined below (Melnyk, Fineout-Overholt &Williamson, 2010) [13] .

Step 0: Planting a spirit of inquiry. Evidence based practice performance begins by cultivating a spirit of inquiry. Clinical inquiry becomes a routine part of practice and ongoing curiosity is fostered.

Step 1: Ask the PICOT question.

(P) patient population of interest,

(I) intervention or area of interest,

(C) comparison intervention or group,

(O) outcome,

(T) time.

Step 2: Search for the best evidence. The PICOT framework guides the search for relevant evidence to answer the clinical question. Database searches using key words or phrases enable to identify articles to inform practice on the topic of interest.

Step 3: Critically appraise the evidence. This step involves a systematic evaluation of the articles retrieved in the search.

Study results are analyzed for validity and reliability, as well as applicability to other clinical settings. Information is synthesized to determine if there is enough evidence to backing current practice or if there is a recommendation for practice change.

Step 4: Integrate the evidence with clinical expertise and patient preferences and values. Research evidence is deem along with patient assessments, clinical expertise

and data; patients' preferences and values are also taken into account.

Step 5: Evaluate the outcomes of the EBP practice change.

After implementing an EBP change, outcomes are evaluated to determine the effect of the intervention.

Step 6: Disseminate the outcomes. Lessons learned should be shared with colleagues. (Melnyk et al., 2015) [14].

4-Evaluation phase:

Evaluation of nurse's knowledge and performance was done immediately and one month post implementing of Evidence based nursing guidelines using Tools II & III.

The data: Collection of data was carried out from the beginning of January, 2019 to the end of January, 2020.

Statistical analysis: The data collected were organized, tabulated and statistically analyzed using statistical science (SPSS) version 21 for windows. Descriptive statistics were applied (e.g. frequency, percentages, mean and standard deviation). Test of significance, Chi-square "X2", were used to test the study hypothesis. Reliability of the study tools was done using Cronbach's Alpha. A significant level value was considered when $p < 0.05$ and a highly significant level value was considered

RESULTS

Table (1): The subjects comprised 40 nurses working at Pediatric intensive care unit, concerning educational degree; near half (47.5%) have technical degrees and only (2.5%) holding PHD degree, more than half (60%) of them aged less than 20 years and more than a third while the same percent (35%) had less than 5 and from 5 to 10 years of experience while only7.5% of them received previous EBN training.

Table (2): Demonstrates that nurses' knowledge score has been increased dramatically immediately post 97.5% compared to 22.5% in the pre implementation of evidence based guideline related to a guide to successful. In addition; the same table illustrated that less than a fifth and the same percent 15% of the nurses give correct and complete answers pre being compared to majority 95% of them immediately post the implementation of evidence based guideline related to The Steps and PICOT. More over; three fourths 75% of the nurses give incorrect answers in the pre, compared to none of them immediately post the implementation of evidence based guideline related to, definition while small and the same percent 2.5% of the nurses give correct incomplete answers immediately post compared to 45%, 50%

and 30% pre the application of evidence based guideline related to endotracheal intubation , infection control by hand washing and Kinetic versus standard beds; respectively. Also, this table showed that the total mean ± SD knowledge scores highly increased immediately after the implementation of evidence based nursing guidelines to 19.62±.80 compared to 5.25±3.67 pre application of evidence based nursing guidelines. It was noticed that there was a high significant correlation between the total knowledge score pre and immediately post the application of evidence based nursing guidelines in all knowledge items where P 0.00.

Table (3): Illustrated that none and the same percentage of the studied nurses give incorrect answers one month post being compared to three fourths of them 75% pre the implementation of evidence based nursing guidelines as related to; Definition and Kinetic versus standard beds. Moreover the same table presented that only a small and the same percentage 2.5% of the nurses were able to answer the questions correctly and completed in the pre implementation which has been increased dramatically to 92.5%, 95% and 95% as related to ; PICOT ,ventilator humidifier change and Kinetic versus standard beds; respectively, one month post the implementation of evidence based nursing guidelines. In addition; less than half and same percentage 45% of the nurses give correct incomplete answers in the pre compared to the small percentage 10% and 5% one month post the implementation of evidence based nursing guidelines related to lower body temperature and endotracheal intubation respectively. It was noticed that there was a high significant correlation between total knowledge score pre and one month post implementation of evidence based nursing guidelines where P value equals 0.00. Also, this table showed that the mean knowledge score highly increased one month post compared to pre the implementation of evidence based nursing guideline 5.25±3.67 and 19.17±1.0 ; respectively, with high a significant correlation.

Table 4:. It is was noticed that there was a high significant correlation between the total practice score pre and one month post the implementation of evidence based nursing guidelines where P value equals 0.00. Also, this table showed that the good practice score highly increased one month post being compared to pre the application of evidence based nursing guideline 85% and 17.5; respectively, with a high significant correlation.

Table (5): Illustrated that evidence performance recommended procedures guidelines pre the application less than(55%) and only (70%),(72.5) in Hand washing and use of a protective gloves every approach child and Frequency of bacterial filter changes every three days respectively was recommended compared to post application evidence all recommended procedure performance take more than (95%) such as axillary temperature measurements, replacement of humidifiers and Kinetic versus standard beds and also in follow up one months .Also it is was notice that there was a high significant correlation between evidence performance recommended procedure guideline pre and one month post implementation of evidence based nursing guidelines where P value equal 0.00.

Table (6): Illustrated that not recommended evidence performance procedures guidelines pre the application more than(70%) in breathing exercise , Children bed ,replacement of humidifiers each week ,oral and rectal temperature measurements, venipuncture for drawing all blood sampling and hearing bowel sounds of patients who undergone abdominal surgery in pre implementation evidence based practices compared to immediate post and one month post all not recommended performances less than (5%) where P value equal 0.00.

Table (7): It is evident from the table that there was a highly statistical significant positive correlation between age and level of education with the total knowledge and total practice pre evidence based nursing guidelines implementation where $p < 0.00$ each while there was no correlation between level of education immediately and one month post evidence based implementation where p .918 and .086; respectively, except the total knowledge was affected by age where $p < 0.00$ one month post implementation of evidence based nursing guidelines

Table (8): Revealed that two thirds 67.5% of nurses had poor level scores of practice pre the application of evidence based nursing guidelines compared to none of them one month post the application. In addition; majority of them 85% had good the total practice levels post compared to less than fifth17.5% pre the implementation of evidence based nursing guidelines and there was no significant correlation between the total practice level pre and one month post the guidelines application where p value equals .052.

Table 1: Percentage Distribution of the studied nurses' related to their socio demographic characteristics.

