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Health Consequences of Child Marriage in Rural and Urban Communities: Comparative Study

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Abstract:

Background: Child marriage threatens children's well-being and constitutes multiple violations of their rights. The aim of this study is to assess health consequences of child marriage in rural and urban communities. **Design:** A descriptive comparative design. **Setting:** Study was conducted atone maternal & child health center and one health unit for both urban and rural communities respectively, Menoufia governorate, Egypt. **Subjects:** A purposive sample of 370 women attended at mentioned places. Instruments: Structured interviewing questionnaire included: socio-demographic data, women perception and attitudes of child marriage, and perception bio-psycho-social health consequences of child marriage. **Results:** the prevalence of child marriage was 18.5%, the majority of the studied women have poor perception of the child marriage, there was no statistical significant difference regarding the perception of reasons for child marriage, which includes: tradition, education failure, insufficient income or poverty, & the marriage of a cousin or a relative, by 35.8% in rural area and 40.5% in urban area.. Finally, there was high statistical significant difference regarding bio psychosocial consequences of child marriage between urban and rural communities. **Conclusion:** Child marriage prevalence in rural and urban areas was significant problem and has negative adverse bio psychosocial consequences for both urban and rural communities. **Recommendation:** raising awareness about negative outcomes of child marriage by intensifying the health education activities and enhancing culture &community perception.

Keywords: Child marriage, Health consequences, Woman's health.

Introduction

Child Marriage is defined as a marriage of a girl or a boy before the age of 18 years and refers to both formal marriages and informal unions in which children under the age of 18. Child marriage affects both girls and boys, but it affects girls disproportionately [(1)]. The Universal Declaration of Human Rights recognizes the right to "free and full" consent to a marriage, acknowledging that consent cannot be "free and full" when one of the individuals involved is not sufficiently mature to make an informed decision about a life partner [(2)].

The prevalence of child marriage is found to be higher in the rural areas in the developing world. According to UNFPA, 44 percent of the women between the ages of 20-24 in rural areas are entering marriage before they reach adulthood, in contrast to the urban areas, where only 22 percent of women in the same age are being exposed to child marriage [(3)].

Perception and attitudes of child marriage which are the broad domain of social norms, ethics, morals, values, rights, culture, tradition, spirituality and religion, and feelings about self and others are rooted in many issues [(1)].Causes of child marriage include; poverty, dowry, cultural traditions, laws that allow child marriages, religious and social pressures, regional customs, fear of remaining unmarried, illiteracy, natural disasters and war. All of these increase the chance of sexual violence against girls, protecting the family honor and family ties in which marriage is a means of consolidating powerful relations between families [(4)].

Consequences of child marriage are drawn in isolated and limited freedom, married girls often feel disempowered. They are deprived of their fundamental rights to health, education and safety. Child girls are neither physically nor emotionally ready to become wives and mothers. Young married girls are more likely to be illiterate and of low social status. They tend to have no access to financial resources and restricted mobility; they are limited in their ability to obtain information on reproductive health, contraception and sexually transmitted infections, complications in pregnancy and childbirth and suffering domestic violence [(5)].

Child marriage is a form of violence which disproportionally affects girls. One

in three women and girls experience violence in their lifetime, while parents often marry their daughters as a way of protecting them from harm. Child marriage exposes girls to intimate partner violence, including sexual, physical, psychological and emotional violence **(6).**

Community health nurse has a big role in identifying immense need to undertake research on deeper understanding of the determinants of child marriage from girls' own perspectives, while giving the importance of child marriage and its impacts on health of adolescents and the role of culture as the main determinants of age at marriage. It will contribute to designing and developing culturally responsive interventions and improving the health programs for this girl**(7).**

Working with communities to change their attitudes toward girls through ensuring that girls are more highly valued, supporting girls to stay in school and continue their education and providing safe spaces and support networks for girls at risk for child marriage .Nursing role is also Engaging with religious leaders to encourage them to take a greater role in condemning child marriage and changing community attitudes and patriarchal attitudes whilst also supporting young people and youth groups to become agents of change. Using media channels to raise awareness and highlight the negative consequences of child marriage**(8)**.

Significance of the study

According to the Egyptian Census of population at 2017, child marriage remains an issue. In Egypt, nearly 1 in every 20 girl between the age of 15 to 17 years off married and 1 in every 10 (11%) adolescent girl's years are either currently married or were married before with large differentials between the rural and urban residence. In Egypt 17% of girls are married before the age of 18and 2% are married before the age of 15. According to UNICEF, Egypt has the 13th highest absolute number of child married girls in the world **(9).**

Purpose of the study: Assess health consequences of child marriage in rural & urban areas.

Research questions: The following research questions are formulated to achieve the purpose of the study**:-**

- What is the prevalence of child marriage in rural and urban communities?
- What are the women's perception and attitudes for child marriage in rural and urban communities?

- What are the health consequences of child marriage in rural and urban communities?

Subjects and Methods

Design: A descriptive comparative design was used to achieve this study.

Study Setting: This study was conducted in maternal & child health center (MCH),Al-Shohadaa district as an urban community and health unit, Met Abo El-Kom village as a rural community , Tala district, Menoufia governorate, Egypt .A multistage random selection of the setting according to the following steps as: Two districts from all districts of Menoufia governorate (nine districts) were selected using simple random sample. These districts were Al Shohadaa and Tala as mentioned.

Study Subject: Calculation of prevalence of the child marriage among studied women at the beginning single questions for 2000 women attended to two previous mentioned settings about current age and age at marriage to determine the frequency of child marriage among women, The sample of 370 women married early derived from total number of 2000, the study conducted for six months.. Subjects were recruited female from Al Shohadaa and Tala as 50 % for rural and 50 % for urban communities that selected from the previously mentioned settings according to the following inclusion criteria:

- Women married prior to 18 years and have at least one child birth.
- Women married for at least 2 years to ensure that they experienced the marital life.

Sample size calculation: calculation for the current descriptive study rendered 370 women who married early based on 2000. Calculation of the sample size to assess the health consequences of child marriage in rural and urban areas.

The following sample size equation was used:

$$n = \frac{z^2_{(1-\alpha/2)} p(1-p)}{d^2}$$

Where:

n **=** Sample size

$\mathbf{Z^2_{(1-\alpha/2)}}$ **=** reliability coefficient

P= Percent of outcome in the population

d **= precision = 5%**

Our assumptions were:

- Reliability coefficient = 1.96
- Percent of child marriage in the population (*p*) =17% (prevalence rate of child marriage among girls

in the Middle East according to (UNICEF, 2015) [10].

- Precision = 5%
- Ratio of rural : urban is 1 : 1

So the calculated sample size for this descriptive study rendered 370 females, who experienced child marriage, and based on the ratio of rural / urban is 1: 1 (i.e.185 in each group). Participant females from each of rural or urban area were selected randomly by the researcher.

Study Instrument

Structured interviewing questionnaire (p1) :

Developed by the researchers after reviewing the related national and international literature, discussion with experts to collect data about the subjects and was written in simple Arabic language to suit level of understanding of the subjects. It contained the following parts:

-Socio-demographic characteristics included name, age, sex, marital status occupation, address, level of education and monthly income.

-Women perception and attitudes toward child marriage such as family tradition, educational status, family income and endogamy.

-Women perception about bio-psycho-social health consequences of child marriage.

Scoring system

The questionnaire contained, items related to the participants' demographic criteria as current age , age of marriage, residence, level of education as well as women' knowledge assessment items; two responses as (1) for "No" answer, and (2) for "Yes" answer. The questionnaire was evaluated giving total score of4 – 8 degree categorized arbitrary into "good knowledge" when the woman achieved more than >50% of the total score, and "poor knowledge" was considered when the mother achieved less than or equal to ≤ 50% of the total score. Concerning attitude of women, the researcher studied it in a list of 11 items, each item was two responses as (1) for "not agree" (2) for "agree"; The questionnaire was evaluated giving a score of 11 – 22 categorized arbitrary into "positive attitude" when the woman achieved more than> 50% of the total score and "negative attitude" was considered when the mother achieved less than or equal to ≤ 50% of the total score.

Validity and Reliability

Validity of the questionnaire was assessed using content validity by three experts in the fields of family and community health nursing, maternal & newborn health nursing and community medicine. The

relevancy, clarity, fluency and simplicity of each component in the questionnaire were examined and needed modifications were applied.

Reliability of the tool was tested by (test-retest) manner for the measuring of the internal consistency by administration of the same tool to the same participants on two or more occasions, with two weeks apart between them, and then results were compared by Cronbach score of reliability test which was R= 0.81 %.

Cronbach score of reliability test was done also to the second part of the tool (perception of causes of child marriage), third part (women attitude toward child marriage) and the fourth part (Perception of adverse bio-psycho-social health consequences of child marriage) of the tool with Cronbach alpha of 0.83,0.80 and 0.78 respectively.

Pilot Study

A pilot study was conducted on 10 % women to assess the feasibility of the study as well as clarity and objectivity of the tools. The needed modifications were incorporated to add or omit questions if needed, the time required for tool fulfillment were calculated. Pilot study sample were excluded from the total study sample size.

Administrative &ethical consideration

An official letter to conduct the study obtained from the administrator of the faculty of nursing then approval of the research was obtained from the Ethics Committee of Scientific Research in the faculty of Nursing, Menoufia University before starting of the study& performed to the administrator of each setting to permit collecting of research data. Ethical considerations included: Apply the subjects' rights to freely choice to participate in the study, the rights of privacy and safety for the subjects were secured and they were allowed to withdraw from the study whenever they wanted.

Field work

-The study conducted firstly by an official permission that was obtained from the directors of both maternal and child health districts.

- Calculation of prevalence of the child marriage among studied women assessed by single questions about current age and age at marriage to determine the frequency of child marriage among women after calculation of the sample size, the study

conducted for six months.

-The researcher introduced herself to the women, the aim of the study was explained .Selecting for counseling room in both rural and urban areas for the subjects interview in order to assure privacy and freely reporting information, the room has two seats for the subject and researcher in order to keep confidentiality.

-Oral consent was obtained from participants after explanation of the purpose of the study to gain their cooperation with promise of close confidentiality of data.

- A structured interview was conducted individually for the study subjects the tool was questionnaire given for each woman under observation of the researcher. While illiterate women the researcher helped them to fill it, questionnaire took about 20-30minute to be answered.

-The interview was carried out for two days(Saturday& Tuesday per week from the 10 :00 AM to 1:00 PM according to available number of females for six months at February - July (2019).

Statistical Analysis

Data was coded and transformed into specially designed form to be suitable for computer entry process. Data was entered and analyzed by using SPSS (Statistical Package for Social Science) statistical package version 22. Graphics were done using Excel program.

Quantitative data as age were presented by mean (X) and standard deviation (SD). Qualitative data were presented in the form of frequency distribution tables, number and percent. It was analyzed by chi-square (χ^2) test. However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used(if the table was 4 cells) , or Likelihood Ratio (LR) test (if the table was more than 4 cells). Level of significance was set as P value <0.05 for all significant tests.

Results

Fig (1): shows that prevalence of child marriage among 2000 of married woman is 18.5%, the studied women who live in urban areas, showed slightly higher prevalence in age between 14-17 years (97.8 %), with mean of 16.4 ± 1.7 years, compared to 95.7 % among women who live in rural areas with mean age of 15.2 ± 2.1 years respectively however, the difference was not significant statistically (p=0.24 & p=0.71).

Table (1): shows that, 55.1% of the studied females, who live in rural areas, their age was between 16 to 26 years with mean of 23.1 ± 2.7 years, while 44.9% of the studied females, who live in urban areas, their age was between 16 to 26 years with mean of 24.4 ± 3.1 years, the difference was not

significant statistically (P=0.09). The studied females who live in urban areas, showed a slightly higher mean age of marriage (16.4 ± 1.7) years , compared to 15.0 ± 2.1 years among women live in rural area , however, the difference was not significant statistically(P=0.71). The same trend was observed in occupation and marital status (P=0.42, and P=0.07 respectively. Concerning level of education, a higher significant difference of moderate education was observed among females living in urban areas compared to those who live in a rural areas (P=0.001**).**

Table (2) demonstrates that, there were no statistical significant difference among rural and urban studied women regarding to their perception about child marriage except at the point of equality between girls and boys in society .Regardingto the reasons for child marriage, the highest percent was "all of above" (which includes :tradition, education failure , Insufficient income or poverty , & the marriage of a cousin or a relative), 35.8% in rural area and 40.5% in urban area. All family members were encouraged these women to child marriage, with a higher percent in rural area (83.2%) than in urban area (81%), however, this difference was not statistical significant (P=0.55).

Fig (2*)*: shows that there was statistical significant difference p= (0.04) in a total attitude toward child marriage score in rural & urban areas in which rural positive attitude(31.9 %) more than urban (22.7 %), while the negative attitude of rural women (68.1 %) less than the urban females attitude (77.3 %).

Table (3): demonstrates that child marriage effects on their physical health considering the occasional bleeding p= (0.000), and vaginal secretions due to vaginitis (p=0.03) are major health effects with no statistical difference between 90.3% of rural and urban women.

Table (4): demonstrates that psychological effects of CM were highly statistically significant difference in urban areas (100%) than in rural areas (89.2 %) that classified into increased responsibility after marriage(p=0.02) ,stress (p=0.002), women not share in decision making with husband(p=0.01)& misunderstanding with husband (p=0.001),but there was no statistical significant difference in suffering from nervousness because of their marital life (p=0.06).

Table (5): shows that social effects of child marriage among studied women in both rural and urban areas were highly statistical significant in which conflicts between husbands & wives that resulted from psychological reasons, marital reasons & exposure to violence (p=0.000 for each item) so that lead to divorce (p= 0.000).

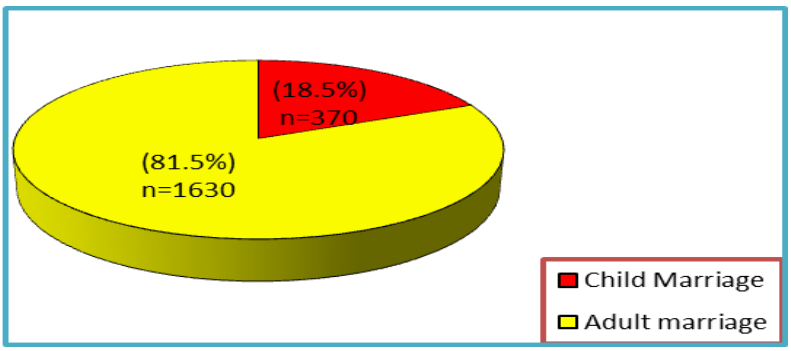

Fig. 1: shows that prevalence of child marriage among 2000 of married woman

Table (1): socio-demographic characteristics of rural & urban studied women distributed by their residence (N = 370)

Socio demographic characteristics		Rural (185)		Urban (185)		X2 P value
		No.	%	No.	%	
Current Age / years	16 - 27 – 38 – 48	102 71 12	55.1 38.4 6.5	83 82 20	44.9 44.3 10.8	X2=4.7, P=0.09 NS
Mean ± SD (Years)		23.1 ± 2.7		24.4±3.1		t=1.12 P=0.43 NS
Age at Marriage	14 -17 Y (n=370)	185	100	185	100	NA
Mean ± SD (Years)		15.0 ±2.1		16.4 ±1.7		t=0.52 ,P=0.71 NS
Educational Level	Illiterate. R& W Moderate education	53 60 72	28.6 32.5 38.9	28 54 103	15.1 29.2 55.7	X2=13.5, P=0.001 Sig.
Occupation	Work Not work	57 128	30.8 69.2	50 135	27 73	X2=0.64, P=0.41 NS
No. Of children	1-3 children 4-6 children	140 45	75.7 24.3	112 73	60.5 39.5	X2=7.6, P=0.002 sig
Marital status	Married Widowed Divorced Other	71 19 54 41	38.4 10.3 29.2 22.2	60 14 47 64	32.4 7.6 25.4 34.6	X2=7.2 P=0.07 NS
Total		185	100	185	100	

NA= Not applicable as all participants in either rural or urban areas were within one age group (14-17 years).

Table (2): Distribution of the studied women according to their perception about child marriage (N = 370)

Perception of child marriage	Rural		Urban		X2 & P value	
	Yes No %	No No %	Yes No %	No No %	X2	P value
Knowing the legal age of marriage in Egypt	40 21.6	145 78.4	45 24.3	140 75.7	0.38	0.53
Child marriage help in the growth of society	6836.8	117 63.2	57 30.8	128 69.2	1.5	0.22
Child marriage happen more among relatives	171 92.4	14 7.6	175 94.6	10 5.4	0.71	0.39
Equality between girls and boys in our society	4423.8	141 76.2	29 15.7	156 84.3	4.1	0.04
The women perception for reasons of child marriage:	**Yes No. %**		**Yes No.%**		**X^2**	**P value**
-Traditions	19	10.3	7	3.8	LR=36.2	0.000 HS
-Education failure	8	4.3	16	8.6		
-Insufficient income or poverty	33	17.8	58	31.4		
-The marriage of a cousin or a relative	53	28.6	23	12.5		
- all the above	66	35.8	75	40.5		
- do not know	6	3.2	6	3.2		
Persons encouraged your child marriage 1-Myself 2- family members 3- I do not know	 22 154 9	 11.9 83.2 4.9	 21 150 14	 11.4 81 7.6	X2=1.2	0.55 NS
Total	**185**	**100**	**185**	**100**		

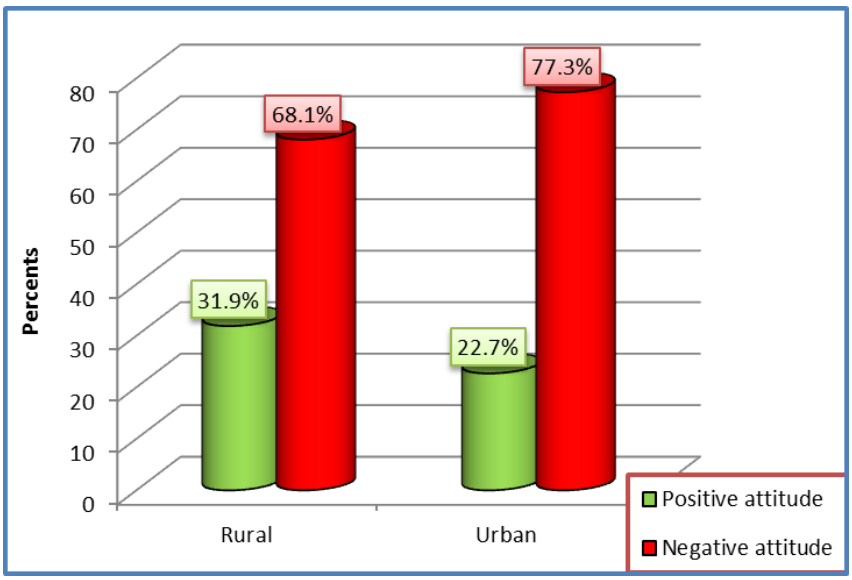

Fig.2: Groups of total attitude score in rural and urban areas toward child marriage

Table 3: Physical health consequences of child marriage among studied women in rural and urban areas.

Physical health consequences of child marriage among studied women in rural and urban areas	Rural (N=185)				Urban(N=185)				X2 & P value	
	Yes		No		Yes		No		X2	P value
	No	%	No	%	No	%	No	%		
Child marriage affect physical health	167	90.3	18	9.7	167	90.3	18	9.7	1.0	0.60 NS
Effect of child marriage on health -Repeated abortion	43	23.2	142	76.8	54	29.2	131	70.8	X2=1.7	P= 0.19 NS
-Occasional bleeding	25	13.5	160	86.5	56	30.3	129	69.7	X2=15.2	0.000 HS
-Vaginal secretions have a bad smell /repeated vaginitis	114	61.6	71	38.4	133	71.9	52	28.1	X2=3.8	0.03 Sig
-Abnormal vaginal bleeding with intercourse	36	19.5	149	80.5	33	17.8	152	82.2	X2=0.16	0.68
- urinary incontinence	74	40	111	60	79	42.7	106	57.3	0.27	0.59
-Different effect	3	1.6	182	98.4	9	4.8	176	95.2	0.15	0.72

Table 4: Psychological effects of child marriage among studied women in rural and urban areas

Psychological effects of child marriage among studied women in rural and urban areas	Rural (N=185)		Urban(N=185)		X2 & P value	
	Yes	No	Yes	No	X2	P value
	No %	No %	No %	No %		
Child marriage affect women psychologically	165 89.2	20 10.8	185 100	0 0	21.1	0.000 HS
If Yes: (N=165) -Responsibilities increased after marriage	163 98.8	2 1.2	185 100	0 0	X2=61	P= 0.02 Sig.
-Suffering from nervousness because of their marital life	165 100	0 0	181 97.8	4 2.2	X2=3.4	0.06 NS
-Suffer from stress due to raising children	160 97	5 3	176 95.1	9 4.9	X2=9.5	0.002 sig
-Sharing the husband's decision-making	60 36.4	105 63.6	85 45.9	100 54.1	X2=8.1	0.01sig
-Feeling misunderstanding with husband	108 65.5	57 34.5	76 41.1	109 58.9	11.1	0.001sig

Table 5: Social effects of child marriage among studied women in rural and urban areas

Social effects of child marriage among studied women in rural and urban areas	Rural (N=185)		Urban(N=185)		X2 & P value	
	Yes	No	Yes	No	X2	P value
	No %	No %	No %	No %		
Child marriage lead to conflicts between wives and their husband	169 91.4	16 8.6	174 94.1	11 5.9	14.3	0.000 HS
• The causes of these conflicts	4 2.4	1 6.2	3 1.7	2 18.2	X2=22.1	0.000 HS
a- psychological reasons	70 41.4	3 18.8	30 17.2	5 45.5		
b- marital reasons exposure to violence	95 56.2	12 75	141 81.1	4 36.3		
Subtotal	169 100	16 100	174 100	11 100		
• The conflict leads to divorce	67 36.2	118 63.8	109 58.9	76 41.1	19.1	0.000

Discussion

Child marriage threatens children's well-being and constitutes multiple violations of their rights. In numerous contexts around the world, the practice has been shown to have profound physical, intellectual, psychological and emotional impacts, especially for girls **(Adhikari, 2015) [6].**

Prevalence of child marriage among 2000 married women.

The current study aimed to assess the prevalence of child marriage in rural and urban communities. The prevalence of child marriage among studied women was (18.5%) in rural & urban areas at marriage with mean age at marriage (15.0±2.1).This result is nearly consistent **UNICEF, 2014 [10]**which reported that 17% of girls in Egypt are married before their 18th birthday. On the other side, this result isn't consistent with **Yount, Crandall & Cheong 2018[11]** which confirmed that 11 % of adolescent girls with mean age at marriage 15 ± 2 years have previously been married.

Socio-demographic characteristics of rural & urban studied women

Regarding to the mean age at marriage according to their residence, the studied females who live in urban areas, showed a slightly higher mean age of marriage (16.4 ± 1.7) years, compared to (15.0 ± 2.1) years among women live in rural area. However, the difference was not statistically significant differences. This agreed with **CAPMAS, (2017) [9]**,which reported that the mean age (15 ± 2.0) are either currently married or were married before, with large differentials between the rural and urban residence ,the highest prevalence is found in rural regions with a relatively high proportion of households. On the other hand, this result was in contrary to **Dube, Sharma, (2015)[12]**, who found that the mean age was (14 ± 1.7) in both regions because of neither recent progress in economic and women's development , nor existing policy or programmatic efforts to prevent child marriage and promote maternal and child health .

Concerning to level of education ,the current study revealed that there was higher significant difference in the level of education between rural and urban areas in which studied women in the illiterate level were in rural 32% and 29% in urban . The moderate education level was 38 %, 55 % in urban respectively. These results were in the same line to a study done by **Pandya and Bhanderi, (2015) [13]**, who found that, the majority of the participants were uneducated 33%, about 32.7% respondentshad up to primary education and 36.6% had middle school education as a cause &.

Regarding to occupation, the current study revealed that majority of studied women not working with no statistical difference between rural and urban areas as a result of big responsibilities and burden of home needs. This study with the same line to **Bani Fatemeh, Abbaszadeh, Alizadeh Aghdam, Mohammadpour, 2018** [(14)]; who reported that 25 percent women are expected to assume domestic responsibilities such as care work, including child and elder care, as well as domestic chores as cooking and laundry.

Perception of child marriage

Concerning to perception for child marriage in rural and urban communities which include: knowledge of the legal age of marriage help in growth of the society, happen more among relatives. Current study showed that more than three quarters of the studied women in both urban & rural areas demonstrated that, they do not know the meaning & the legal age of marriage in Egypt and occurs more between relatives. These findings in the line with **Dube & Sharma, (2015)** [(12)] who stressed that, most respondents were uneducated, poor and were working as housemaids. The majority participants were unaware of age & consequence of child marriage

negative health outcomes of child marriages. They appeared satisfied by the decision of their parents of marrying them before 18 years, Strong influence of culture and community perceptions, varying interpretation of religion, and protecting family honor are some of the perception.

Concerning to reasons of child marriage, the current study revealed that tradition, education failure, insufficient income or poverty in addition to the marriage of the cousin or relatives in both rural & urban areas. These results were agreed with **Stark, (2018)**[(15)] who stated that, poverty could constrain women's choices and prompt them to marry earlier than otherwise preferable.

Regarding to education as a reason, the current study revealed that education failure, far distance and poor economic status of parents lead to child marriage, this result was with the same line of **International Center for Research in Women (ICREW, 2017)** [(16)] in a conference for solutions to end child marriage which reported that, schools are of poor quality, sometimes far away, or costly for families, this leads to encourage parents to marry off their girls &reprioritizing girls education.

Attitudes toward child marriage

Attitudes of toward child marriage in the current study showed that, the majority of studied women regarding their attitude and trends toward child marriage stated that, child marriage increase responsibility

of girls after marriage prevents spinsterhood& maintains virginity.

In addition to, this practice wastes woman rights & leads to negative effects and not satisfied with it, so they encourage its prevention. These results accepted with **(Nasrullah, 2014)** [17] who found that women who were aware of the negative health impacts of child marriage & were against the marriage of their daughters before the age of 18 years. These women wanted their daughters to get education and better social status in the society and protect daughter from negative health impacts against child marriage.

Health consequences of child marriage

Concerning to physical consequences of child marriage on women lived in rural and urban communities, Current study demonstrated that there was a highly statistical significant difference between rural and urban women regarding occasional bleeding and repeated vaginitis which they were the most common effects while, there was no statistical significant difference in abnormal vaginal bleeding with intercourse and urinary incontinence related to muscles weakness of uterine & bladder in both areas groups. These results was in the same line with the results reported by **Ministry of Health and Population, (2014)**[18], who stated that Egypt Demographic and Health Survey for married adolescent girls in Egypt ; suggested that girls who marry before the age of 18 are more at risk of contracting diseases as they do not receive a premarital examination & The exceptionally low knowledge of diseases among youth makes young girls vulnerable to infection as they engage in risky practices.

Regarding to psychological consequences of child marriage, child marriage, current study reflected highly statistical significant difference in urban areas (100 %) than in rural areas (89.2%) that classified into increased responsibility after marriage, stress, women not share in decision making with husband & misunderstanding with husband which resulted in statistically significant difference in both areas regarding to psychological problems resulted from child marriage as depression, suffering from nervousness because of their marital life. These results were consistent with **Klugman, et al., (2014)** [4]. Who demonstrated that child girls are often vulnerable as they are young, often poorly educated, and possibly limiting their decision-making ability, including in regard to disadvantaged socio-economic backgrounds. When they marry early, they may fall even more under the control of their husband they had married later. This may limit their aspirations, as well as agency.

Furthermore, limiting girls' decision-making ability in regard to access to healthcare during pregnancy and delivery as another psychological effect. This was agreed with **Parson, (2015)[19]& Kidman, (2016) [20]**who stressed that child marriage reduces girls and women's decision-making ability in the household, less of freedom and a feeling of isolation for the girl-child as well as an unhappy marriage . Current study demonstrated that social problems were considered consequence of child marriage and there were highly statistical significant difference between rural and urban women which mean that rural women unable to raise their children more than urban women, divorce & separation common related to marital problems, respectively. These results in the same line with **Raj, (2016) [2],** which supported that literate women are more aware of health and reproductive issues and the importance of children's education, while girls who were not adequately educated and prepared for the roles expected of them in the family. This therefore becomes a burden and has serious impact on their psychological welfare, their perception of themselves and also their relationship.

In addition to social conflicts result as divorce & separation as a social effect, the current study which approved that divorce is observed generally 11.2 percent as in rural more than urban related to the partner conflict. This result agreed with **International Center for Research in Women (ICRW), 2017 [16];** reported that there were evidences of the links of child marriage with divorce, abandonment, separation, widowhood and denial of property rights.

Conclusion

Child marriage is a complex issue, rooted deeply in gender inequality, tradition, failure of education and poverty. Despite national law, the practice is widely prevalent in rural and urban areas clearly in the study which indicated that attitudes, motives, health consequences of women adequate to sufficiently curb the social evil of child marriage. The outcome of the study necessitates stricter awareness, better educational opportunities for girls. Particularly, after marriage, awareness for negative consequences and easy access to quality health services.

Recommendations

-Address the factors that drive child marriage, including poverty, insecurity, and the lack of opportunities for girls, traditional roles of wives and mothers, and gender inequality.

-Raising the level of awareness about negative outcomes of child marriage by intensifying the Health education activities.

-Rehabilitation programs for social, psychological problems of child marriage.
-Provision of economic opportunities for women & enhancing culture and community perception of child marriage can help to eliminate the child marriage practice.
-Ensure that family planning programs &Provide safe spaces for adolescent married girls to interact, exchange information and learn about their rights as education, decision making.
-Prioritization of girls' education & decreasing the obstacles that faces in order to end child marriage.

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Effect of Educational Intervention on Nurses' Performanceabout Management of Dehydration for Children Underfive Years

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Abstract :

Background: Dehydration is a major cause of preschooler illness and death throughout the world it is often a result of diarrheal disease in children. **The aim** ofthisstudy was to evaluate the effect of educational intervention on nurses' performance about management of dehydration for children under five years. **Subjects and method:**A quasi-experimental research design was used. Eighty nurses who was working at Pediatric out-patient clinics and pediatric medical department and eighty children who had dehydration.Three Tools were used for data collection:Structured interview Schedule, Nurses' practice observational checklist, Health assessment related to nursing management of dehydration for children under five years.Management and administration of oral rehydration solution. **Results:**The present study revealed that, only 5.0% of nurses had good knowledge scores and 95.0% of them had satisfactory practices before the program intervention while this percentage improved to 100% of them immediately and one month after the program intervention **Conclusion:**A significant difference between total scores of nurses' knowledge and practice before and after educational intervention. **Recommendation**: In-service educational training program should be provided to all pediatric nurses about management of dehydrationfor children under five years to update their knowledge and clinical practice.

Keywords: Children under five years, educational intervention, management of dehydration, Nurses' performance.

Introduction

Dehydration is a significant depletion of body electrolytes and water, often secondary to acute gastroenteritis, or to other diseases that cause vomiting [1,2].Dehydration is very common among children and can be life-threatening. According to the World Health Organization, and United Nations International Children's Emergency Fund data in 2017, diarrhea is a leading killer of children, accounting for approximately 8 percent of all deaths among children under age 5 worldwide in 2017. This translates to over 1,300 young children dying each day, or about 480,000 children a year, most deaths from diarrhea occur among children less than 2 years of age living in South Asia and sub-Saharan Africa [3].

Total annual number of deaths related to diarrhea among children under 5years, from 2.5 million in the year 2000 to 480,000 in the year 2017decreased by 60 percent. Many more children could be saved through basic interventions this high incidence is usually associated with contaminated food and water and unhygienic conditions in poverty-stricken communities. Infants and toddlers have a small body mass and lose fluids and electrolytes more rapidly than adults. Early detection of symptoms is essential in the prevention and treatment of dehydration.