Socio-demographic characteristics	(n=40)	
	No	%
Age -< 20 years -20 < 40 years - 40< years	 24 14 2	 60 35 5
Mean ± SD	2.3000 ±.56387	
Sex -Male -Female	 5 35	 12.5 87.5
Level of education • Technical Degree • Bachelor Degree • Master Degree • PhD Degree •	 19 18 2 1	 47.5 45 5 2.5
Position • Technical • Head of unit • Total	 5 35 40	 12.587.5% 100%
Years of Experience • < 5 years • 5 < 10 years • 10 < 15 years • 15<20 years • Total	 14 14 10 2 40	. 35% 35% 25% 5% 100%
Previous Training • Yes • No • Total	 3 37 40	 7.5% 92.5% 100.0

Table 2: Distribution percentage of nurse's knowledge score pre and immediately post application of evidence based nursing guideline

Evidence-based knowledge	Groups				X2	P value
	Pre		Immediately Post			
	No	%	No	%		
A guide to successful						
No	31	77.5	1	2.5	46.875	0.00
Yes	9	22.5	39	97.5		
Definition						
Incorrect	30	75	0	0	67.105	0.00
Correct incomplete	9	22.5	3	75.5		
Correct complete	1	2,5	37	92.5		
Steps						
Incorrect	15	37.5	0	0	52.035	0.00
Correct incomplete	19	47.5	2	50		
Correct complete	6	15	38	95		
PICOT						
Incorrect	15	37.5	0	0	52.035	0.00
Correct incomplete	19	47.5	2	5		
Correct complete	6	15	38	95		
Lower body temperature						
Incorrect	19	47.5	0	0	72.290	0.00
Correct incomplete	20	50	1	2.5		
Correct complete	1	2,5	39	97.5		
Endotracheal intubation						
Incorrect	22	55	0	0	72.800	0.00
Correct incomplete	18	45	2	2.5		
Correct complete	0	0	38	95.		
Infection control by hand washing						
Incorrect	18	45	0	0	68.581	0.00
Correct incomplete	20	50	1	2.5		
Correct complete	2	5	39	97.5		
Ventilator humidifiers change time						
Incorrect	20	50:	0	0	65.200	0.00
Correct incomplete	18	45	2	5		
Correct complete	2	5	38	95		
Blood sample pain control						
Incorrect	26	65	0	0	76.098	0.00
Correct incomplete	13	32.5	0	0		
Correct complete	1	2.5	40	100		
Kinetic versus standard beds						
Incorrect	25	62.5	0	0	65.165	0.00
Correct incomplete	12	30	1	2.5		
Correct complete	3	7.5%	39	97.5		
M± SD	M± SD Pre		M± SD Post		Paired t	Sig
	5.25±3.67		19.62±.80		39	0.00

Table 3: Distribution percentage of nurses knowledge score pre and one month post the application of evidence based nursing guidelines

Evidence-based knowledge	Groups				X	P value
	Pre		1 Month post			
	No	%	No	%		
Aguide to successful						
No	31	77.5%	5	12.5%	34.141	0.00
Yes	9	22.5	35	87.5%		
Definition						
In correct	30	75%	0	0%	61.1714	.000
Correct incomplete	9	22.5%	6	15%		
Correct complete	1	2.5%	34	85%		
Steps						
In correct	15	37.5%	0	0%	46.211	0.00
Correct incomplete	19	47.5%	4	10%		
Correct complete	6	15%	36	90%		
PICOT						
In correct	19	47.5%	0	0%	65.670	0.00
Correct incomplete	20	50%	3	7.5%		
Correct complete	1	2.5	37	92.5%		
Lower body temperature						
In correct	22	55%	0	0%	66.909	0.00
Correct incomplete	18	45%	4	10%		
Correct complete	0	0%	36	90%		
Endotracheal intubation						
In correct	18	45%	0	0%	65.127	0.00
Correct incomplete	20	50%	2	5%		
Correct complete	2	5%	38	95%		
Infection control by hand washing						
In correct	20	50:%	0	0%	65.200	0.00
Correct incomplete	18	45%	2	5%		
Correct complete	2	5%	38	95%		
Ventilator humidifiers changes						
In correct	26	65%	0	0%	69.169	0.00
Correct incomplete	13	32.5%	2	5%		
Correct complete	1	2.5%	38	95%		
Blood sample pain control						
In correct	25	62.5%	0	0%	59.300	0.00
Correct incomplete	12	30%	3	7.5%		
Correct complete	3	7.5%	37	92.%		
Kinetic versus standard beds						
In correct	30	75%	0	0%	69.557	0.00
Correct incomplete	9	22.5%	2	5%		
Correct complete	1	2.5%	38	95%		
Total knowledge (mean± SD	**%(mean± SD)** Pre		**%(mean± SD)** Post		Paired T	Sig
	(5.25±3.67)		(19.17±1.0)		39	0.00

Table 4: Total score of practice pre evidence ,immediately post and one month post.

Total practice level	Pre evidence		Immediately post		One month's post		P	Sig
	N	%	N	%	N	%	.201	0.00
Poor	27	67.5%	0	0%	0	0%		
Fair	6	15%	0	0%	6	15%		
Good	7	17.5%	40	100%	34	85%		

Table 5: Distribution percentage of recommended procedures pre, immediately and one month post implementation of evidence based nursing guidelines

Recommended performance	Groups						X	P value
	Pre		Immediately Post		1 Month post			
	No	%	No	%	No	%	19.57	0.00
Hand washing and use a protective gloves every approach child	28	70	39	97.5	39	97.5		
Use of closed circuit aspiration system	20	50	40	100	39	97.5	45.65	0.00
Oral route for endotracheal intubation	19	47.5	39	97.5	39	97.5	45.65	0.00
Spirometer therapy	10	25	40	100	40	100	43.03	0.00
Frequency of ventilator circuit changes each week for child	22	55	40	100	40	100	45.65	0.00
Warm blood by warmer machine	15	38.5	39	97.5	39	97.5	80.00	0.00
Frequency of bacterial filter changes every three days	29	72.5	40	100	39	97.5	45.65	0.00
suction systems with sterile water	15	37.5	40	100	40	100	43.35	0.00
Warm compressor	20	50	40	100	39	97.5		
Bladder training vacation with urinary catheter	14	35	38	95	38	95	53.52	0.00
Kinetic versus standard beds	7	17.5	39	97.5	38	95	45.65	0.00
Replacement of humidifiers	12	30	40	100	39	97.5	20.56	0.00
Axillary temperature measurements	11	27.5	39	97.5	38	95		
Drawing all blood sampling from central line	10	25	40	100	39	97.5	63.16	0.00
The return of flatus	7	17.5	40	100	38	95	45.65	0.00