In Egypt, diarrhea is the second leading cause of death among under-5 children. Most diarrhea-related deaths in children are due to dehydration from loss of large quantities of water and electrolytes. Statistics show that 3,500 – 4,000 under-five children die of diarrhea every year [3,4]. Children are more likely than adults to die from diarrhea because they become dehydrated more quickly. About 2.2 million People in developing countries, around 525, 000 children, die every year from diseases associated with lack of access to safe drinking water, inadequate sanitation, and poor hygiene and overcrowding, in that 90% are children under five years of age [5].Dehydration is a medical emergency, thus, several related symptoms and signs should be considered including: urine output, sunken eyes, lack of tears, dry mucous membranes, heart rate, respiratory rate and effort, capillary refilling time and skin turgor. American Academy of Pediatrics Guidelines Recommend making clinical decisions based on the degree of dehydration;

mild (3-5%), moderate (6-9%), or severe ($>$10%) [6,7].

Dehydration consists in four clinical elements: general and eyes appearance, hydration of mucous and tears. Each item is rated from 0 to 2, and the total score is

between 0 and 8. The three final categories are: no degree of dehydration score 0, mild dehydration score, 1-4, and moderate/severe dehydration score, 5-8. In the last 15 years, the Dehydration scale has been validated by different studies [8].The capillary refilling time is a simple and quick parameter to be obtained; the examiner presses fingernail for 5 seconds, and estimates the time needed to return at normal color after releasing the finger pressure. The value for the non-dehydrated children is less than 2 seconds, whilst severity of dehydration increases with prolonged time up to 4 seconds which corresponds to severe shock. Usefulness and validity of the capillary refilling time in the assessment and severity of dehydration were attested in a systematic review included in the National Institute for Health and Care Excellence guidelines of 2016[6, 9].

There are two treatment goals when a child has diarrhea: elimination of the cause of diarrhea and prevention of dehydration. Could be averted through combined prevention and treatment strategies, intervention such as oral rehydration therapy, appropriate drug therapy, optimal breast-feeding practice, improved nutrition, increasing access to clean water, sanitation facilities, improved personal hygiene including food and water. The importance of oral rehydration is to replace the lost fluids by increasing the amount of liquids the child drinks, has become recognized throughout most of the world. Oral rehydration solution is effective, safer and less costly than the intravenous rehydration[10, 11].

Nursesassess the severity of dehydration as well as prescribe and supervise oral rehydration therapy to treat children with diarrhea. She also stressed the need for further nursing research especially related to homemade oral rehydration solution.Nursing intervention should be directed to prevent complication of diarrhea. Giving health education to the mother would help to gain more knowledge and reduce anxiety related to diarrhea. Health education regarding hygienic water, breast feeding, basic sanitation and hygienic practice helps to attain highest level of knowledge. Therefore, the nursing practice should be patient centered rather than task centered to prevent complications [12].

Significance of the study

Dehydration is a common complication of illness observed in children presenting to the emergency department. Early recognition and early intervention are important to prevent progression to shock and cardiovascular collapse by providing educational intervention on nurses' performance about management of dehydration for children under five years

as nurses play an important role in management of these health problem.

Aim of the study

The study was conducted toevaluate the effect of educational intervention on nurses' performance about management of dehydration for children under five years

Subjects and Method

Study Design

Aquasi-experimental research design was used.

Setting

The study was conducted at; Pediatric out-patient clinics and pediatric medical department at Tanta Main University Hospital and Qutour General Hospital which affiliated to the Ministry of Health and Population

Subjects

A convenience sample of eighty pediatric nurses who were assigned as follow:10 nurses from Pediatric out-patient clinics and 30 nurses from pediatric medical department of Tanta Main University Hospital. Ten nurses from Pediatric out-patient clinics and30 nurses from pediatric medical department Qutour General Hospital which affiliated to the Ministry of Health and Population. Eighty children diagnosis with dehydration who were selected with equal number of children from previously mentioned setting were also involved. The sample size was based on the following parameters confidence level error level 5% type I error 0.05 and power of test 95%.

Inclusion criteria of children

- Both sexes .Children have signs and symptoms of acute gastroenteritis (diarrhea of recent onset not caused by chronic disease with or without accompanying nausea, vomiting, fever, or abdominal pain) presenting to Pediatric out-patient clinics. Free from any other disease such as immunity disease, tumor out liver cardiopulmonary disease, brain disease, metabolic disorders, food intolerance and medication reaction that could affect their quality of life.

Tools of data collection

Three tools were used to collect data.

Tool I: **Structured Interview Schedule**: It consisted of six parts: Part one: characteristics of nurses: which includes age, level of education, residence, experience and previous training about dehydration. Part two: Socio-demographic characteristics of studied children such as: age, sex, birth order and residence. Part three: Medical history of children suffering from dehydration related to diarrhea. Part four: Nurses' knowledge pre and post educational intervention about definition of dehydration, causes, degree of dehydration, sign and symptoms, clinical manifestation, complication and important investigation. Part five: Component and

value of oral rehydration solution, child feeding during gastroenteritis and measures to prevent complication. Part six: Management plan of dehydration under five years.

Scoring system of nurses' knowledge was as following: scoring for question was used: Correct and complete answer was scored (2), correct and incomplete answer was scored (1), and don't know or incorrect answer was scored (0).Less than 65% were considered poor knowledge.From 65 to less than 75% were considered fair, from 75 to 100% were considered good.

Tool II: **Nurses' Practice Observational Checklist** [13 -15]: It was consisted of three parts:

Part I: Health assessment related to nursing management of dehydration for children under five years which included the following: General appearance and behavior, capillary refill time, tearing and salivation, mucous membrane moisture, skin color and moisture, and intake and output chart. Part II: Anthropometric measurement for children such as: Weight, height, mid arm, and skin fold thickness. Part III: Physiological measurement: such as temperature, Pulse respiration and blood pressure.

Tool III: Management and Administration of Oral Rehydration Solution: It was developed by the researcher after reviewing related literatures [12] to observe the following: Administration and preparation of oral rehydration solution, insertion and rehydration of nasogastric tube, intravenous therapy and management of dehydration in children which include child feeding during gastroenteritis and administration of medication.

Scoring system for nurses' practice were as follows: The score of practice for each item were ranged from 0-2.Done correct and complete was scored (2), done correct and incomplete was scored (1), and not done was scored (0).

The total score of nurse's practices were 86 and, it was calculated as follows: - less than 65% were considered unsatisfactory practice and from 65% to 100% were considered satisfactory practice.

Method

Informed consents were obtained from nurses and mothers to participate in the study after explaining the aim of the study and their right to withdraw from the study at any time without providing a reason and without any potential.

Confidentiality and privacy were maintained.The tools were presented to a jury of five experts in the field of pediatric nursingto check content validity, clarity, relevance, comprehensiveness, understanding, applicability and ease for implementation.Content validity index was 98.5%. To assess reliability, the study tools

were tested and the value of Cronbach's alpha coefficient was 0.822. A pilot study was carried out on (10%) 8 nursesand 8 children to test the tools for its clarity, applicability, feasibility and the necessary modification was done Pilot study was excluded from total sample of the study.

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

1-Assessment phase: It was done by the researcher for all study subjects to assess the studied nurses and children who met the inclusion and there is exclusion criteria of this study. The researcher also, firstly met doctors to explain the purpose and the educational intervention of the study to gain their cooperation after taking the permission from related authorities. During the initial interview, the purpose of the study and the procedures were explained and the informal consent was obtained from the participants.

Subjects were assured that all information would be confidential to assure the confidentiality of the participants. Nurses who participated in the studied sample were interviewed by the researcher in the nursing room to assess nurses knowledge about dehydration, component and value of oral rehydration solution and management plan of dehydration to using tool one. Also, taking sociodemographic and medical history of children suffering from dehydration from assessment sheet afterward, the researcher explained to the nurses how to make health assessment related to nursing management of dehydration for children under five years (tool II). Every nurse was observed by the researcher three times to assess the actual care for the children (tool III).

2- Planning phase: Educational intervention was developed by researcher based on literature review according nurses' education needs and expected outcomes criteria were formulated, different methods audio-visual material was prepared such as: PowerPoint presentations, picture, posture to facilitate them learning, small lectures and group discussion.

3-Implementation phase: The researcher attended at 10.00 Am till 12.00 pm every day in the previously mentioned settings to collect the data and meet the nurses in nursing room. The researcher met the study nurses, divided into eight subgroups from ten nurses in each group according to the availability of them. The time of each session will be 30-45 minutes. Educational intervention was implemented by the researcher for all study subjects using interactive lectures, group discussion demonstration and redemonstration and video presentation. They attended the fifth sessions about:

First session: focus on definition of dehydration, causes, degree of dehydration,

sign and symptoms, clinical manifestation, complication and important investigation.

Second session: Definition of diarrhea, clinical manifestation, causes and dangerous sign and symptoms, important investigation, component and value of oral rehydration solution, child feeding during gastroenteritis and measures to prevent gastroenteritis.

Third session: Include general appearance and behavior, vital signs, including blood pressure and temperature, weight, capillary refill time, tearing and salivation, mucous membrane moisture, skin color and moisture and urine output.

Fourth session: focus on Anthropometric measurement for children such as: weight, height, mid arm, and skin fold thickness and Physiological measurement: such as temperature, respiration, and blood pressure.

Fifth session: Management and administration of oral rehydration solution administration, preparation of oral rehydration solution, Insertion and rehydration of nasogastric tube check list, intravenous therapy check list and management of dehydration in children.

4- **Evaluation phase:**Educational intervention was evaluated before, immediately, after implementation of the sessions, and after one month from health education intervention implementation using constructed tools (I and III). The data was collected over a period of six months from beginning of January 2019 to June 2019.

Statistical analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 23, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison between two groups and more was done using Chi-square test ($\chi 2$). For comparison between more than two means of parametric data, F value of ANOVA test was calculated. For comparison between means of two related groups (before & after change) of non-parametric data, Z value of Wilcoxon Signed Ranks Test was used. Correlation between variables was evaluated using Pearson's correlation coefficient (r). 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 non-parametric data, Kruskal-Wallis (X2 value) was calculated. Significance was adopted at $P < 0.05$ for interpretation of results of tests of significance.[16]

Results

I- Sociodemographic data; Table (1): As regards the age, it was observed that slightly more half of the studied nurses

(55%) ranged from > 25 - ≤ 35 years while16.3% were ranged from > 35 – 45 year with mean age of 30.075 ± 5.72 years. Most of them (81.2%) were married while 2.5% were widowed. According the educational level it was clear that 55% of them had bachelor degree of nursing while the least (3.8%) had diploma degree of nursing (1 year).

Regarding years of experience, nearly half of them (46.3%) was between 10 – 15 years of experience while 21.2% was between 5 - < 10 years of experience.Regarding to residence, it was observed 51.2% of them were from urban areas while 48.8% from rural areas. In relation to nurse previous training on care of child it was found that 55.0% hadn't previous training.

Figure (1): showssocio-demographic characteristics of the studied children with dehydration. Regarding the age of the studied children,it was observed that47.5% of themranged from 3 – 5 years while 18.8% were aged less than-one years. The same figure also showed that 65.0% of them were female. In addition, 38.8% of studied children were in the second birth order while 15.0% were in the third birth order. Regarding to residence, it was observed that more than two thirds of them (70.0%) were from urban.

II- knowledge of the studied nurses related to dehydration:Table(2): illustrates percentage distribution of levels and mean scores of total knowledge of the studied nurses related to dehydration.It was found that 5.0% only of them had goodknowledge scores before the program interventionwhile this percentage improved to 100% of them immediately and one month after the program intervention and there was a statistically significant difference as(P= 0.0001*).

III- Assessment related to nursing management of dehydration for children under five years:Figure(2):it was obvious that, more than half of the studied children (55.0%) hadmoderate dehydration while the least of them (10.0%) had mild dehydration.It was indicated that 81.2% of the studied children had prolonged capillary refill time ranged between (2-4sec) while 11.3% ofthem had capillary refill time more than (> 4sec). Also, this table showed that 80.0 % the studied children had dried mucous membranes of mouth while 20.0% ofthem had very dry mucous membranes. Concerning the assessment of skin recoil, it was observed that 78.8% the studied children had delayed skin recoil time for (2 sec) while 12.4% ofthem had very prolonged skin recoil time more than (> 2sec).

Percentage Distribution of the Studied Children related to Anthropometric Measurements

IV-Anthropometric Measurements of the Studied Children. Table (3): shows the percentage distribution of the studied children related to anthropometric measurements. It was found that 47.5% of the studied children were considered weight between 5 - < 10 kg with the mean of 8.207 ± 3.32. Regarding to their height (cm), it was found that 53.8% were between 60 - < 80 cm and 22.5% were between 40 - < 60cm, with the mean of 12.310 ± 0.583. The same table also showed that mid arm circumference 46.2% of the studied children were between 12 - < 13 while 16.3% of them were more than 13 cm, with the mean of 12.310 ± 0.583. Concerning to their skin fold thickness, it was observed that three quarters of studied children (75.0%) were between 11 - < 14 mm, with the mean of12.273 ± 1.45.

Figure (3): Mean Scores of Physiological Measurementsof the studied children. It was found that 53.8% of the studied children had body Temperature between 38 - < 39 while 21.2% of them had body Temperature less than < 38(cc), with the mean of38.413 ± 0.506. Regarding to their respiration, it was found that 87.5 %were between 30 - < 60 (breath/minute) and 1.3% had more than ≥ 90 (breath/minute), with the mean ofwith the mean of43.787 ± 11.664.

V-Nurses Practice related to Management and Administration of Oral Rehydration Solution. Table (4): shows thelevel of nurses practice sub items related to management and administration of oral rehydration solution. It was revealed from this table that, the mean of total nurse's practice scores before the program was 65.03±5.34 while, immediately after the program implementation the mean was improved to 85.81±0.42. Also, one month later, the nurses' mean practices score was 84.87±1.21. The difference was statistically significant between pre, post and after one month as P = 0.0001.

VI- relation between Total Nurses' Knowledge and Practice Scores related to Management and Administration of Oral Rehydration Solution. Figure (4): shows thecorrelation between total nurses'knowledge and practice sub items scores related to management and administration of oral rehydration solution before and after program implementing. It was revealed that there was a positive relationbetween the degree of the studied nurses' total knowledge score and their totalpractice score as(P= 0.029).

Table (5): explain the relation between total knowledge of nurses before and after implementing of health education and demographic data. A significant relationwas found between the educational level, years of experience, previously in-service training program, and nurses'

knowledge before and after implementing of health education as (P= **0.013**, **P= 0.026**, **P= 0.047**, **P= 0.003**).

Table (6): explain the relationship between total practice of nurses before and after implementing of health education and demographic data. Asignificant relation was found between the educational level, years of experience, previously in-service training program, and nurses' practice before and after implementing of health education as (P= **0.001, P=0.0400, P=0.024,** P= **0.001, P=0.011**).

Table (1): Percentage Distribution of the Studied Nurses Related to Socio-demographic Characteristics.

Socio-demographic characteristics of nurses	(n=80)	
	No	%
Age in years:		
≤ 25	23	28.7
> 25 - ≤ 35	44	55.0
> 35 - 45	13	16.3
Range	20 - 45	
Mean ± SD	30.075 ± 5.72	
Marital status:		
Single	10	12.5
Married	65	81.2
Divorced	3	3.8
Widowed	2	2.5
Educational level		
Nursing School (3years)	23	28.7
Technical Institute of Nursing	10	12.5
Bachelor of Nursing Science	44	55.0
Diploma in Nursing (1 year)	3	3.8
Years of experience		
1 - <5	26	32.5
5 - < 10	17	21.2
10 – 15	37	46.3
Range	1 – 15	
Mean ± SD	7.587 ± 4.28	
Residence		
Rural	39	48.8
Urban	41	51.2
Previously in-service training program		
Yes	36	45.0
No	44	55.0

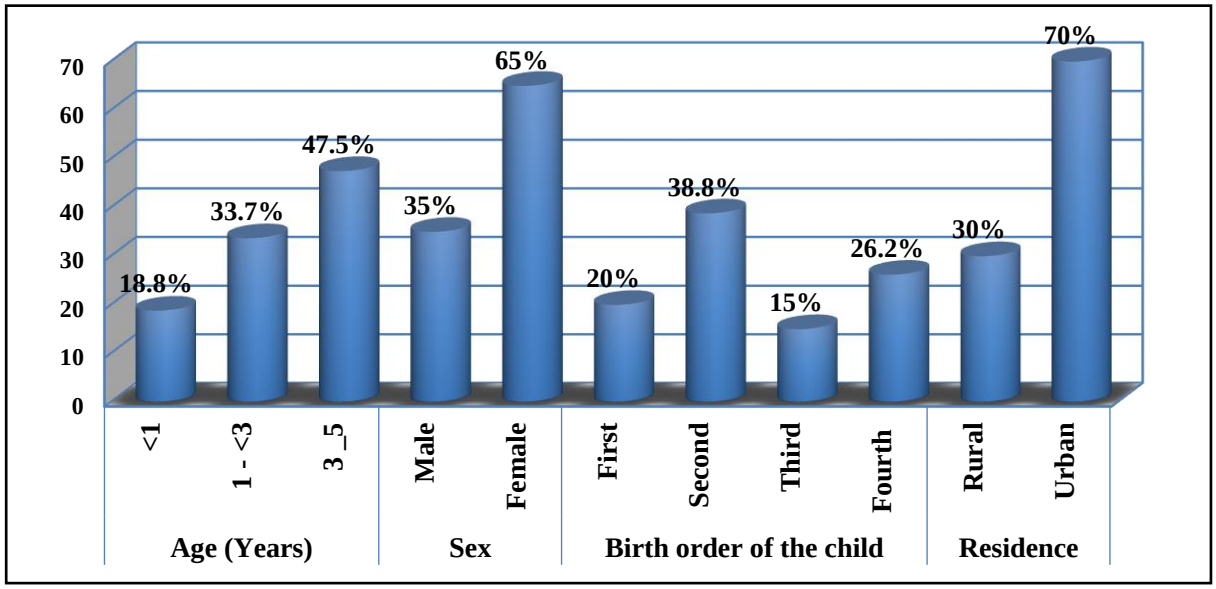

Figure (1): Socio-demographic Characteristics of the Studied Children

Table (2): Percentage distribution of total scores of the studied nursesknowledge related to dehydration.

Total knowledge of nurses related to dehydration	(n=80)						χ^2	P
	Before (n=80)		Immediate after (n=80)		One month after (n=80)			
	No	%	No	%	No	%		
Total knowledge score:								
Poor knowledge	65	81.2	0	0.0	0	0.0	**184.62**	**0.0001***
Fair knowledge	11	13.8	0	0.0	0	0.0		
Good knowledge	4	5.0	80	100.0	80	100.0		
Total knowledge scores:								
Range	14 - 31		36 - 40		32 - 40			
Mean ± SD	22.43±3.93		39.33±0.87		38.46±1.51			
F value	**1221.261**							
P	**0.0001***							

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

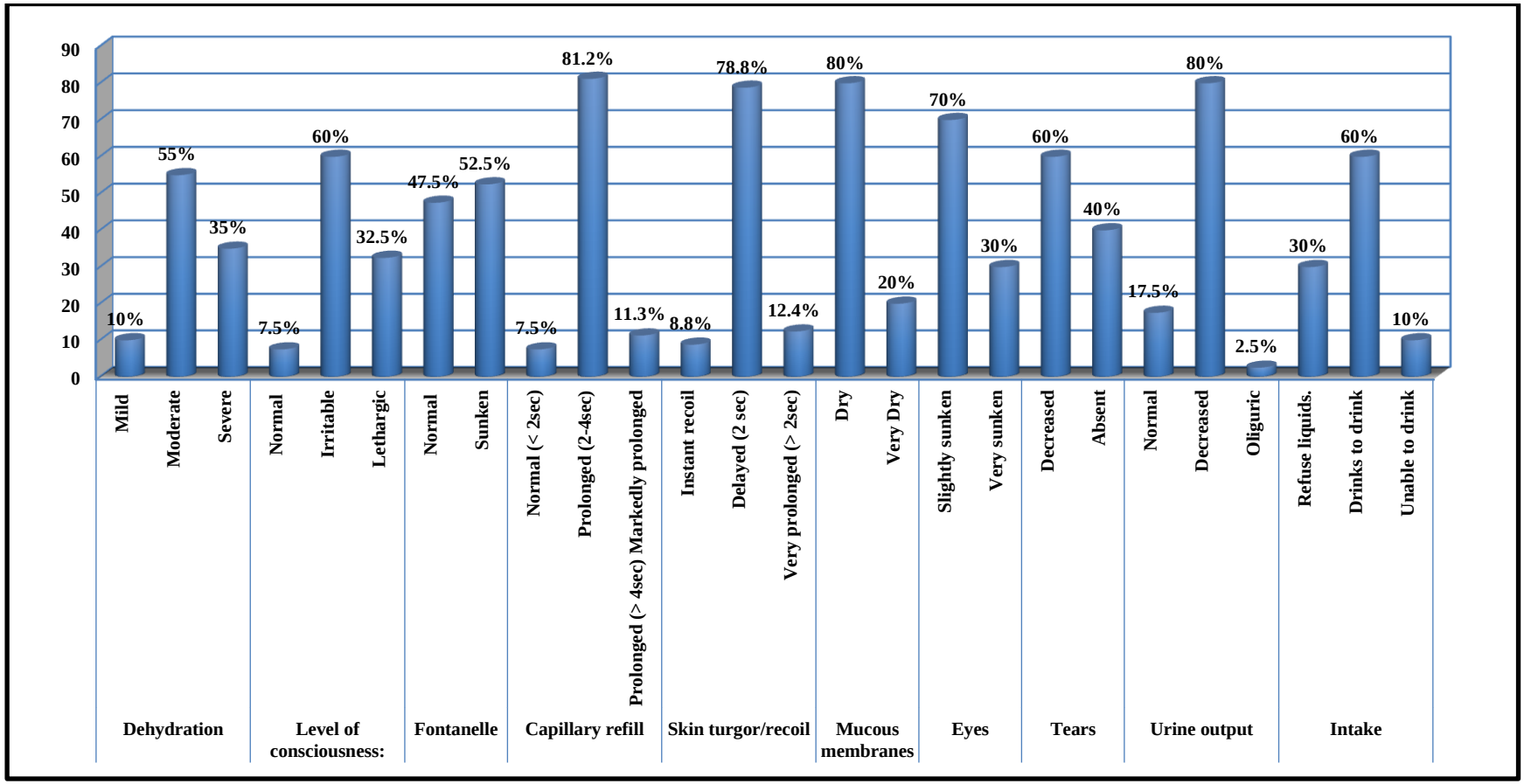

Figure (2): Health Assessment related to Nursing Management of Dehydration for Children under Five Years

Table (3): Percentage Distribution of the Studied Children related to Anthropometric Measurements

Anthropometric measurements	The studied children (n=80)	
	N	%
Weight (Kg)		
Normal	15	18.25
Subnormal	65	81.75
Range	**2.5 – 16**	
Mean ± SD	**8.207 ± 3.32**	
Height (cm)		
Normal	34	42.5
Subnormal	46	57.5
Range	**40 – 92**	
Mean ± SD	**69.743 ± 11.20**	
Mid Arm Circumference (cm)		
Normal	3	3.75
Subnormal	77	96.5
Range	**11 – 13.7**	
Mean ± SD	**12.310 ± 0.583**	
Skin Fold Thickness (mm)		
Normal	6	7.5
Subnormal	74	92.5
Range	**8.4 – 14.6**	
Mean ± SD	**12.273 ± 1.45**	

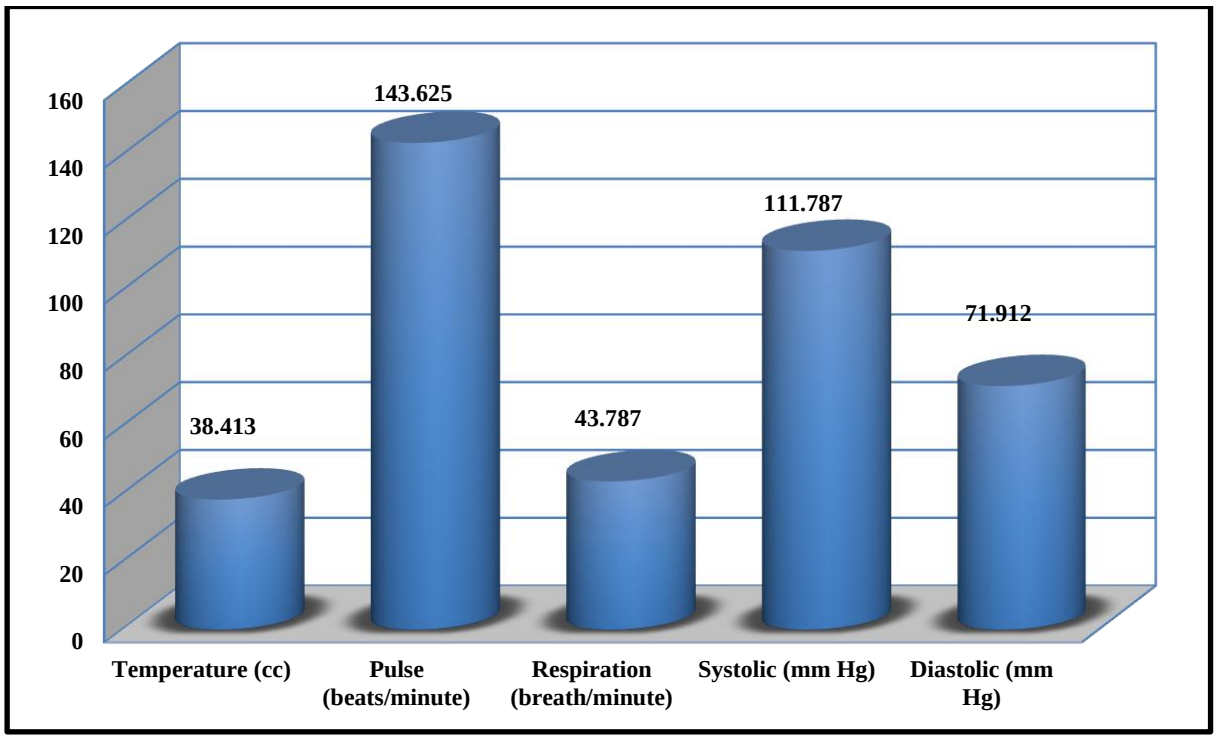

Figure (3): Mean Scores of Physiological Measurements of the Studied Children

Table (4): Nurses Practice related to Management and Administration of Oral Rehydration Solution.

Practiceitems of management and administration of oral rehydration solution	Practice sub items' level among the studied nurses (n=80)						χ^2	P
	Before		Immediate after		One month after			
	No	%	No	%	No	%		
Administration and preparation of ORS								
Unsatisfactory (0-10)	6	7.5	0	0.0	0	0.0	**12.308**	**0.002***
Satisfactory (11-16)	74	92.5	80	100.0	80	100.0		
Range	9 - 16		16 - 16		14 - 16		**F value = 287.2**	
Mean±SD	12.65±1.61		16.00±0.00		15.76±0.55		**P = 0.0001***	
Insertion and rehydration of nasogastric tube								
Unsatisfactory (0-15)	24	30.0	0	0.0	0	0.0	**53.333**	**0.0001***
Satisfactory (16-24)	56	70.0	80	100.0	80	100.0		
Range	10 - 22		23 - 24		22 - 24		**F value = 531.4**	
Mean±SD	16.81±2.65		23.93±0.42		23.71±0.53		**P = 0.0001***	
Intravenous therapy								
Unsatisfactory (0-14)	18	22.5	0	0.0	0	0.0	**38.919**	**0.0001***
Satisfactory (15-22)	62	77.5	80	100.0	80	100.0		
Range	8 - 22		20 - 22		19 - 22		**F value = 190.3**	
Mean±SD	16.71±3.13		21.87±0.36		21.55±0.74		**P = 0.0001***	
Management of dehydration in children								
Unsatisfactory (0-15)	5	6.3	0	0.0	0	0.0	**10.213**	**0.006***
Satisfactory (16-24)	75	93.7	80	100.0	80	100,0		
Range	13 - 23		24 - 24		23 - 24		**F value = 399.5**	
Mean±SD	18.86±2.23		24.00±0.00		23.85±0.35		**P = 0.0001***	
Total practice scores								
Unsatisfactory (0-15)	4	5.0	0	0.0	0	0.0	**8.136**	**0.017***
Satisfactory (16 - 24)	76	95.0	80	100.0	80	100.0		
Range	53 - 77		84 - 86		81 - 86		**F value = 1092.2**	
Mean±SD	65.03±5.34		85.81±0.42		84.87±1.21		**P = 0.0001***	

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

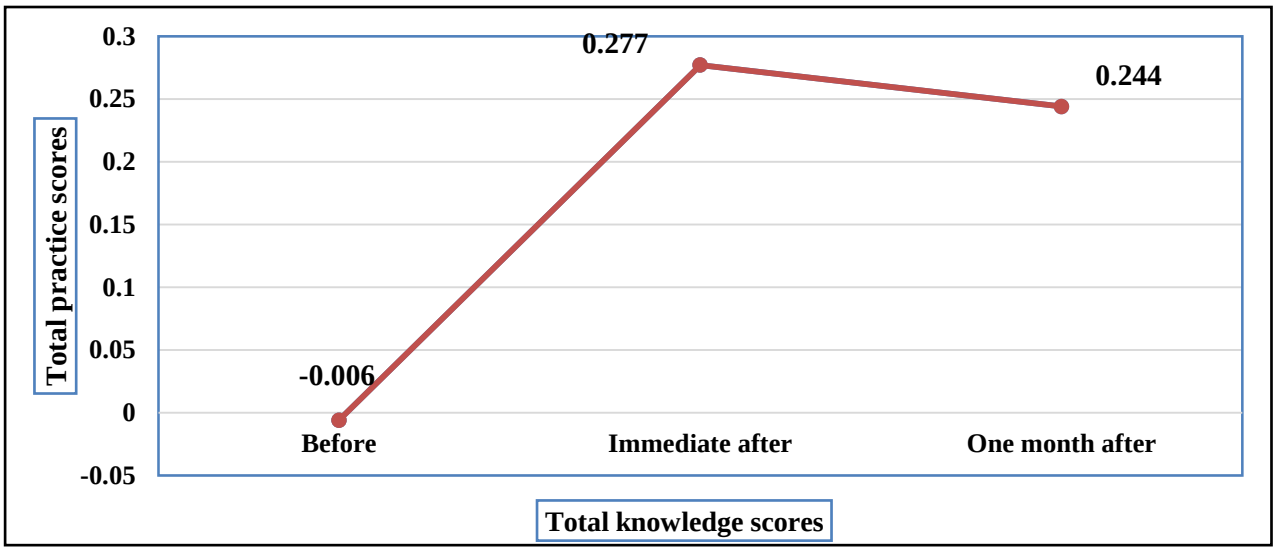

Figure (4): Correlation between Total Nurses' Knowledge and Practice Scores related to Management and Administration of Oral Rehydration Solutionbefore, immediatelyand after one month of Program Implementing.