Table 6: Distribution percentage of not recommended procedures pre, immediately and one month post implementation of evidence based nursing guidelines

not recommended performance	Groups						X	P value
	Pre		Immediately Post		1 Month post			
	No	%	No	%	No	%		
Hand washing with alcohol between procedure	12	30	1	2.5	1	2.5	19.57	.00
Use of open suction circuit aspiration system	20	50	0	0	1	2.5	45.65	0.00
Nasal route for endotracheal intubation	21	52.5	1	2.5	1	2.5	43.03	0.00
Breathing exercise	30	75	0	0	0	0	80.00	0.00
Frequency of ventilator circuit changes every new child	18	45	0	0	0	0	43.35	0.00
Warm blood with traditional method	25	62.5	1	2.5	1	2.5	53.52	0.00
Frequency of bacterial filter changes every child	11	27.5	0	0	1	2.5	20.56	0.00
Suction systems with saline	25	62.5	0	0	0	0	63.16	0.00
Cold compressor	20	50	0	0	1	2.5	43.98	0.00
Urinary catheter without vacation	26	65	2	5	2	5	51.20	0.00
Children bed	33	82.5	1	2.5	2	5	78.81	0.00
Replacement of humidifiers each week	28	70	0	0	1	2.5	68.84	0.00
Oral and Rectal temperature measurements	29	72.5	1	2.5	2	5	64.52	0.00
Venipuncture for drawing all blood sampling	30	75	0	0	1	2.5	75.77	0.00
Hearing bowel sounds of patients who undergone abdominal surgery	33	82.5	0	0%	2	5	82.85	0.00

Table (7) Correlation between age, level of education with total knowledge, total reported practice and throughout evidence based guideline performance

Variable	Age		Level of education	
	r	p-value	R	p-value
Total knowledge pre	.818**	0.00	.880**	0.00
Total practice pre	.841**	0.00	.841**	0.00
Total knowledge immediately post	. 366*	. 020	.017	.918
Total practice immediately post	. 207	.200	.094	.563
Total knowledge 1 month post	.491**	. 001	.275	.086
Total practice 1 month post	. 207	. 200	.094	.563

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

Table (8): Distribution of the studied nurses according to their total practice level pre and after one month post evidence based guideline (n=40).

Total practice level	Pre (40)		After one month		X2	P- value
	No	%	No	%		
Poor	27	67.5	0	0	.725	.052
Moderate	6	15	6	15		
Good	7	17.5	34	85		

Discussion

Evidence based guideline is an opportunity for intensive care nurses to become involved in making significant changes in nursing care. It is essential that nurses become empowered to use the knowledge available to implement evidence based nursing guidelines. Specific knowledge and skills are required to search and appraise the available evidence to determine when evidence supports the need for a practice change. Providing nurses with the time to develop these skills and ensuring support through mentors is crucial to implementation [(31)].

The current study revealed a great lack of nurses knowledge regarding evidence based guidelines in pediatric intensive care unit before the application of evidence based guidelines ; all nurses had a poor knowledge score level . It agrees with those [(32)]who found over three quarters of respondents that they needed more education and skills in EBP. This reflects the lack of scientific education and skills in EBP. Resources such as computer and internet access should be available in intensive care units for online research and journals access, a lack of time has frequently been identified as an important barrier to applying research into practice[(33)]. Appropriate resources must be made available for the implementation of evidence based nursing guidelines [(34)].

Implementation of the present study reflects a significant improvement of nurses knowledge after the application evidence based guidelines so they need to be encouraged to search for answers for questions regarding nursing care not only with senior colleagues but also on electronic resources and recent journal articles, therefore, there is a need that they become familiar with such modern databases and resources. [(35)] Recommends that all hospitals should have educational training programs for their staff to improve adherence to evidence based guidelines. They also recommend that hospitals encourage staff involvement in educational advancement and performance improvement projects[(35)].

The result of the present study revealed that there was a significant positive correlation among nurse's knowledge , age and level of education before the implementation of evidence based guidelines [(31)]. Evidence-based practice: collaboration between education and nursing management agreeing) age may also affect the degree as to which nurses apply prevention measures in evidence based where EBP can been enculturated. Competencies can be used as a tool to

support high quality care and can be built into a number of processes, such as performance appraisals, clinical ladders or other structures to aid in EBP implementation [35].

In the present study found that all nurses had a poor performance score before the implementation evidence based practice supported by[35]nurses persist in performing practices that are not supported by evidence and also fail to implement those with ample research evidence such as using saline for endotracheal suctioning and using an air bolus to fix a placement of a nasogastric tube (NGT) are perpetuated even though there is a large body of research showing these practices are "not helpful and may even be harmful" [36-37] who is in agreement with the present study and mentioned that the mean performance was low in pre-evidence guidance and increased immediately post-evidence guidance . Also[35] show that databases , accessing , critiquing Clinical Practice Guidelines , literature ,engaging and mentoring staff throughout the steps of EBP will empower clinical staff while promoting independence [35].

The synthesis of large bodies of knowledge into clinical practice guidelines is one method of improving accessibility and utility of medical literature to health care professionals for the management of critically ill patients, guidelines can improve outcomes and costs of critical care to patients and institutions [38].

Evidence based guideline was chosen as one of five core competencies along with providing patient centered care applying quality improvement principles, working in professional teams, and use of health information technologies[10] .Further validating the critical role of EBP in improving quality of care.

In the present study, the majority of the nurses was negative attitude towards EBP but after the implementation most of them was positive attitude towards EBP. [11] Many factors; however, can facilitate use of EBP implementation including adequate time, education, access to information, organizational support, mentors, resources, increased awareness of and a positive attitude towards EBP ,this agree [39] [35] [32] . Creating a supportive organizational culture is a key to improve and sustain EBP [32.The following studies highlight some key facilitating factors of EBP implementation, including positive attitude, mentors, resources and education [36] .Those that reported a greater use of EBP held force beliefs about the importance of EBP and had more knowledge of EBP than those who

reported less use of EBP in current practice. The presence of a research mentor and use of Cochrane Database also correlated positively with an increased Implementation of evidence to practice [40]

Conclusion

The present study has shown that EBP was implement significantly associated with nurses' level of education and suggests that nurses with degrees are better placed to review and apply EBP than nurses with a lower level of education. The most common hindrance to EBP implementation was reported to be resources as high patients and few nurses, lack of resources and time to apply, lack of EBP guidelines and formal evaluation criteria can also limit their ability to advocate for EBP application.

Recommendations

Need to develop more nurse graduates and expose nurses to more research courses, as the findings show that the level of education plays a great role in EBP implementation. This will improve both nurses' academic qualification and attitudes to EBP implementation. Resource availability plays a key role in EBP implementation . There is ;therefore, a need for the hospital management to design and develop a staff working model that takes into consideration factors such as patient-to-nurse ratio, balance between routine duties, time for research and training and resources for the EBP implementation.

A follow-up study on the postgraduate nurse's role in bridging the gap in routine practices and EBP in the clinical environment enable nurses to understand of the management role in incorporating research findings into clinical and enhancing EBP application in clinical areas.

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Emotional Intelligence, Perceived Social Support and Mental Health of Institutionalized Elderly

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Abstract: Many life circumstances such as physical health, income and social support, may decline in later adulthood, older adults who are higher in emotional intelligence may adjust their life goals and use more effective emotion regulation strategies, such as cognitive reappraisal, to enhance their life and their affective well-being. **The objective of this study** was to determine the relationship between the emotional intelligence, social support and mental health of institutionalized elderly. **Design**: A correlational descriptive design was used. **Setting**: The study was conducted at Dar- El Saada geriatric home in Tanta city. **Subjects:** selected only 54 older adults who were passed by cognitive impairment test. **Three tools** used for this study: **tool I**: Emotional intelligence scale, **tool II**: Multidimensional perceived social support, **tool III**: General Health Questionnaire 28 item. **Result:** The results of this study showed that the majority of the studied subjects had low emotional intelligence. And there was low percentage of subjects (83.3%) had low social support levels. Also it was found that two thirds of the studied subjects had poorer mental health. **Conclusions**: The results concluded that there was a significant positive relation between emotional intelligence and social support. The study also found negative relation between emotional intelligence and poor mental health, also the study found a significant negative relation between mental health of elderly and their level of perceived social support. **Recommendation:** Future researches are needed to find out exactly how older adults with higher emotional intelligence cope with the changing life circumstances to maximize their well-being.

Key words: Emotional intelligence, Elderly, Metal health, Social support.

Introduction

One of the main features of the Egyptian population over the last few decades is the gradual increase in the absolute and relative numbers of older people [(1)]. The Egyptian census is carried out every 10 years, the percent of older people "defined as 60 years of age and more" was 6.27% in 2006, 8.9% in 2016 and expecting the figure rising to10.9 in 2026 [(2)]. with regard to the fact that the elderly's mental and physical abilities reduces due to senility, various diseases and mental problems that threaten their health make the elderly's health is of particular importance. Therefore, increasing elderly population is one of the most important economic, social, and health challenges in the present century [(3)].

Mental health is one of the important aspects requiring special attention to prevent mental disorders such as depression and anxiety moreover, mental health has a big impact on physical health, (for example, coexisting depression in people with diabetes is associated with decreased adherence to treatment, higher complication rates, decreased quality of life, increased disability and increased risk of death). Conversely, people with medical conditions such as heart disease, diabetes, asthma and arthritis have higher rates of depression than those who are medically well [(4, 5)].

Various studies indicated that greater vulnerability to mental disorders has been observed in those who are institutionalized which make it essential to investigate the factors that determine the mental health of that population [(6, 7)]. Mental health can be affected by many factors such as poverty, social isolation, loss of independence, and loneliness. Older adults are more likely to experience events such as sadness or physical disability that affect emotional well-being and can result in poorer mental health. They may also be exposed to abuse at home and in care institutions [(8-10)]. On the other side, it is necessary to identify factors that can promote and have a positive impact on the wellbeing of this group. Among these factors, the construct of emotional intelligence are likely to have a protective role in the mental health outcomes of this population [(11)], and can predict an individual's greater psychological adjustment [(12)]. Emotion is somewhat unaffected by aging or even enhanced with age, in comparing to most cognitive functions [(13)]. Aging is connected with improved emotional problem solving and increased frequency of positive feelings [(14)].

Emotional intelligence (EI) is a generic ability in perceiving emotions both in one and in others. This ability helps the individual to regulate his emotions and cope effectively with emotive situations [15]. It is defined as ``the ability to monitor one's own and others' feelings and emotions, to distinguish among them, and to use this information to guide one's thinking and action" [16]. Emotional intelligence (EI) is made up of four key emotional abilities: accurate perception, appraisal, and expression of emotions; access to and/or generation of feelings that facilitate thought; understanding of emotions and generation of emotional knowledge; and regulation of emotions by improving emotional and intellectual growth [17].

Generally, emotional intelligence play an effective role in detecting appropriate emotional responses in the face of everyday events, broadening the vision, and creating a positive attitude towards events and emotions. Healthier Individuals who accurately perceive and appraise their emotional states can effectively regulate their emotional states, know how and when to express their feelings .These characteristics, can deal with the perception, expression, and regulation of moods and emotions, suggests that there is a direct connection between emotional intelligence and physical as well as mental health [18,19].

Compared to secure persons, insecure individuals are found to be less adjusted on measures of well-being including loneliness, depression, anxiety, hostility and psychosomatic illness. Insecure attachment has been consistently associated with low levels of emotional well-being and high levels of depression and anxiety [20]. Perceived social support has been found to be an important determinant for improving the Quality of Life of older people. Psychological well-being among older adults can be enhanced by social support. Instrumental support (e.g., affection, companionship, transportation, and nursing care, etc.) has been found to play a primary role in increasing older persons' self-esteem, competency, and autonomy. Especially, the support of family as well as friends can make an important contribution to older adults' well-being. These social networks can give older adults a sense of belonging[21].

Social support consist of interpersonal communication and interaction, love and understanding, caring and concern, affection and companionship, financial assistance, respect and acceptance. Many

studies have confirmed the contributions of social supports to the life satisfaction of older people. People in different living arrangements also vary across indicators of social support. To the extent that particular types of living arrangements define these social conditions, it is important to understand how they influence life satisfaction [22].

The most frequent cause of emotional suffering is a late-life depression and is also found to be a risk for poor self-rated health over time. The prevalence of psychological distress increased by decreasing social status. The negative effect of somatic health problems on social support implies that social support may be a moderator in the relationship between somatic disorders and psychological distress. Because somatic health problems tend to reduce social support, which is a risk factor for mental health problems, somatic health problems increase the risk of mental health problems [23].

Having a high level of social support from multiple sources (e.g., family, friends, significant other) allow individuals to re-appraise the unlikable situations, share their upsetting emotions, and seek alternatives to cope, thereby enhance the possibly harmful impacts of negative events on mental health. Consequently, it is believable to assume that social support might lead to improved psychological well-being of individuals [24]. Therefore this study was aimed to evaluate the effect of emotional intelligence on mental health of institutionalized elderly.

Aim of the study: The aim of the study was to determine the relationship between the emotional intelligence, perceived social support and mental health of institutionalized elderly.

Research question:

Is there a relation between the elderly emotional intelligence, perceived social support and their mental health?

Subjects and methods;

Research Design:

A descriptive correlation design was used for the current study.

Setting:

The study was conducted at Dar- El Saada geriatric home in Tanta city which contain about 50-60 older adults living in it. This setting serves El-Gharbia, el-menofia, and Khafr-Elsheik Governorate.

Subjects: 54 older adults participated in this study who have the following **inclusion criteria**:

- Selecting only participants who were passed by cognitive impairment test
-Age 60 and above
-Willing to participate in the study

Exclusion criteria:

-Cognitive impairment

-Drug addict

-Mentally retarded

Data Collection Tools:

Three tools were used to collect data for this research:

The Mini Mental State Examination (MMSE) [25], it was used before embarking in the actual study to measure the cognitive function of the elderly to include in this study. And it was developed by **Folstein MF, Folstein SE, McHugh PR**. (1975), it consisted of 11-question measure that tests five areas of cognitive function: orientation, registration, attention and calculation, recall, and language. The maximum score is 30. A score of 23 or lower is indicative of cognitive impairment.