Table (5): Relation between Total knowledge of Nurses before and after Implementing of Health Education and Demographic data

Socio-demographic characteristics.	Change of total knowledge scores among the studied nurses after than before health education (n=80)					
	Change immediate after than before health education	t-test or χ^2 value	P value	Change one month after than before health education	t-test or χ^2 value	P value
Age years:						
≤ 25	15.39 ±2.57	**3.664**	**0.0001***	15.21±2.57	**2.490**	**0.013***
> 25 - ≤ 35	17.06 ±4.50			15.93±4.23		
> 35 - 45	19.00 ±2.23			17.76 ±3.29		
Marital status:						
Single	13.90 ±1.85			13.70 ±2.00		
Married	17.12 ±3.95	**2.207**	**0.027***	16.12 ±3.82	**2.228**	**0.026***
Divorced	20.66 ±2.08			20.00 ±3.00		
Widowed	19.00 ±1.41			18.50 ±.70		
Educational level:						
Nursing School (3years)	12.33±2.08	**2.348**	**0.019***	11.33±2.08	**1.986**	**0.047***
Technical Institute of Nursing	12.70±4.11			12.20±3.85		
Bachelor of Nursing Science	17.55±3.73			16.81±3.39		
Diploma in Nursing (1 year)	17.65±2.99			16.34±3.47		
Years of experience						
1 - <5	15.38 ±2.45	1.116	0.265	15.23 ±2.45	0.133	0.894
5 - < 10	20.94 ±2.83			19.35 ±3.21		
10 - 15	16.10 ±3.91			15.05 ±3.90		
Residence						
Rural	17.51±3.90	0.904	0.366	16.76±3.49	1.484	0.138
Urban	16.31±3.81			15.31±3.86		
Previously in-service training program						
yes	18.33±3.56	**2.773**	**0.006***	17.44±3.31	**.2.988**	**0.003***
No	15.72±3.76			14.86±3.69		

*** Statistically Significant difference at (P<0.05).**

Table (6): Relation between total Practice of Nurses before and after Implementing of Health Education and Demographic data.

Sociodemographic characteristics.	Change of total practice scores among the studied nurses after than before health education (n=80)					
	Change immediate after than before health education	t-test or χ^2 value	P value	Change one month after than before health education	t-test or χ^2 value	P value
Age years:						
≤ 25	19.95 ±5.96	**2.617**	**0.009***	18.90±6.28	**3.424**	**0.001***
> 25 - ≤ 35	23.26 ±4.75			23.00 ±4.90		
> 35 - 45	19.15 ±3.02			17.38 ±3.17		
Marital status:						
Single	25.40 ±5.68			25.20 ±5.73		
Married	20.26 ±5.21	1.836	0.066	19.29 ±5.52	**2.052**	**0.040***
Divorced	19.00 ±4.35			17.33 ±5.50		
Widowed	17.00 ±2.82			14.50 ±0.70		
Educational level:						
Nursing School (3years)	17.82±3.53	1.616	0.106	16.00±3.77	**2.255**	**0.024***
Technical Institute of Nursing	19.10±6.38			18.10±6.34		
Bachelor of Nursing Science	22.84±5.38			22.40±5.50		
Diploma in Nursing (1 year)	21.00±1.73			20.00±3.46		
Years of experience						
1 - <5	23.07 ±4.68	**3.649**	**0.0001***	22.84 ±4.81	**4.422**	**0.0001***
5 - < 10	22.82 ±6.43			22.17 ±6.44		
10 - 15	18.21 ±4.34			16.64 ±4.55		
Residence						
Rural	23.23±5.26	**3.937**	**0.0001***	22.89±5.27	**4.662**	**0.0001***
Urban	18.43±4.55			16.92±4.80		
Previously in-service training program.						
yes	22.00±5.01	**2.036**	**0.042***	21.44±5.17	**2.529**	**0.011***
No	19.77±5.63			18.52±6.07		

*** Statistically Significant difference at (P<0.05).**

Discussion:

Pediatric patients, especially those younger than five years, tend to be more susceptible to volume depletion as a result of vomiting, diarrhea, or increases in insensible water losses. Significant fluid losses may occur rapidly. The turnover of fluids and solute in infants and young children can be as much as 3 times that of adults [17].

Dehydration is a common complication of illness observed in children presenting to the emergency department. Early recognition and early intervention are important to prevent progression to shock and cardiovascular collapse. Pediatric dehydration is frequently the result of gastroenteritis, characterized by vomiting and diarrhea. However, other causes of dehydration may include poor oral intake due to diseases such as stomatitis, insensible losses due to fever, or osmotic diuresis from uncontrolled diabetes mellitus [18].

The current study revealed that more half of studied nurses hadn't previous training on care of dehydrated child. This may be due to absence of in-service training program in the hospital and increased work load. This result was disagreement with**Padmavathi et al. (2016)** who found that most of the subjects have received previous information from mass media. Also this result was in an agreement with**El-Sayed et al. (2018)**who revealed that more than three quarters of the studied nurses did not attend training programs about pediatric shock [19, 20].

It was evident from the present study's results that nearly half of studied children aged from 3 – 5 years while the least of them were aged less than-one year and most of them were female. The possible explanation for this could be that, children are more likely than adults to die from diarrhea because they become dehydrated more quickly. About 2.2 million People in developing countries, most of them children, die every year from diseases associated with lack of access to safe drinking water, inadequate sanitation, and poor hygiene and overcrowding, in that the majority of them are children under five years of age [5, 21]. This result was in an agreement with **Osonwa (2016)** who assess the utilizing of oral rehydration therapy in the management of diarrhea in children among nursing mothers in Odukpani. The study revealed that most children were aged 25-60 months, where the least were aged 0-12 months, and more than half of the children were females [22].

The present study clarified that, most of the studied nurses had poor knowledge scores about dehydration, oral rehydration solution and management plan of dehydration, before the program intervention while, this percentage improved to good knowledge scores immediately and one month after the program implementation and there was a statistically significant difference this may be due to more half of studied nurses had no training courses and lack of orientation program prior to work as well lack of nursing care conference during work, invariability of procedure, and books especially in this area, lack of supervision during the work.

This justification goes in line with**Babiker et al. (2016)** who revealed that most the nurses answered were not good and only one third of them who had correct knowledge regarding definition,types,causes, vulnerable age, signs and symptoms, degree of dehydration, evaluation of dehydration and complication of diarrhea.[23].Also, this result goes in line with **Sadasiba et al. (2017)** who concluded a study on Mother's knowledge, attitude and practice regarding prevention and management of diarrhea in children in Southern Odisha. He found that , Regarding assessment of dehydration, preparation of ORS, and treatment of dehydration, more one third of mothers were having poor knowledge, nearly one third of them were having good knowledge, and more one third of them were having average knowledge [24].While this result was in disagreement with **Ibrahim (2016)** who reported that, majority of nurses had accurate knowledge about the definition and causes of dehydration ether majority of them identified the types of dehydration and symptoms of moderate and severedehydration.This result can assess the nurses to be well aware with his physical mental and knowledge needs to be well profession in his work and practice[15].

The current study revealed that, more than half of the studied children had moderate dehydration, majority of them had prolonged capillary refill time ranged between (2-4second), had dried mucous membranes, delayed skin recoil time for (2 second), and children had decreased urine output.This result was in an agreement with **Kelly et al. (2017)** showed the one third of them had some dehydration, twelve percent of them had severe dehydration, and nearly half of them had no dehydration. Among all children enrolled, most of them had no acute malnutrition, one quarter of them had

moderate and acute malnutrition, and five percent of them had severe and acute malnutrition [25]. Also, this interpretation was supported by**Osonwa (2016)andOtheroet al. (2016)who** showed that, about one third of the respondents had sunken eyes dry tongue, dry lips/tongue, body weakness and irritability, where most children mentioned excessive thirst and sunken eyes as danger signs and symptoms of dehydration[22, 26].

The present study found that three quarters of the studied children had sub normal body weight, mid arm circumference and skin fold thickness while less than one quarter of them had normal body weight mid arm circumference and skin fold .This result goes in line with **Holliday (2017)** and **Boluyt (2016)** who showed that, treatment should be repeated as necessary, with monitoring of the child's pulse strength, capillary refill time, mental status, urine output, weights, heights and, skin fold thickness of infants and children[27,28].

The current study found that more than half of the studied children had body temperature above normal, had above normal Pulse rate, blood pressure, and majority of them had above normal respiratory rat. Similar to this study results **Akech et al**.**(2016)** who found that, nearly one third of the studied children were severely tachycardia (heart rate>160 beats/minute) at baseline, 8 and 24 hours after starting fluid respectively. No incidences of bradycardia (HR<60 beats/minute) were reported[29].

The current study result revealed that, there was a statistically significant differenceregarding nurses'practice of administration and preparation of oral rehydration solutionbefore, immediately and one month after the program intervention. This may attributed to good supervision of the head nurse, increasing the nurse awareness about the important oforal rehydration. This findings was supported by **Samuele et al. (2018)** who found that, most nurses correctly assessed the hydration status of the children and ensured a prompt introduction of oral rehydration solution and a speedy handling of the dehydrated patient who needs an earlier physician assessment. The prompt administration of oral rehydration solution in case of not clinically detectable dehydration can be configured as a preventive treatment[30].

Regarding nurses' practice of insertion and rehydration of nasogastric tube, it was indicated that more than half of them did not do these practices before the program intervention while this percentage

improved to completely all of them done immediately and one month after the program intervention there was a statistically significant difference. This may attributed to the lack of proper equipment needed to provide and improve nursing care, and shortage of nursing staff. In addition, absence of continuous in-service programs, and lack of supervision during work. This result goes in line with **Babiker et al. (2016)** who showed that, regarding nurses practice about management of dehydrated children most of them have good skills about, administering medication , of nasogastric tube insertion , of nasogastric treated by oral rehydration solution, skills dealing of nasogastric tube and how to applied oral rehydration solution[(23)].

Regarding nurses' practice of dehydration management in children related to child feeding during gastroenteritis and administration of medication. It was observed that more than half of them did not do these practices, while this percentage improved to all of them had done correctly immediately and one month after the program intervention respectively, there was a statistically significant difference. This is may be related to that they know better about this part and so demonstrated good level practices. This findings was supported by **Geurts et al. (2017)** who conducted a study about implementation of clinical decision support in young children with acute gastroenteritis aimed to evaluate the impact of a nurse-guided clinical decision support system for rehydration treatment in children with acute gastroenteritis, proved a significant improvement in length of stay at the emergency department, the number of diagnostic tests, treatment, follow-up, and costs of children in the study group compared with usual care group[(31)].

The current study result's revealed that , there was a statistically significant differencebetween nurses practice sub items scores before and after implementation of health education This may be due to increase the nurse awareness about the important child care , and detecting the defects in their practice and identifying their responsibilities. This interpretation was supported by**El-Sayed et al.(2018**) illustrated that there was a marked improvement in the nurses' total practices regarding management of children in hypovolemic shock pre- and post-implementation of the training guidelines. A statistically significant difference was detected because most of the participants' nurses demonstrated all procedures (practical skills) competently

immediately post-implementation of the training on guideline compared to only one third of them pre- implementation of the training guideline [20].

It was revealed that, before the program implementation, more than half of the studied nurses had poor knowledge and satisfactory performance.The enhancement in nurses' performance may be related to the educational sessions and the frequent demonstration of the related procedure during the period of the study. This result was in an agreement with **Babiker (2016)** who concluded that the nurses are not knowledgeable than skilled in caring of diarrhea and dehydration patient's [23].

It was revealed that there was a statistically significant difference between the degree of the studied nurses' total score of knowledge and their practice. Similar to this study results **El-Sayed et al. (2018)** who showed that there was a significant positive association between nurses' knowledge and practice regarding hypovolemic shock management in children pre- and post-implementation of the training on guidelines, with highly statistical significant differences[20].

The current study results revealed that, there was a positive relationwas found between the educational levels, years of experience, previously in-service training program, and nurses' knowledge and practice before and after implementing of health education. This may be related to that the total number of bachelor degree of nursing was more half of them and regarding years of experience, nearly half of them was between 10 – 15 years. This result was in an agreement with **El-Sayed et al. (2018)** who found that a positive relation between the studied nurses' level of education and their total knowledge score , as well as a significant link between nurses' years of experience, and previous attendance of training programs about pediatric shock and their total knowledge and total practice scores about hypovolemic shock in children, pre- and post-implementation of nurses' training program on guidelines[20].

Conclusion

Based on the findings of the present study, it can be concluded that the nurses showed a significant improvement in their knowledge and practices about management of dehydration for children under five years after implementation educational intervention. There was a statistically significant difference between total knowledge and practice scores of studied nurses before and after the educational intervention. A significant correlation was found between the

educational levels, years of experience, previously in-service training program, and nurses' knowledge and practice before and after implementing of health education

Recommendations

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

1- Training and education programs should be provided to all pediatric nurses about management of dehydration for children under five years to refresh and update their knowledge and clinical practice.

2- Further researches should be conducted to explore the levels of knowledge and practice of pediatric nurses toward of dehydration for children under five years on national level.

3- Resources such as articles, journals, computers and internet should be accessible in in the pediatric as a reference to units' staff members.

4- Periodic checkup of health status for children under five years for prevention of dehydration.

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Effect of Implementation of Teaching Program on Pregnancy Outcome among Primipara Women Suffering from Pregnancy Induced Hypertension.

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Abstract:

Background: Pregnancy Induced Hypertension (PIH) is strongly associated with adverse outcomes to the mother, fetuses, as well as newborn. Health education intervention regarding risks and proper self-care measures will contribute to complications reduction and improve pregnancy outcome. **The aim of this study**: was to evaluate the effect of teaching program on pregnancy outcome among primipara women suffering from pregnancy induced hypertension. **Subjects and Method**: The study was conducted at antenatal unit in obstetric departments of Tanta University Hospital, El-Menshawy Hospital and 4 MCH Centers in Tanta. Convenient samples of 60 pregnant women diagnosed with pregnancy induced hypertension were selected from the previously mentioned settingsaccording to the inclusive criteria. Three tools were used for data collection: **Tool (I):** A structure interview schedule that included three parts: (a) socio demographic characteristics, (b) Reproductive history, (c) History of present pregnancy. **Tool (II):** Structured women's Knowledge Interview Schedule that included three parts:Part a: women's knowledge regarding pregnancy induced hypertension, part b:women's knowledge regarding self-care management and part c:reportedwomen's self-care measures. **Tool (III):** Outcome Assessment Tool that included two parts: part I: Maternal outcome assessment sheet, part II: Neonatal outcome assessment sheet. **Results**: The resultsof the present study revealed improved women's level of knowledge as well as positive maternal and neonatal outcomes after implementation of health teachingprogram. **Conclusion and Recommendation*:***The health education program had improved women's level of knowledge which consequently reflected positive effect on the maternal and neonatal outcomes. *So,* it is important toplan and develop antenatal health educational classes for all pregnant women. In addition, Provision of continuous refreshing courses, pre-service and in-service training programs should be provided for newly appointed nurses regarding PIH management at all levels of health care.

Keywords: Pregnancy Induced Hypertension, Maternal outcome, Neonatal outcome, and Health Education

Introduction

Pregnancy is the time of physical and psychological preparation for birth and parenthood[1].Hypertensive disorder of pregnancy (HDP) are among the main public health issues worldwide and represents the most significant complications of pregnancy, as well as contributes significantly to maternal and perinatal morbidity and mortality [2]. It includes gestational hypertension (GH) or pregnancy induced hypertension (PIH), pre-eclampsia(PE) and eclampsia[3]. Pregnancy induced hypertension is estimated to affect 7% to 10% of all pregnancies [4]. While the prevalence of HDP in Egypt is estimated to be 4.2% had PIH, 3.8% had PE, and 0.3% had eclampsia[5].

Gestational hypertension GH was adopted by NHBPEP 2000 to replace PIH which, is defined as the elevation of the blood pressure (BP) to 140/90 mmHg or more with or without proteinuria or any systematic findings, which emerges for the first-time during pregnancy after 20 weeks of gestation and normally resolves by 12 weeks postpartum [6].PIH, especially PE is considered to be multifactorial disease. So, many theories have been developed about its pathogenesis, such as rejection phenomena, compromised placental perfusion, altered vascular reactivity, uterine muscle stretch, dietary factors, and genetic factors [7, 8].

Hypertension, collagen vascular disease, obesity, black race, insulin resistance, diabetes mellitus, gestational diabetes, increased serum testosterone concentration, nulliparity, severe anemia, renal disease, and thrombophilia are considered risk factors of PIH. A recent epidemiological study showed that black and some Hispanic woman had markedly increased risk of all HDP. Also, maternal age more than 30 years and body mass index (BMI) were found to be positively correlated to risk for PIH in Arab women[7,9].