1-Emotional intelligence scale: it was developed by Schutte et al (1998) , [26] It was used to evaluate emotional intelligence (measuring a person's belief in his/her emotional ability) This scale includes 33 items divided into four subscales ; mood regulation (15) items, emotional appraisal (8 items), emotional utilization (5) items, and social skills (5) items , there are 5 responses for each question ranging from strongly disagree (1) to strongly agree (5). In the study the Likert scoring procedure (5, 4, 3, 2, and 1) for reversed questions (5, 28, 33) the scoring is reversed and the total scale score ranges from 33-165

The score ranged from 33 to 165, with the higher scores indicating more characteristic emotional intelligence. The mean emotional intelligence score is 124; higher scores indicate higher levels of emotional intelligence:

Scores below 111 indicate low level of emotional intelligence or above 137 are considered higher levels of emotional intelligence.

2-Multidimensional perceived social support scale (MSPSS), [27] It was developed by (Zimet, Dahlem, Zimet & Farley, 1988) and designed to measure perceptions of support from 3 sources: Family, Friends, and Significant other. The scale is comprised a total of 12 items, with 4 items for each subscale, there are 7 responses for each question ranging from very strongly disagree (1) to very strongly agree (7)

Scoring system:

The minimum and maximum score that can be acquired from each total score is 12 and 84 respectively, and 4 and 28 respectively for each subscale.

A total score of 12–48 is taken as poor perceived social support,

49–68 as moderate perceived social support and,

69–84 as high perceived social support

3-General Health Questionnaire 28 items (GHQ). It was developed by **Goldberg and Hillier (1979)**, [28] used to diagnose brief –non psychotic disorders it consisted of 28 items classified into four subscales; somatic symptoms, anxiety & insomnia, social dysfunction, and severe depression, each subscale consisted of 7 items, there are 4 responses for each question ranging from (1) not at all, (2) no more than usual, (3) rather more than usual (4) much more than usual). In the study the Likert scoring procedure (1, 2, 3, and 4), the total scale score ranges from 28 to 112. The higher the score the poorer mental health of the subjects.

The maximum score for each subscale in this questionnaire is 28. Any score is equal or more than 5 is deemed a positive case or affected.

The tools of the study supported by Interview Schedule Questionnaire contain socio-demographic characteristics of elderly which include: age, sex, marital status, residence, level of education, occupation, income, causes of admission, duration of admission.

Methods:

- Official permission to conduct the study was obtained from faculty of nursing to the responsible authorities to facilitate the researchers' work.
- Ethical consideration:

* Approval of the ethical committee was obtained before conducting the study.
* A written informed consent was taken from elderly to participate in the study after explanation of the purpose of the study.
* The participants were reassured about the confidentiality and privacy of the obtained information.
* Respecting the elderly rights to refuse to participation in the study and to withdraw at any time from the study.
* This study caused no harm for the subjects.

-The tool 1, 2, 3 was translated into the Arabic language by the researchers of the study.

- The tools were tested for its content validity by a jury composed of 5 experts in the field of psychiatric nursing, the expert panels were asked to evaluate the questions after translation according to readability, language appropriateness to avoid biases, and ease of understanding items.

-A pilot study was carried out on 10% (8) older adults to ascertain the clarity, visibility, and applicability of the study tools and its translation, as well as to determine any obstacles that may be encountered during the time of data collection. Accordingly the necessary modifications were done and those older adults were excluded from the study subjects.

- Chronbach's Alpha coefficient of reliability of tool I is 0.70–0.85
- Chronbach's Alpha coefficient of reliability of tool II, Overall internal consistency was excellent (Chronbach's Alpha= .88)
- Chronbach's Alpha coefficient of reliability of the subscale of the tool III vary around 0.82 and the internal consistency of the total scale of the tool III is 0.92

Data collection

-The studied elderly were selected based on the inclusion criteria for participation in the study and according the Mini Mental State Examination.

-Tools of the study distributed on the subjects in an individual basis and the subjects were asked to fulfill the questionnaire in the presence of the researcher for any clarification, help and guidance.

-Each interview lasted for about 20-35 minute for fulfilling the three tools according to elderly attention and willingness.

-Data of the study were collected prospectively by the researchers over a period of 3 months starting from October 2017 and ended at December 2017

Statistical analysis:

- The collected data was organized, tabulated, coded and statistically analyzed using SPSS software statistical computer package version(25).
- Statistical presentation and analysis of the present study was conducted using, for quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient r. A significance was adopted at $P<0.05$ for interpretation of results of tests of significance (*). Also, a highly significance was adopted at $P<0.01$ for interpretation of results of tests of significance (**).

Results

Table (1) Presents the distribution of the studied subjects according to their socio-

demographic characteristics. As their age ranged between 60-77 years with a mean age of 66-20±4.676 years. The results revealed that the highest percentage of the studied subjects (37%) aged between 60-65, and 35.2% aged between 65-70 years and the lowest percentage of them (3.7%) aged more than 75 years. It was also found that 51.9% of the studied subjects were female and 48.1% were widowed, and 33.3% of them were divorced. As for living residence (72.2%) of patients were from urban areas and (27.8%) of them were from rural area.

Concerning their educational level (38.9%) of subjects had secondary school education, and only 11.1% of them were illiterate. Regarding their job 77.8% of the studied subjects were retired and only 22.2% do not work. It was found that 75.9% of the studied subjects said that their income was enough, and 44.4% of them were admitted the geriatric home for reason of loneliness. Also 63% of them had less than 5 years for duration of stay and 37% had 5 or more duration of stay in the geriatric home.

Table (2) Showed the total level of Schutte Self Report Emotional Intelligence Test (SSEIT). The results revealed that the high score of the subscale mood regulation /optimism was 55.6% and the range was 22-68 with a mean of 46.17±13.718, indicating low level of emotional intelligence. High score of the subscale emotional appraisal was 48.1% and the range was 14-39 with a mean of 26.28 ±8.426, indicating low level of emotional intelligence. Also high score of the subscale emotional utilization was44.4% and the range was10-23 with a mean of 17.19±4.019, indicating low level of emotional intelligence, and high score of the subscale social skills was 79.6% and the range was 8-26 with a mean of 17.13±4.674 , indicating low level of emotional intelligence. As total level of Self Report Emotional Intelligence was 70.4% of the studied subjects had low emotional intelligence.

Table (3) Revealed the percent distribution of the studied subjects regarding their total level of perceived social support. The results showed that low score of subscale significant others was 75.9% and the range was 4-23 with a mean of 11-13±6.069, indicating low social support from significant others, and low score of subscale family was 92.6% and the range was 4-28 with a mean of 10-00±4.802, indicating low social support from family. Also low score of subscale friends was 74.1% and the range was 4-25 with a mean of 14-33±5.241 indicating low social

support from friends, and the total score of perceived social support of subjects (83.3%) had low social support levels.