Pregnancy induced hypertension PIHeffects on maternal, fetal, and neonatal organs [7]. Serious maternal effects include abruptio placenta, disseminated intravascular coagulation (DIC), eclampsia, acute renal failure, hemolysis, elevated liver enzymes and low platelet count (HELLP) syndrome and postpartum hemorrhage. While fetal effects include, low birth weight, hypoxia in the antenatal period, intrauterine death, early delivery which will produce preterm baby requires resuscitation, as well as neonatal effects that include small for gestational age

(SGA) neonate, and low birth weight neonate [7, 10].

Prediction of pregnancy induced hypertension PIH was based on the identification of the woman who predisposes to the occurrence of the disease. Early and regular antenatal checkup, adequate bed rest, daily low dose aspirin, calcium supplementation, antioxidants, vitamin C and E, and well-balanced diet all proposed to prevent the development of PE. But it is recommended that only low dose aspirin started in the first trimester in high risk women to reduce the risk of PE by up to 50%. Also, calcium supplementation reduces the risk only in women who are deficient in dietary calcium [11-13].

Management of PIH depends on BP levels, gestational age, presence of symptoms and associated factors. Antihypertensive drugs are mainly used to prevent or treat severe hypertension, also to prolong pregnancy and prevent complications as eclampsia and maternal cerebral hemorrhage[7, 11]. The definitive treatment of PE is termination of pregnancy so, the maternity nursesare directed toward continuationof pregnancy, without affecting the maternal prognosis until the fetus become mature enough to survive in the extra-uterine environment through regular antenatal visits with proper maternal and fetal monitoring which includes BP and weight monitoring, urinary protein analysis, abdominal examination, fetal assessment, laboratory studies, antihypertensive therapy and advice regarding rest, diet and warning signs[14,15].

Thus,care of the women with PIH depends on the degree of severity of the process.Recent evidence suggests that high maternal mortality rate is as a result of inadequate knowledge, negative attitude and lack of preventive practice on the part of the pregnant women who have strong traditional beliefs [14- 16].Therefore, it was crucial to conduct the current study to determine the effect of implementation of teaching program on pregnancy outcome among primipara women suffering from PIH.

Aim of the study

The aim of this study was to evaluate the effect of teaching program on pregnancy outcome among primipara women suffering from pregnancy induced hypertension.

Research hypothesis

Maternal and neonatal outcomes are expected to be less or free from complications after implementation of the program provided to women with pregnancy induced hypertension.

Subjects and Method

Study design

A quasi experimental research design was used in this study. Such design fits the nature of the study under investigations, in which the researcher tried to evaluate the effect of teaching program on pregnancy outcome among primipara women suffering from pregnancy induced hypertension between the studied women.

Settings

The study was conducted at antenatal unitsof obstetric departments at two hospital settings: Tanta University hospital, El-Menshawy hospital and 4 MCH centers affiliated to the different geographical health zones at Tantacitythese include:

1. Tanta Rabae at Kohafa.
2. Medical Center at Said.
3. Tanta Khames at El agizy.
4. Medical Center at Sager.

Subjects

A total convenient sample of 60 pregnant women diagnosed with pregnancy induced hypertension were selected from the previously mentioned settings.

The subjects of this study were selected according to the following inclusion criteria:

1. Diagnosed with pregnancy induced hypertension **(PIH).**
2. Gestational period from 28-32 weeks.
3. Primi-para women.
4. Free from other medical and obstetrical complications.
5. Willing to participate in the study.

Tools of data collection

Tools of data collection were developed by the researcher based on relevant literature and used to collect data about the study subjects as follows:-

Tool I: Bio Socio-demographic,and reproductive and current pregnancyhistory structured interview schedule: was used to collect basic data. It included three parts:

Part a: Socio- demographic dataincluded:age,level of education, marital status, place of residence, occupation, type of family, number of family members, family's income level, family history of Hypertension or (PIH), address and mobile or phone number.

Part b: Reproductive history included:number of pregnancy, problems with previous pregnancy, number of abortions, time and causes of abortion, last menstrual period (**LMP)** ,duration of current pregnancy (gestational weeks), and expected date of delivery. In addition to, antenatal booking as time of initial antenatal visit, number/follow- up of

antenatal visits, and also, if they were attending antenatal care classes regarding PIH.

Part c: Women's current pregnancy included: time of discovering the problem (gestational week at which PIH was diagnosed), type/degree of PIH, degree of blood pressure (from 140/90 to BL/P> 160/100), site of edema, presence of proteinuria by urinary dipstick test, presence of any symptoms as (headache, visual disturbances, blurring, flashing, nausea, vomiting, upper abdominal pain and brisk deep tendon reflex, compliance to treatment, and presence of any complications (fits and others).

Tool II: Women's Knowledge Assessment Tool:

This tool was developed by the researcher after reviewing of recent and related literature. It covered three sections which comprised a set of questions related to women's knowledge regarding pregnancy induced hypertension **(PIH),** self-care management of PIH, and reported women's self-care management related to PIH. It included three parts:

Part(1): This part included questions related to women's knowledge regarding pregnancyinduced hypertension: definition, classifications, etiology, signs and symptoms, high risk groups, effect of **PIH** on pregnancy (maternal and fetal/neonatal complications), diagnostic testing, and therapeutic management.

Part (2): This part included questions related to women's knowledge regarding self-care management of **PIH** as; self-monitoring of body weight, correct measurement of blood pressure, self-monitoring of urinary dipstick test, self-monitoring of edema, self-identification of danger signs and also self-monitoring of daily fetal movement.

Part (3): Assessment of reported women's self-care management regarding PIH: This tool was adapted from **Hussian, Al-saffar(2016)[(2)].** It comprised 3 main items to assess women's reported self-caremanagement regarding PIH as; **self-care management regarding feeding habits, self-care management regarding daily living activities and self-monitoring of signs and symptoms of PIH.**

Tool III: Outcome assessment tool: was used to assess maternal and neonatal outcome of the studied women and included two parts:-

Part I: Maternal outcome assessment: presence of maternal distress, mode of rupture of membranes- spontaneous or artificial, time of rupture of membranes (pre-mature or mature), type of delivery

(normal or cesarean section), occurrence of complications during labor due to PIH, such as abruption placenta, convulsions,preterm labor, *disseminated intravascular coagulation (DIC)* vaginal bleeding, pulmonary edema, acute renal failure,as well ashaemorrhage and postpartum haemorrhage, in addition to length of hospital stay.

Part II: Neonatal outcome assessment: included assessment of viability status- alive or stillborn, abnormal apgar score, need for resuscitation and oxygen administration, visible congenital malformation, birth weight measurement, gestation at delivery, and also neonatal complications such as; hypoglycemia or jaundice, signs of respiratory distress syndrome, admission of the neonate to intensive care unit, and length of stay at hospital.

Methods

The study was implemented according to the following steps:

1. **Administrative approval:**

- Official permission was obtained from responsible authority before conducting this study through official letters from faculty of Nursing Tanta University after clarifying the purpose of the study directed to hospital's directors of obstetrics departments at 6 settings (Tanta University Hospital, El-Menshawy hospital and 4 MCH centers at Tanta City) to obtain their approval and cooperation for carrying out the study.

2. **Tool development :**

- Tools (I, II, part 1 and 2, III) were developed by the researcher after reviewing recent literature. Then, they were tested for content and construct validity by three experts in the field of obstetric and gynecological nursing.

3. **Ethical considerations:**women's

- Informed oral consent was obtained from all the study participants who accepted to participate in the study after explaining the purpose of the study, confidentiality of information, benefits and right to withdraw from the study at any time if desired and that the nature of the study did not cause any harm and/or pain for the entire sample.

4. **Pilot study:**

After development of tools, a pilot study was carried out on 10% of the sample (6 women) who were excluded from the main study sample from the previously mentioned settings .This pilot study was conducted one month before data collection.

The purposes of the pilot study were to:

- Ascertain the feasibility and applicability of the developed tools.
- Detect any problems 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 tool was reconstructed and made ready for use.

Tools reliability

Validity test: Tools of data collection were distributed to a jury of 5 academic professors in Maternity and Gynecological Nursing Department to test its face and content validity. Accordingly, corrections and modifications were done.

The reliability of the translated Arabic tools was done by using Cronbach's Alpha which was0.87 and 0.88 respectively.

5. Actual study (field work)

- The study was conducted in the period from 15/1/2019 to 30/9/2019at Tanta University hospital, El-Menshawy hospital and 4 MCH centers in Tanta. The researcher was attended the sites of data collection 3days per week (on the morning shift) until the predetermined sample were collected. All cases presented at the time of data collection and had the inclusion criteria at each setting were included in the study.

6. The study was carried out in four phases

a. Assessment and planning phase

- The researcher introduced herself to the participants, obtainedtheir informed consent and the interview schedule was then conducted individually for each woman using Tool I to collect basic data about socio-demographic history, andreproductive history of current pregnancy.
- Knowledge of the studied women regarding PIH, and self-care management were assessed using Tool II part 1, and 2 three times;before, immediately after and 2 weeks after the implementation of the educational program.

b. Implementation phase

- The educational sessions for the pregnant women composed of 3 main separate sessions given jointly with an educational booklet and carried-out in the previous mentioned settings. Each session ranged from 15-20 minutes.
- Booklet was developed by the researcher using simple Arabic language and illustrated pictures. It

included the following: Information needed for pregnant women with PIH about PIH and women's self-care management.

- The researcher explained the purpose of the study to the pregnant women to obtain their acceptance to participate in the study.
- Before conducting the sessions, the researcher used (tool I part 1,2, &3) to collected the socio-demographic data, and reproductive current pregnancy history of all studied women.(Tool II part 1,2, &3) assessed women's knowledge regarding PIH, self-care management of PIH and women's reported self-care management.
- The researcher distributed the booklet at the beginning of the first session to be used as a guide for self-learning, and raising women's self-efficiency about self-care measures regarding PIH.
- **The first session**: The researcher explained definition of PIH, causes, classifications, signs and symptoms, high risk groups, expected complication of PIH and its effect on maternal and fetal/neonatal outcome, screening, and investigation used to diagnose PIH.
- **The second session:** The researcher clarified therapeutic management and its effectiveness in preventing complications. As well as self-identification of danger signs as (headache, visual abnormalities, generalized edema, vomiting, and oliguria) ,dietary intake and food pattern, drugs, physical activity (exercise), and regular self - monitoring of daily fetal movement .
- **The Third session:** The researcher emphasized on knowledge and re-demonstration of women's self-care management regarding PIH, such as daily self-monitoring of body weight, self-monitoring of urinary dipstick testing for screening for presence of proteinuria, self-monitoring of edema, and correct position for measurement of blood pressure.

c. Evaluation phase

- **Tool II part 1, and 2** was used to assess women's knowledge before, immediately and two weeks after the program.
- **Tool II part 3** was used to assess women's reported self-care management before, immediately, and two weeks after the program.
- **Tool III** was used to assess maternal

outcome and neonatal outcome before, immediately, and two weeks after the program.

- **Statistical analysis:**
- Statistical analysis of the data was carried out and the collected data was organized, categorized, computerized tabulated and analyzed by the statistical package for social sciences (Version 20.0. Armonk, NY: IBM Corp).

Results

Table (1): Shows the socio-demographic characteristics of the studied pregnant women. It was observed that the mean age of the study subjects were 25.13±3.45 years, more than two-third (71.7%) were born in rural areas, and more than the half (58.3%) of the study subjects had secondary equivalent education. Considering occupation, slightly more than three quarters of the study subjects (78.3.0%) were housewife. Furthermore, less than the half (41.7%) of the study subjects had barely enough income, and more than one-third (33.3%) hadn't enough income per month.Moreover, more than two-third (66.7%) of them had family history of hypertension.

Table (2): Describes distribution of reproductive history of the studied pregnant women. It was found that the majority of the study subjects (83.3%) had no history of abortion and also was primigravida. As regard the number of weeks of gestation, the mean of gestational age of the study subjects were 29.77±0.89. Concerning the time of initial antenatal visit it was illustrated that more than half of the study subjects (53.3%) were started late with a mean& SD= 24.37±2.6. The mean of antenatal visit of current pregnancy was 4.37±0.99 visits. In relation to attendance of antenatal classes about PIH, no woman of the study subject had attended to antenatal classes about PIH. As well as no woman of the study subject had PIH in the previous pregnancy.

Figure (1): Clarifies the total score level of pregnant women's knowledge regarding Pregnancy induced hypertension. It was found that more than half (58.3%) of the studied women their total score level of knowledge about PIH was poor before implementing the educational session, while the majority of the sample (88.4% and 75.0% respectively) had good level of knowledge immediately and 2 weeks post –program, the difference was statistically significant(X^2 88.295, P<0.001).

Figure (2): Clarifies the total score level of the studied women's knowledge regarding practices of PIH. It was found that the total score level of women's

knowledge regarding practices of PIH was poor (68.4%) before implementing the educational session, while the majority of the sample (91.7% and 88.3% respectively) had good total score level of knowledge immediately and 2 weeks post–program, the difference was statistically significant(X^2 78.313, P<0.001).

Figure (3): Clarifies the total score level of the studied pregnant women's reported self-care management. It was found that more than two-third of the women (70%) had inadequate self-care management regarding self-care management before implementing the educational session, while the majority of them (88.3%% and 85% respectively) had adequate self-care management immediately and 2 weeks post –program. These findings was statistically significant(X^2 37.136, P<0.001).

Table (3): Shows percent distribution of the studied women's pregnancy outcomes after delivery. It was observed that the majority of the studied women (96.6%) delivered cesarean section. Regarding occurrence of complications, it was clear that the majority (95%) had no complications, and only 5% of the studied women had complications (antepartum hemorrhage, postpartum haemorrhage, and coagulation disorders). It was also found that none of the women were admitted to the intensive care unit (ICU).

Table (4): Shows assessment of the neonate outcome among the studied women after delivery, according to the viability status of fetus, it was observed that the majority of the fetuses (98.3%) were live born.Considering the gestational age at delivery, it was found that slightly less than three-quarter (73.3%) were born full term, while one quarter were born preterm, and only 1.7% born preterm. The mean birth apgar score at first minute and at fifth minute was (6.89 ± 0.92 P and 7.19 ± 1.23 respectively). It was also clear that three-quarter (75%) of the neonates were normal birth weight, and the majority (91.7%) didn't admit to the intensive care unit.

Table (1): Percent distribution of socio-demographic characteristics of the studied Pregnant women (n=60)

Socio-demographic characteristics	The studied pregnant women (n=60)	
	No	%
Age (years)		
<25	25	41.7
25- <30	24	40.0
30 or more	11	18.3
Mean±SD	25.13±3.45	
Marital status		
Married	60	100.0
Residence		
Urban	17	28.3
Rural	43	71.7
Level of education		
Illiterate	10	16.7
Elementary or preparatory	8	13.3
Secondary or equivalent	35	58.3
University or above	7	11.7
Occupation		
Housewife	47	78.3
Work	13	21.7
Type of work	(N=13)	
Worker	4	30.8
Employee	7	53.8
Teacher	2	15.4
Type of family		
Nuclear family	37	61.7
Extended family	23	38.3
Number of family members		
Less than 3	47	78.4
3-5	11	18.3
6 or more	2	3.3
Family income per Month:		
Enough	15	25.0
Barely enough	25	41.7
Not enough	20	33.3
Family history of hypertension		
Yes	40	66.7
No	20	33.3
Degree of proximity(n=20)		
First degree	17	85.0
second degree	3	15.0

Table (2): Percent distribution of reproductive history of the studied pregnant women .