Table (4) Presents the percent distribution of the studied subjects regarding their total level of General Health Questionnaire (GHQ). The results revealed that high score of subscale somatic symptoms was 61.1% and the range was 8-24 with a mean of 17-26±4.443, indicating high level of somatic symptoms, and high score of subscale anxiety and insomnia was 53.7% and the range was 8-26 with a mean of 17-74± 6.559, indicating high level of anxiety and insomnia. There was low level of social dysfunction (57.4%) and the range was 9-25 with a mean of 19-80±4.877, indicating low level of social dysfunctions. High score of severe depression was 61.1% and the range was 7-26 with a mean of 17-24±6.333, indicating high level of severe depression .It was found that (59.3%) of the studied subjects had low mental health.

Table (5) Presents the comparison and correlation between total level of Self Report Emotional Intelligence Test (SSEIT), total level of Perceived social support and total level of General Health Questionnaire (GHQ) among the studied subjects. The results revealed that there was a significant positive relation between emotional intelligence and the studied subjects' perceived social support at r=0.545, p=0.00. While there was a significant negative relation between emotional intelligence and the mental health of elderly at r=-0761, p=0.00.

Table (6) Illustrates the relation between the intelligence, social support, and the mental health of elderly (general health). As there was a significant negative relation between the mental health of elderly and the studied subjects' emotional intelligence at r=-0.761, p=0.00. And also there was a significant negative relation between the mental health of elderly and the studied subjects' level of perceived social support at r=-0.404, p=0.002.

Table (7) Clarifies the correlation between socio-demographic characteristics and total level of Schutte Self Report Emotional Intelligence Test (SSEIT), total level of Perceived social support and total level of General Health Questionnaire (GHQ) among the studied subjects. It was found a significant negative correlation between elderly age and their emotional intelligence at r=-0.440, p=0.001 and also a significant negative correlation between elderly age and their social support at r=0.310, p=0.023, but the present study found a significant positive correlation between elderly age & their mental health at r=0.399, p=0.003. As for gender it was

found a significant positive correlation between female elderly & their mental health at 0.0439, p=0.001.

Regards marital status it was found a significant negative correlation between single elderly and their emotional intelligence at r=-0.490, p=0.00, and also had a negative one with their social support at r=-0.584, p= 0.00, but it was found a significant positive correlation between single elderly and their mental health at r=0.282, p=0.039. There was a significant positive correlation between married elderly and their emotional intelligence at r=0.388, p=0.004, and had a negative one with their mental health at r=-0.401, p=0.003. There was a positive correlation between divorced elderly and their emotional intelligence at r=280, p=0.004, and had a negative one with their mental health at r=-0.330, p=0.015. There was a positive correlation between widow elderly with their mental health at r= 0.344, p= 0.011.

In relation to educational level, there was a positive correlation between the study subjects' educational levels and their emotional intelligence, social support at r=0.562, p=0.00, r=0.378, p= 0.005 respectively, but there was a negative correlation between the study subjects' educational levels and their mental health at r=-0.577, p=0.00.

As regards elderly job, there was a positive correlation between the study subjects 'retirement and their emotional intelligence at r=0.399, p=0.003, and there was a positive correlation between the study subjects retirement and their social support at r= 0.275, p=0.044, but a negative one between the study subjects retirement and their mental health at r=-0.424, p= 0.001. It was found a negative correlation between the study subjects duration of stay in the geriatric home and their emotional intelligence at r=-0.327, p=0.016, and also with their perceived social support at r=-0.375, p=0.005, but a positive one between the study subjects duration of stay in the geriatric home and their mental health at r=0.365,p= 0.007.

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

Socio-demographic Characteristics	The studied elderly (n=54)	
	N	%
Age (in years)		
▪ 60 <65	20	37.0
▪ 65-<70	19	35.2
▪ 70-<75	13	24.1
▪ ≥75	2	3.7
Range	**(60-77)**	
Mean ± SD	**66.20±4.676**	
Gender		
▪ Male	26	48.1
▪ Female	28	51.9
Marital status		
▪ Single	6	11.1
▪ Married	4	7.4
▪ Divorced	18	33.3
▪ Widow	26	48.1
Residence		
▪ Urban	39	72.2
▪ Rural	15	27.8
Educational level		
▪ illiterate	6	11.1
▪ primary	15	27.8
▪ Secondary	21	38.9
▪ University	12	22.2
Job		
▪ Retired	42	77.8
▪ Don't work	12	22.2
Income		
▪ Enough	41	75.9
▪ Not enough	13	24.1
Reason for admission		
▪ Leaving home for son marriage	10	18.5
▪ Loneliness	24	44.4
▪ Family conflict	14	25.9
▪ His family desire	6	11.1
Duration of stay (in years)		
▪ < 5	34	63.0
▪ ≥5	20	37.0
Range	**(0.5-10.0)**	
Mean ± SD	**3.702±2.76**	

Table (2) Distribution of the studied subjects according to their total level of Schutte Self Report Emotional Intelligence Test (SSEIT).

Emotional Intelligence of elderly	The studied elderly (n=54)	
	N	%
Mood regulation/optimism		
▪ (14–46) Low	30	55.6
▪ (47-58) Average	14	25.9
▪ (59–70) High	10	18.5
Range	**(22-68)**	
Mean ± SD	**46.17±13.718**	
Emotional appraisal		
▪ (8–26) Low	26	48.1
▪ (27-33) Average	13	24.1
▪ (34–40) High	15	27.8
Range	**(14-39)**	
Mean ± SD	**26.28±8.426**	
Emotional utilization		
▪ (5–16) Low	24	44.4
▪ (17-21) Average	19	35.2
▪ (22–25) High	11	20.4
Range	**(10-23)**	
Mean ± SD	**17.19±4.019**	
Social skills		
▪ (6–20) Low	43	79.6
▪ (21-25) Average	8	14.8
▪ (26–30) High	3	5.6
Range	**(8-26)**	
Mean ± SD	**17.13±4.674**	
Total Schutte Self Report Emotional Intelligence		
▪ < 111 Low	38	70.4
▪ (111-137) Moderate	4	7.4
▪ >137 High	12	22.2
Range	**(56-156)**	
Mean ± SD	**106.76±27.249**	

Table (3) : Percent distribution of the studied subjects regarding their total level of Perceived Social Support.