Reproductive history	(n=60)	
	N	%
Number of gravid		
Primigravida	50	83.3
Two	8	13.3
Three	2	3.4
History of PIH in previous pregnancy		
Yes	0	0.0
No	60	100
Number of abortion		
None	50	83.3
One	8	13.3
Two	2	3.4
Duration of current pregnancy(weeks of gestation) Mean±SD	29.77±0.89	
Time of first antenatal care visit		
Early (In the 1st trimester)	28	46.7
Late(In the 2nd trimester)	32	53.3
Mean±SD	24.37±2.6	
Number of antenatal visits of current pregnancy Mean±SD	4.37±0.99	
Attendance of antenatal classes about PIH		
Yes	0	0.0
No	60	100

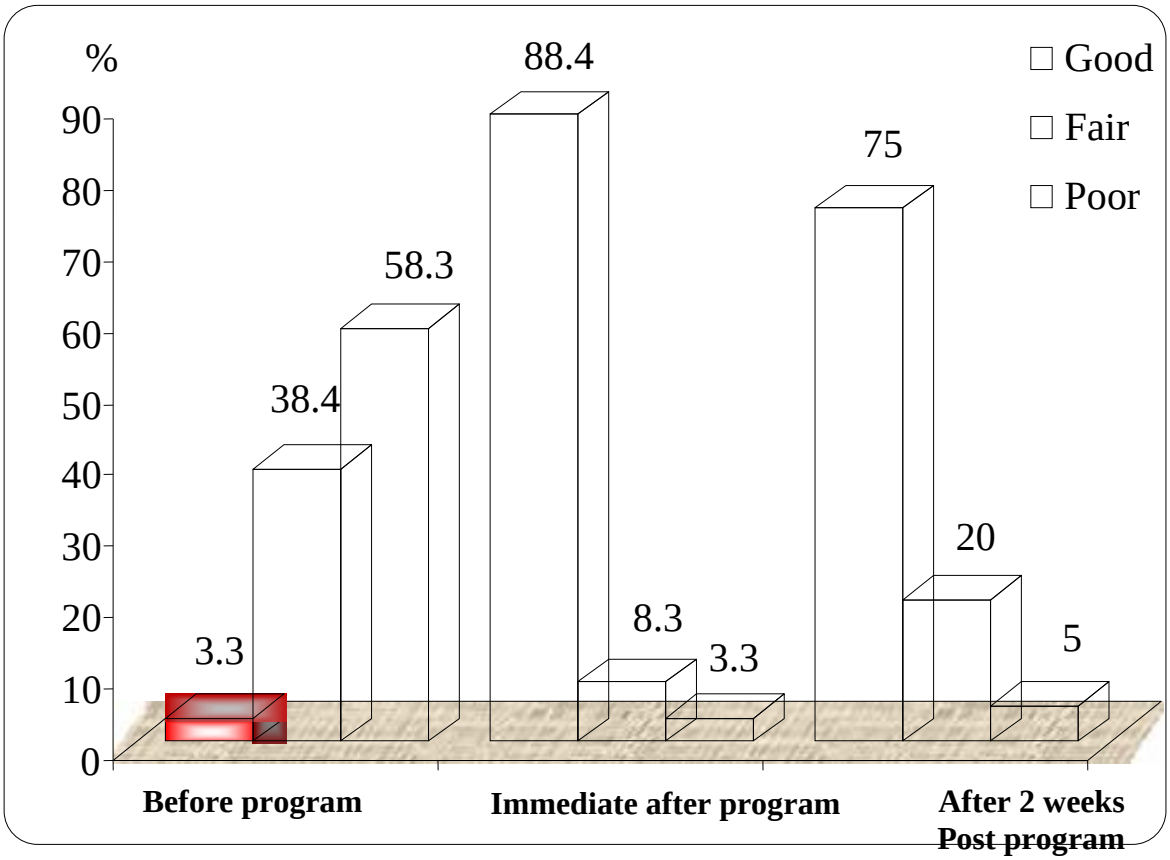

Figure (1): Total score level of women's knowledge regarding Pregnancy induced hypertension, before, immediate and after implementation of the educational program.

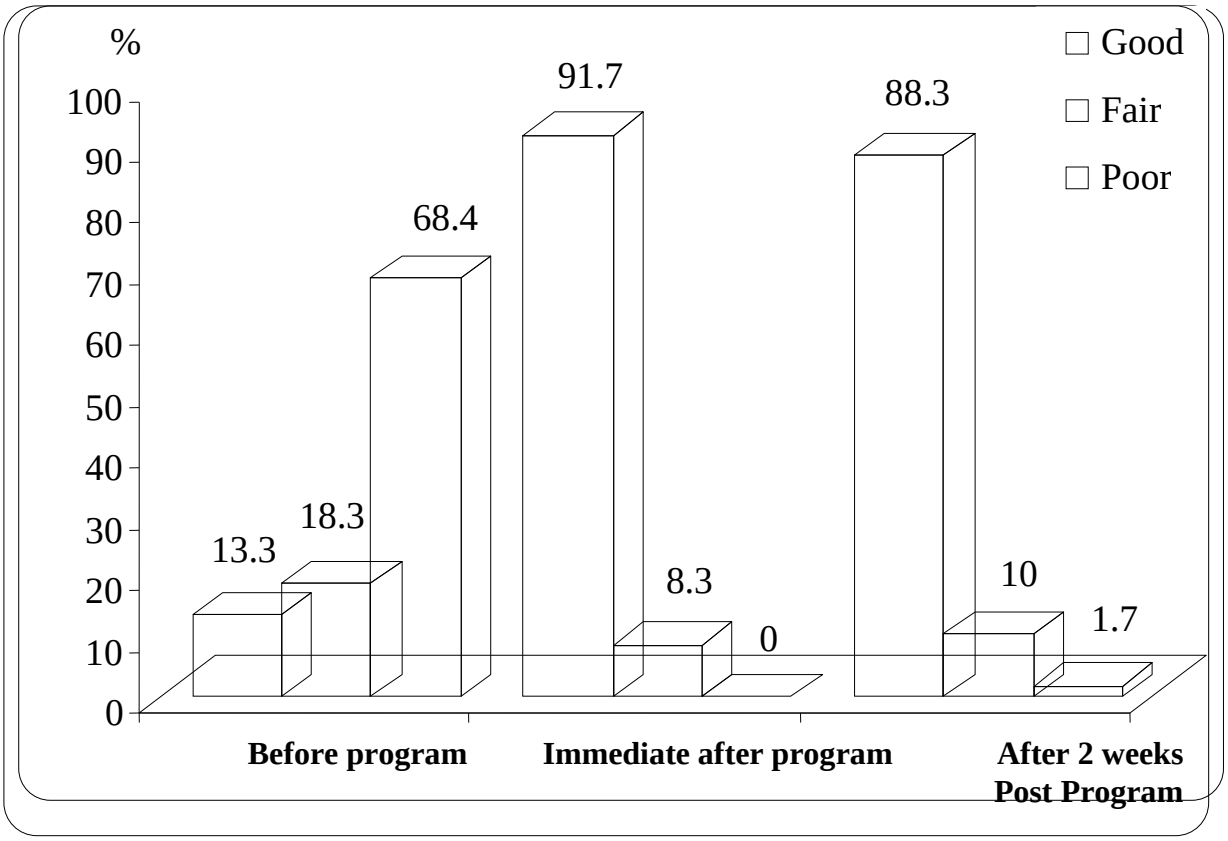

Figure (2): Total score level of the studied women's knowledge regarding practices of PIH before, immediate and 2 weeks after implementation of the educational program.

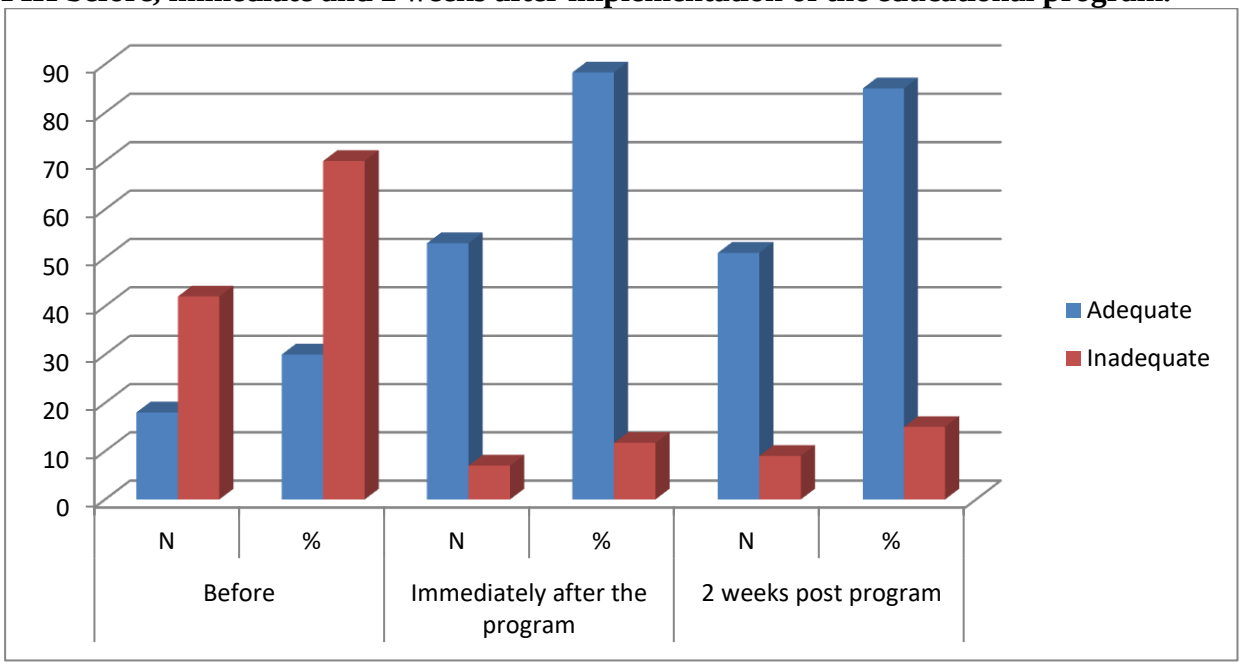

Figure (3): Total score level of the studied women's reported regarding self-care management of PIH before, immediate and 2 weeks after implementation of the educational program.

Table (3): Assessment of the studied women's pregnancy outcome (maternal outcome)

Pregnancy outcome	(n=60)	
	No	%
Type of delivery		
Normal	2	3.33
Cesarean	58	96.67
Occurrence of a raised complications regarding PIH#		
Coagulation disorders(thrombocytopenia)	2	3.33
Antepartum haemorrage	1	1.66
Postpartum haemorrhage	1	1.66
None	57	95
Maternal distress		
Present	0	0
Absent	60	100
Labor complications regarding PIH		
Present	0	0
Absent	60	100
Admission to intensive care unit (ICU)		
Yes	0	0
No	60	100
Length of hospital stay		
Hours	2	3.3
Day	54	90
More than one day	4	6.7
Crisis of severe stress or depression		
Yes	4	6.7
No	56	93.3
Continuous need for analgesics		
Yes	2	3.3
No	58	96.7
Problems with sleeping		
Yes	4	6.7
No	56	93.3
Complain from diarrhea, vomiting or epigastric pain after delivery		
Yes	0	0.0
No	60	100.0
Occurrence of convulsions after delivery	0	0.0
Yes	60	100
No		

 # More than one item

Table (4): Assessment of the studied women's pregnancy outcomes(neonate outcome)

Neonatal outcomes.	(n=60)	
	No	%
Viability status of the fetus		
Live born	59	98.3
Neonatal death	1	1.7
Gestational Age at delivery (wks)		
Preterm 34-36	16	26.7
Full term >=37	44	73.3
Apgar score at 1 min.(n=58)	18	31
<7	40	69
>=7		
Mean±SD	6.89±0.92	
Apgar score at 5 min.(n=58)		
<7	17	29.3
>=7	41	70.7
Mean±SD	7.19±1.23	
Weight		
Low birth weight <2.5 kg	15	25.0
Normal birth weight 2.5kg or more	45	75.0
Height		
41-49 cm	54	90.0
50-53cm	6	10.0
Intra-uterine fetal growth retardation		
Yes	0	0.00
No	60	100
Needs of neonate for oxygen administration/ resuscitations		
Yes	6	10
No	54	90
Presence of any congenital anomalies		
Yes	0	0.00
No	60	100
Occurrence of respiratory distress syndrome		
Yes	4	6.7
No	56	93.3
Presence o meconium in the amniotic fluid(fetal distress)		
Yes	0	0.00
No	60	100
Admission of neonate to intensive care unit		
Yes	5	8.3
No	55	91.7
Length of stay at intensive care unit (n=5)		
Hours	2	40.0
Days	2	40.0
Weeks or more	1	20.00
Occurrence of any problems after delivery		
Hypoglycemia	2	3.3
Jaundice in the first 24 hours	1	1.7

Discussion

Pregnancy induced hypertension (PIH) is defined as hypertension that develops direct from the gravid state includes GH, pre-eclampsia, and eclampsia. About 10% of pregnancy is complicated with HDP. HDP is a multi-organ, heterogeneous disorder of pregnancy and their incidence is increasing.Inaddition PIH lead to significant maternal, fetal, neonatal mortality and morbidity [(17)]. Effective management of PIH with health educational intervention can significantly help women to acquire new knowledge, skills and actions to cope with the practical aspects of self-care measures regarding PIH [(18)]. Therefore, the current study was conducted to evaluate the effect of implementation of health education program on pregnancy outcome among primipara women suffering from pregnancy induced hypertension.

Concerningsocio-demographic characteristics of the studied women, the finding of the present study revealed that PIH cases their mean age were 25.13 +3.45. ***In addition***, more than half of women were from rural areas, had secondary/diploma education, and were housewives. Also, less than half of studied women their family income per month from their point of view was barely enough and only one-quarter their income were enough. As well as socioeconomic factors such as, low income, poor education, residences in low income areas are strong indicators of the development of hypertension. These findings are supported by, **Shahid et al. (2012) [(19)], Parmer et al. (2012) [(20)], and Martins et al.(2012) [(21)],** they showed that incidence of PIH was higher among women with low socioeconomic status, low educational level and unemployed women.

Concerning the reproductive history of the studied women, the findings of the current study reported that more than half of the studied women start antenatal care visit later after 20 weeks gestation and the majority of them reported that they had their initial antenatal visit after 20 weeks gestation to take tetanus vaccine. The mean of antenatal visits number of current pregnancy were 4.37+0.99. These findings are in agreement with **E-Moselhy et al. (2011) [(22)],** who recommended that antenatal care for pregnant women should be improved and mothers in different areas in Egypt must be understand the epidemiology of PIH as a primary prevention, consequently careful antenatal care especially for women at risk of preeclampsia is recommended. On the

other hand,**El Shair et al. (2012)** [23]**,**study revealed that most of pregnant women were registered later to the antenatal care.

Furthermore**,** it is disappointing to say that all of the studied women did not attend any health education classes during pregnancy related to PIH. The results of the present study could be reasonable proof of drawbacks of health education topics as PIH during antenatal care provided to women during antenatal visits. Needless to say that providing essential health education to pregnant women through antenatal care has been advocated as effective tools to reduce maternal and prenatal morbidity as well as mortality.

As regards total women's knowledge level regarding PIH before and after implementation of the health education sessions, the present study revealed that accordingly, before health education sessions more than half of the studied women had poor level of knowledge regarding PIH. These results are supported by **Maputle et al. (2015)** [24], who assess knowledge towards PIH among pregnant women and revealed that the majority of pregnant women had deficit knowledge about PIH. Moreover, **Salim et al. (2017)** [25]**,** had assessed knowledge of gestational hypertension among primigravida women and pointed out that about three-quarter of the study sample had poor level of knowledge regarding gestational hypertension.

After implementation of health education sessions, about three-quarter of women accomplished good level of knowledge regarding PIH. While there is slightly decline in knowledge level after 2 weeks follow up compared to the immediate post test. This may be due to, studied women might forget some knowledge or may be due to fear/stress from delivery which is expected. Nonetheless, the levels were still significantly higher than pre-program levels. These results are supported by **Joseph (2013)** [26]**,** who mentioned that the majority of antenatal mothers accomplished maximum knowledge score after antenatal care package which was effective in improving their knowledge about PIH.

The findings of the current study revealed that the majority of the studied women accomplished good level of knowledge regarding self-care management. These results are supported by**Jayasutha et al. (2013)** [27]**,** who assessed the impact of PIH and patient counseling on pregnancy outcome. They stated that an improvement in patient's knowledge increase their understanding about the disease, therapies. Thus enhanced compliance and improve

pregnancy outcome. Many studies also recommended continuous educational programs as well as scientific researches to enhance pregnancy outcome.