Types of Perceived Social Support by the level	The studied elderly (n=54)	
	N	%
Form significant others		
▪ (4–16) Low	41	75.9
▪ (17-22) Average	10	18.5
▪ (23–28) High	3	5.6
Range	**(4-23)**	
Mean ± SD	**11.13±6.069**	
From family		
▪ (4–16) Low	50	92.6
▪ (17-22) Average	3	5.6
▪ (23–28) High	1	1.9
Range	**(4-28)**	
Mean ± SD	**10.00±4.802**	
Form friends		
▪ (4–16) Low	40	74.1
▪ (17-22) Average	8	14.8
▪ (23–28) High	6	11.1
Range	**(4-25)**	
Mean ± SD	**14.33±5.241**	
Total level of Perceived Social Support		
▪ (12–48) poor	45	83.3
▪ (49–68) Moderate	9	16.7
▪ (69–84) high	0	0.0
Range	**(13-68)**	
Mean ± SD	**35.46±11.681**	

Table (4) Distribution of the studied subjects according to their total level of general health questionnaire.

General Health Questionnaire	The studied elderly (n=54)	
	N	%
Somatic Symptoms		
▪ (7–19) High	33	61.1
▪ (20–21) Average	12	22.2
▪ (22–28) Low	9	16.7
Range	**(8-24)**	
Mean ± SD	**17.26±4.443**	
Anxiety and Insomnia		
▪ (7–19) High	29	53.7
▪ (20–21) Average	6	11.1
▪ (22–28) Low	19	35.2
Range	**(8-26)**	
Mean ± SD	**17.74±6.559**	
Social Dysfunction		
▪ (7–19) High	18	33.3
▪ (20–21) Average	5	9.3
▪ (22–28) Low	31	57.4
Range	**(9-25)**	
Mean ± SD	**19.80±4.877**	
Severe Depression		
▪ (7–19) High	33	61.1
▪ (20–21) Average	8	14.8
▪ (22–28) Low	13	24.1
Range	**(7-26)**	
Mean ± SD	**17.24±6.333**	
Total General Health Questionnaire		
▪ **(28–78) High**	32	59.3
▪ **(79–86) Moderate**	4	7.4
▪ **(87–112) Low**	18	33.3
Range	**(39-99)**	
Mean ± SD	**72.04±18.917**	

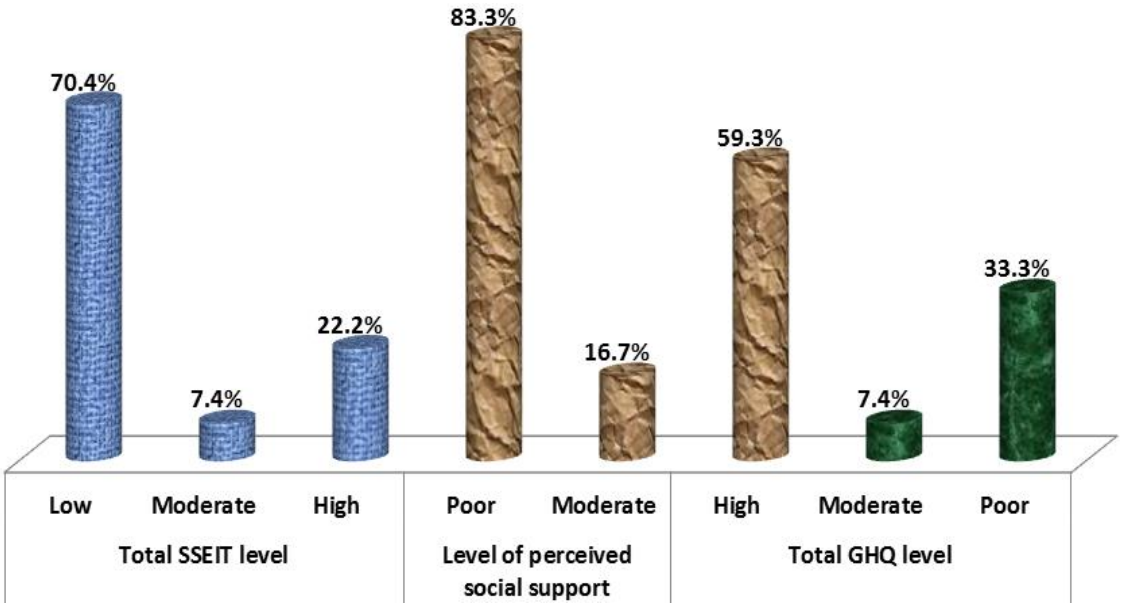

Figure: Percent distribution of both total level of Schutte Self Report Emotional Intelligence Test (SSEIT), total level of Perceived social support and total level of General Health Questionnaire (GHQ) among the studied elderly.

Table (5) Comparison and correlation between total level of Self Report Emotional Intelligence Test (SSEIT), total level of Perceived social support and total level of General Health Questionnaire (GHQ) among the studied elderly.

	Total SSEIT level (n=54)						**χ^2 P**
	Low (n=38)		**Moderate (n=4)**		**High (n=12)**		
	N	**%**	**N**	**%**	**N**	**%**	
Total level of perceived social support							
▪ Poor	34	63.0	4	7.4	7	13.0	**7.232**
▪ Moderate	4	7.4	0	0.0	5	9.3	**0.027***
r , P	**0.545 , 0.00****						
Total level of GHQ							
▪ High	19	35.2	1	1.9	12	22.2	**39.012**
▪ Moderate	1	1.9	3	5.6	0	0.0	**0.00***
▪ Low	18	33.3	0	0.0	0	0.0	
r , P	**-0.761 , 0.00****						

* Significant at level P < 0.05

** Highly significant at level P < 0.01

Table (6): The relation between emotional intelligence, social support, and the mental health of elderly (general health)

	Total level of GHQ (n=54)						**χ^2 P**
	high (n=32)		**Moderate (n=4)**		**Low (n=18)**		
	N	**%**	**N**	**%**	**N**	**%**	
Total SSEIT level							
▪ low	19	35.2	1	1.9	18	33.3	
▪ Moderate	1	1.9	3	5.6	0	0.0	**39.012**
▪ High	12	22.2	0	0.0	0	0.0	**0.00***
r , P	**-0.761 , 0.00****						
Total level of perceived social support							
▪ Poor	23	42.6	4	7.4	18	33.3	**7.425**
▪ Moderate	9	16.7	0	0.0	0	0.0	**0.024***
r , P	**-0.404 , 0.002****						

Table (7) Correlation between socio-demographic characteristics and total level of Self Report Emotional Intelligence Test (SSEIT), total level of Perceived social support and total level of General Health Questionnaire (GHQ) among the studied elderly.

Socio-demographic Data	**Total SSEIT score**		**Total Perceived social support scores**		**Total GHQ Score**	
	r	**P**	**r**	**P**	**r**	**P**
Age (in years)	**-0.440**	**0.001****	**-0.310**	**0.023***	**0.399**	**0.003****
Gender						
▪ Male	0.160	0.249	-0.061	0.661	**-0.439**	**0.001****
▪ Female	-0.160-		0.061		**0.439**	
Marital status						
▪ Single	**-0.490**	**0.00****	**-0.584**	**0.00****	**0.282**	**0.039***
▪ Married	**0.388**	**0.004****	0.251	0.067	**-0.401**	**0.003****
▪ Divorced	**0.280**	**0.04***	0.233	0.090	**-0.330**	**0.015***
▪ Widow	-0.159	0.251	0.016	0.909	**0.344**	**0.011***

Residence ▪ Urban ▪ Rural	0.062 -0.062	0.657	0.086 -0.086	0.539	-0.155 0.155	0.262
Educational level	**0.562**	**0.00****	**0.378**	**0.005****	**-0.577**	**0.00****
Job ▪ Retired ▪ Don't work	**0.399** **-0.399**	**0.003****	**0.275** **-0.275**	**0.044***	**-0.424** **0.424**	**0.001****
Income ▪ Enough ▪ Not enough	-0.154 0.154	0.265	-0.007 0.007	0.958	0.050 -0.050	0.721
Duration of stay (in years)	**-0.327**	**0.016***	**-0.375**	**0.005****	**0.365**	**0.007****

* Significant at level P < 0.05

** Highly significant at level P < 0.01

Discussion

Emotional intelligence can be explained by lifelong learning and also it can be improved through practice. Young adults have few opportunities than older adults to practice emotional intelligence throughout their lives. Consequently, older adults have better understanding of emotions and use better emotional regulation strategies than younger adults [(29)].

Social support has a beneficial effect on psychological well-being, it refers to an extent to which "one's perceptions of supportive behaviors from individuals in their social network [(24)]. Socialization influences the emotions of individuals as it provides essential skills and habits necessary for interactions in the society. It enables an individual to have self-awareness while alone and in group, motivate to move positively and handle one's own and other's emotions. Since elderly people require more emotional care, socialization helps in gaining better emotional maturity when associated with peer group [(30)].

Emotional Intelligence has a significant impact on psychological, social and physical adjustment according to numerous studies. However most of those findings are related to young and middle aged samples and little is known about the association between emotional intelligence and well-being among older people. [(31)] So this study was aimed to evaluate the association between the emotional intelligence, social support and mental health of institutionalized elderly.

The present study revealed that there was a significant positive relation between emotional intelligence and social support. **Toyama et al 2017** confirmed this result as they stated that the results showed that emotional intelligence was directly and positively associated with social support, work environment, and creativity. This finding extends prior evidence indicating that higher emotional intelligence can improve the effectiveness of social support [(32)]. Also it is indicated that in principle, all the dimensions of emotional intelligence construct correlate positively with the dimensions of perceived social support [(33)].

The present study found negative relation between emotional intelligence and mental health as if emotional intelligence were high, the mental health were low so, older adults may obtain higher emotional intelligence through learning from their life, and collected knowledge subsequently, they may be more likely to use the emotional intelligence to regulate their emotions and less perceived stress and increase their life satisfaction and

affective well-being. This is in line with **Chen Y et al 2016,** as they found emotional intelligence had a positive relationship with both life satisfaction and affective well-being. Individuals who have higher emotional intelligence are also having higher life satisfaction and experience more frequent positive association to negative affect [(29)]. Also the results showed that between emotional intelligence and life satisfaction among the elderly of Sardasht city, there is a significant positive correlation [(34)]. **Also Rahmawti et al, 2017**, stated that emotional intelligence has significant relation with psychological well-being. Meaning that if emotional intelligence, self-esteem, self-efficacy are high, the score of psychological well-being is also high [(35)].

The mental health of elderly was related negatively to their level of perceived social support. This is due to the elderly don't receive social support and their health is at risk if social unity is poor. Conversely, a high level of social support protects people from illnesses. Social support reduces the adverse effects of mental stress. In older adult communities, it should be said that older people who receive more social support and participate in different aspects of social life more than others, enjoy more favorable mental health. This is the same with **Harandi et al 2017**, who stated that perceived social support can inhibit the adverse physiological complications of diseases and increase self-care among older people. In the field of social support on patients' mental health, patients certainly find themselves in an insecure situation and seek for support that decreases their anxiety and discomfort, and thus, social support in such a situation can reduce their anxiety and discomfort [(36)].

In consistent with **Kafetsios 2016 ,**who stated that persons with secure support models use emotional regulation strategies to minimize stress and emphasize positive emotions and those with support insecure models follow emotion regulation strategies that emphasize negative emotions and stressful situations, or tend to inhibit emotional experiences. This has obvious consequences for the link with both well-being and social support processes. Older adults have smaller support networks but the close relational networks (marital and familial relationships) are better established in later adulthood [(21)].

The results of the this study found a significant negative correlation between elderly age and their emotional intelligence which came in consistent with **Atkins**

2005, who stated that younger adults who use more emotions in decision-making appear to find it more hard to control strong negative emotions and prevent them from hindering their work. However, this becomes progressively less true for older adults [37]. In contrast to diminishing associated with physical and cognitive aging, emotional aging appears to profit from age. Shifts in cognitive processing of emotional stimuli, enhanced emotional motivation and emotional competence likely contribute to improvements [38].

In contrast to the present study **Chen Y et al 2016,** who found in their study a positive relationship between age and emotional intelligence, suggested that older adults may gain higher emotional intelligence due to lifelong learning and collected knowledge [29].

The result showed that there was a significant positive correlation between married women elderly and their emotional intelligence, and had a negative one with their mental health. This related to women may feel less control over emotions, negative events and more responsible for emotional tone in relationships.

The present study revealed that there was a positive correlation between the study subjects' educational levels and their emotional intelligence, social support, but there was a negative correlation between the study subjects' educational levels and their mental health. This is due to the increased level of education makes the individuals more knowledgeable, more mature in their behaviors and able to accept facts, and the higher socialization and communication with others. As regards elderly job, there was a positive correlation between the study subjects 'retirement and their emotional intelligence and there was a positive correlation between the study subjects retirement and their social support, but a negative one between the study subjects retirement and their mental health, this related to those who have worked for many years are nearing retirement age and thus they are expected to be better prepared for retirement than who don't work. As working help older individuals to experience successful aging.

Conclusion:

The results found that there was a significant positive relation between emotional intelligence and perceived social support. and there was a significant negative relation between emotional intelligence and mental health as if emotional intelligence were high, the mental health were low, also the study found a significant negative relation

between the mental health of elderly and their level of perceived social support.

Recommendations:

Based on the results of the current study researchers recommended that:

- Establish workshops and holding seminars about emotional intelligence for elderly according to their cognitive ability from health care professionals.
- Future researches must focus on establishing the causal links among features of emotional processing, retirement and mental health concurrently and over time.
-Future researches are needed to find out exactly how older adults with higher emotional intelligence cope with the changing life circumstances to maximize their well-being.
- Development of group activities in elderly homes and social communities that will contribute to reducing isolation and loneliness in the elderly.
- Immediate need for socialization programs to elderly has to be taken care of and should be encouraged in future researches to enhance mental health and life quality in old age.

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