According to the studied women's reported self-care management regarding PIH, the findings of the present study revealed that the majority of the studied women had inadequate level of self-care measures before health education sessions, these results are dissimilar **with Hussian et al. (2016)** [(2)]**,** who assessed self-care management of PIH for pregnant women attending primary health care centers. They mentioned that women's level of self-care management of PIH was adequate and no-one among the studied items are formed low assessment. The possible explanations of the finding of the present study involve that study sample were primipara women and more than half of them started antenatal care visits later after 20 weeks gestation as well as no one of them attending antenatal classes related to PIH.

As regards to maternal outcomes, the results of the current study revealed that the majority of the studied women had no complications. These results are supported by**Kolluru et al. (2016)** [(28)], who observed that maternal complications of hypertensive pregnant women were less in booked women than un-booked and HELLP syndrome was the commonest maternal complication followed by acute renal failure. Another study done by, **Parmar et al.(2017)** [(29)]**,** stated that highest incidence of eclampsia followed by antepartum hemorrhage and disseminated intravascular coagulation respectively among the hypertensive pregnant women who had lack of awareness regarding antenatal care. Additionally,**Kilembe et al. (2004)** [(30)]**,** they confirmed that only half of studied women are booked for antenatal care, so that maternal complications included highest rate of eclampsia, followed by severe preeclampsia, disseminated intravascular coagulation (DIC), acute renal failure (ARF), pulmonary oedema as well as maternal death.

Moreover the present study concluded that the majority of fetuses were survived without any complications, and about three-quarter newborns were delivered with normal birth weight 2.5 kg or more. These results are consistent with **Abdelati et al. (2016)** [(31)]**,** who presented that neonatal outcomes were improved among mothers group received nursing care after implementation of educational program for them as regards newborn measurements, and prenatal and also postnatal complications. At the same line

Hassan et al. (2015) [32]**,** reported that the majority of fetus survived and respiratory distress syndrome was the most common cause of admission to intensive care units as well as increase percentage of fetus with low birth weight. This because that about half of mothers revealed irregular ANC less than 4 visits.

Accordingly, empowering women with knowledge regarding PIH through health education program enables them to seek care, follow medical procedures, and participate in health education program. Knowledge and awareness about PIH and its self-care management are translated to improve their self-care measures and increase their commitment with the care regimen, which ultimately contributed to complications reduction. So, the study findings have proved that health education program is necessary step for better management of PIH to improve pregnancy outcomes for the women and her offspring.

Conclusion

Based on the findings of the present study, it can be concluded thatthe studied pregnant women revealed improvement of their level of knowledge as well as their self -care management regarding PIH after implementation of health educational program which inturn reflect positive effect on the maternal and neonatal outcomes.

Recommendations

This study recommended Planning and development of antenatal health educational classes for all pregnant women to increase their awareness about importance of early antenatal care, as well as proper screening for early diagnosis and effective management of PIH to improve their pregnancy outcome.

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Quality of Remote Learning during Outbreak of COVID 19 Pandemic and its Effect on Nursing Students' Satisfaction

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Abstract:

Background: COVID-19 interfere the designed system of education to achieve cognitive, affective, and psychomotor domain of learning and rapid application of remote learning systems is linked to obstacles that can affect students' satisfaction. **Aim of the study**: This study directed to assess quality of remote learning as perceived by nursing students and its effect on their satisfaction. **Subjects and method:** A descriptive, correlational research design was applied. The current study was conducted in the faculty of nursing, Tanta University. A convenience sample consisted of 794 undergraduate nursing students was involved in the study. Quality of Remote Learning and Nursing Student's Satisfaction regarding remote Learning scales were utilized to achieve the aim of this study. **Results**: More than sixty percent of nursing student perceived quality of remote learning as low especially for faculty staff, course structure, information, and system quality.As well as nearly two thirds of nursing student were dissatisfied with remote learning. **Conclusion:** Quality of remote learning affect nursing student's satisfaction where there was a statistically significant positive correlation between overall quality of remote learning and overall nursing student's satisfaction. **Recommendation**: Improving faculty staff online experiences is vital by providing continuous training and education opportunities. Also, maintaining powerful online education platform and internet infrastructure is necessary to improve remote learning quality and increase nursing student's satisfaction.

***Keywords*:** Nursing Students, Remote Learning, Student's Satisfaction.

Introduction

The global spread of COVID-19 has greatly impacted the higher education sector resulted in the suspension of classes, disturbing the original learning plans and threatened student's future education privileges [(1)]. The whole education system in universities has changed from a traditional education system to an online education based on remote learning for the continuance of academic activities. Remote learning is now much more than virtual education, and in the context of the COVID-19 pandemic, it became a social phenomenon and necessary approach to sustain normal teaching order [(2)].

Remote learning is defined as educational activities takes place online in synchronous or asynchronous environments. It depends on the use of electronic media and devices for enhancing accessibility of training, communication and collaboration that helps in accepting new ways of realizing and establishing learning [(3,4)]. Information in this type of learning is communicated by technology means, such as conversation boards, video conferencing, and online assessments. Remote learning can be characterized as a tool that can make the teaching–learning process more student-centered, more innovative, and even more flexible [(5)]. It provides nursing student the aptitude to learn on their own time and place

as well as join online to download resources that are crucial to their learning requirement[(6)].

Effective application of remote learning is mainly depending on the quality and efficiency of its educational aspects including system, services, faculty staff, course structure, learners, and information [(7)]. System quality directly affects students' learning process. The three constructs systems (educational, technical and support system) established in respect of students' desires and requirements as well as help the learner become competent and self-confident in online learning, social interactions, and self-evaluation [(8)]. Nursing students need to be supported by services of information technology (IT) by providing clear instruction and training about how to deal simply with the Moodle to gain needed knowledge and skills easily and achieve learning goals[(9)].

Faculty staff efficacy also are the most significant part influence utilizing remote learning system that through supervision and emotional support can assist the students to achieve their goals, develop

control over the educational process and decrease stress in the crises time [8,10]. Remote learning efficacy relies on how course content designed, outlined, organized and interacted in attractive way through the Moodle. Aspects related to learner such as attitude, prior experience in online learning, and computer applications are vital that enable them to deal with the Moodle straightforwardly, complete their tasks more rapidly, facilitate their learning performance and improve their learning satisfaction [7].

Nursing students' satisfaction considered to be an important indicator of the quality of academic experience in learning. Student satisfaction is defined as "the student's perceived value of their learning experiences in an educational situation" [11]. Students' satisfaction with remote learning linked to their experience in applying this kind of learning [12]. Their satisfaction dependent mainly or affected by course content, student-instructor interaction, the instructor's role in the course and the use of effective learning tools. Where, satisfied students appear to be engaged, encouraged and responsive; contribute to an effective learning environment; and re reach at higher levels [13].Conversely,dissatisfied students will reduce the practice of remote learning or, in the end they will never use it anymore[14].

Significance of the study

To finish the academic year during the COVID-19 outbreak, nursing students abruptly enforced to practice remote learning. Recent literatures highlight certain weakness of online teaching infrastructure and disagreement about online learning quality[15,16]. As well, the fact of challenging implementation of online learning in Egypt that affects its quality [17].Besides, the negative consequence of the current critical circumstances of COVID-19 on students. So, it becomes serious to assess the quality of remote learning and its effect on nursing student satisfaction.

Aim of the study

This study aimed to assess quality of remote learning as perceived by nursing students and its effect on their satisfaction.

Research Questions

1- What are the remote learning quality levels as perceived by nursing students?
2- What are the nursing students' satisfaction levels?
3- Is quality of remote learning affect nursing students' satisfaction?

Subjects and Methods:

Research design: A descriptive, correlational design was applied.

Research Setting: This study was conducted at faculty of nursing, Tanta University.

Subjects: This study utilized a convenience sample, which consisted of 794 undergraduate nursing students from first (n=197), second (n=275), third (n=138), and fourth (n=184) year from the previously mentioned setting. The overall response rate was 53.2% out of 1492 nursing students (males & females) in the academic year of 2019/2020, who agree to participate in data collection.

Tools of data collection

Two tools were used to gather data of the study.

1-Quality of Remote Learning Assessment Scale.

The scale was based on the updated version of **DeLone and Mclean (2003)[18]** and modified by the researchers through omitting and merging the items with the same meaning to assess the quality of remote learning as perceived by nursing students. It consisted of 24 items classified into six dimensions; system quality (5 items), service quality (2 items), faculty staff quality (6 items), course structure quality (4 items), learner quality (3 items) and information quality (4 items). Besides, four items related to nursing students' demographic characteristics. The nursing students' responses were evaluated against 3-points Likert scaling where 1 =strongly disagree 2= neutral and 3 =strongly agree. Levels of remote learning quality interpreted statistically based on the cut of value into three levels; ≥75% as high level; <75%-60% as moderate level; <60% as low remote learning quality

2-Nursing Student'sSatisfactionregarding Remote Learning scale

Nursing student' satisfaction scale was constructed by **Abo Seada&Mostafa(2017)[19]** in Likert scaling with five points scaling going from 1 (strongly disagree) to 5 (strongly agree). It contained (12) statements to evaluate nursing student' satisfaction regarding remote learning. Levels of nursing students' satisfaction scored statistically based on the cut of value as; >60% as high satisfactory level; <60% as low satisfactory level.

Procedures

Data collected through a self-administered questionnaire and WhatsApp application. The questionnaire translated into the Arabic language to be clear for all nursing student. The questionnaire took

approximately 10 to 15 minutes for each participant. The actual time for data collection between June 2020 and August 2020 during the academic year 2019/2020.

Ethical considerations: The authors obtained approval from the authoritative personnel at the Faculty of Nursing, Tanta University. Oral consent was obtained from nursing students after explaining the aim of the study. The participation in the study was voluntary without penalty from unwilling participants. They were told that their anonymity and answers would be kept confidential.

Validity and reliability: A panel of five experts was invited to review the questionnaire from the nursing administration specialty to assess face and content validity. Based on this revision, necessary modifications were done, and a pilot study was conducted on 10% of nursing students (n=79) who are excluded from the study sample. Reliability of the tools was tested using Cronbach's alpha coefficient test which equal to 0.801, 0.783 for tool 1,2.

Statistical analysis of the data

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. The Kolmogorov-Smirnov test was used to verify the normality of distribution. Quantitative data were described using range (minimum and maximum), mean, and standard deviation. Significance of the obtained results was judged at the 5% level. The used tests were Chi-square test for categorical variables, to compare between different groups, Monte Carlo correction for chi-square when more than 20% of the cells have expected count less than 5.

Results

Table (1) shows number and percent distribution of nursing student demographic data. The table shows that the highest percent of nursing student (59.4%) at age group < 20 year with mean age 19.57 ± 1.35. More than three quadrants (76.4%) of nursing student are female and the majority (97.9 %) were single. Regarding to grade, 34.6% at second grade followed by 24.8% at first grade, 23.2% at fourth grade and 17.4% at third grade.

Table (2) illustrates distribution of the studied nursing student according to perception of remote learning quality. The table shows that in system quality more than three quadrants (75.5%) of nursing student disagree that Moodle always available for them to perform learning

activities and more than half (54.2%) disagree that Moodle launches and runs right away promotion. Regarding to service quality more than half (55.8%) agree that The IT services staff is available and cooperative when facing error at Moodle.

In relation to faculty staff quality, more than half (50.6%) of nursing student disagree that faculty staff give them chance to talk about the crisis of **COVID-**19 and more than forty percent (46.5%, 43.5%) of them disagree that faculty staff provide emotional support to students, and receive a prompt response to questions and concerns respectively.

More than fifty percent (52.9%) of nursing student disagree that learning materials are presented in an attractive way and more than forty (43.7%, 42.6%) disagree that the materials arranged in a logical sequence and understandable and the learning objectives are conveyed properly respectively.

Concerning learner quality.The table shows that more than fifty percent (54.8%) of nursing student agree that they have sufficient computer and internet skill to deal with this Moodle while more than two fifth (40.4%) disagree that they can learn actively in the e-learning environment. At information quality, more than forty percent (42.7%) of nursing student agree that information in Moodle is in a form readily useable.

Figure (1)showsdistribution of the studied nursing student according to levels of quality of remote learning. In overall more than sixty percent of nursing student perceived quality of remote learning as low especially for faculty staff, course structure, information, and system quality respectively.

Table (3) shows mean percent score and ranking of quality of remote learning dimensions as perceive by nursing students. The highest mean percent (60.47%) was for service quality while lowest mean present (45.62%, 45.48 %) was for faculty staff quality and course structure, respectively.

Figure (2) shows levels of overall nursing students' satisfaction of remote learning.Nearly two thirds of nursing student dissatisfied with remote learning while more than on third were satisfied.

Table (4) shows correlation between overall satisfaction and overall quality of remote learning.As uncovered in table there was a statisticallysignificant positive correlation between overall quality of remote learning and overall nursing student's satisfaction at ($p \leq 0.05$). System quality as well as information quality of remote learning were statistically significant positively correlated ($p \leq 0.05$) with overall student's satisfaction.

Table (1): Distribution of nursing students according to demographic characteristics (n = 794)

Demographic data	No.	%
Sex		
Male	187	23.6
Female	607	76.4
Age		
< 20	472	59.4
20 – 23	322	40.6
Min. – Max.	18.0 – 23.0	
Mean ± SD.	19.57 ± 1.35	
Grade		
First	197	24.8
Second	275	34.6
Third	138	17.4
Four	184	23.2
Marital status		
Single	777	97.9
Married	17	2.1

Table (2): Distribution of nursing studentaccording to perception of remote learning quality (n=794)

Remote Learning quality	Disagree		Neutral		Agree	
	No.	%	No.	%	No.	%
System Quality						
It is easy to use Moodle	212	26.7	290	36.5	292	36.8
Design and user interface of system are attractive, includes all necessary features and functions needed	306	38.5	246	31.0	242	30.5
Moodle is always available for me to perform learning activities	599	75.5	106	13.4	89	11.1
Moodle launches and runs right away promotion	425	54.2	197	24.8	172	21.7
Moodle protects my information logging only with my account and password	326	41.1	221	27.8	247	31.2
Services Quality						
IT provides enough and clear instructions/training about how to use Moodle	229	28.9	189	23.8	376	47.3
The IT services staff is available and cooperative when facing an error	174	21.9	177	22.3	443	55.8
Faculty staff quality						
Faculty staff communicate course content effectively	310	39.0	225	28.3	259	32.7
Faculty staff have experience in using operating systems and internet	320	40.3	226	28.5	248	31.2
I receive a prompt response to questions and concerns from my instructors	345	43.5	227	28.6	222	27.9
Faculty staff have a positive attitude to utilization of Moodle	272	34.3	258	32.5	264	33.2
Faculty staff give me chance to talk about covid 19 crisis	402	50.6	183	23.0	209	26.3
Faculty staff provide emotional support to students	369	46.5	182	22.9	243	30.6
Course structure quality						
The learning objectives are conveyed properly	338	42.6	218	27.5	238	30.0
The materials arranged in a logical sequence and understandable	347	43.7	211	26.6	236	29.7
Learning materials are presented in an attractive way	420	52.9	190	23.9	184	23.2

Evaluation criteria were clearly state for every subject	256	32.2	208	26.2	330	41.5
Learner quality						
I have sufficient computer and internet skill to deal with this Moodle	187	23.6	172	21.7	435	54.8
I can learn actively in remote learning environment	321	40.4	195	24.6	278	35.0
I believe that remote learning gives me the opportunity to acquire new knowledge	283	35.7	196	24.7	315	39.7
Information quality						
Information in Moodle is concise and clear	279	35.1	247	31.1	268	33.8
Information in Moodle is sufficient and complete	302	38.0	240	30.2	252	31.7
The content in the Moodle is up to date	241	30.4	251	31.6	302	38
Information from Moodle is in a form readily useable	235	29.6	220	27.7	339	42.7

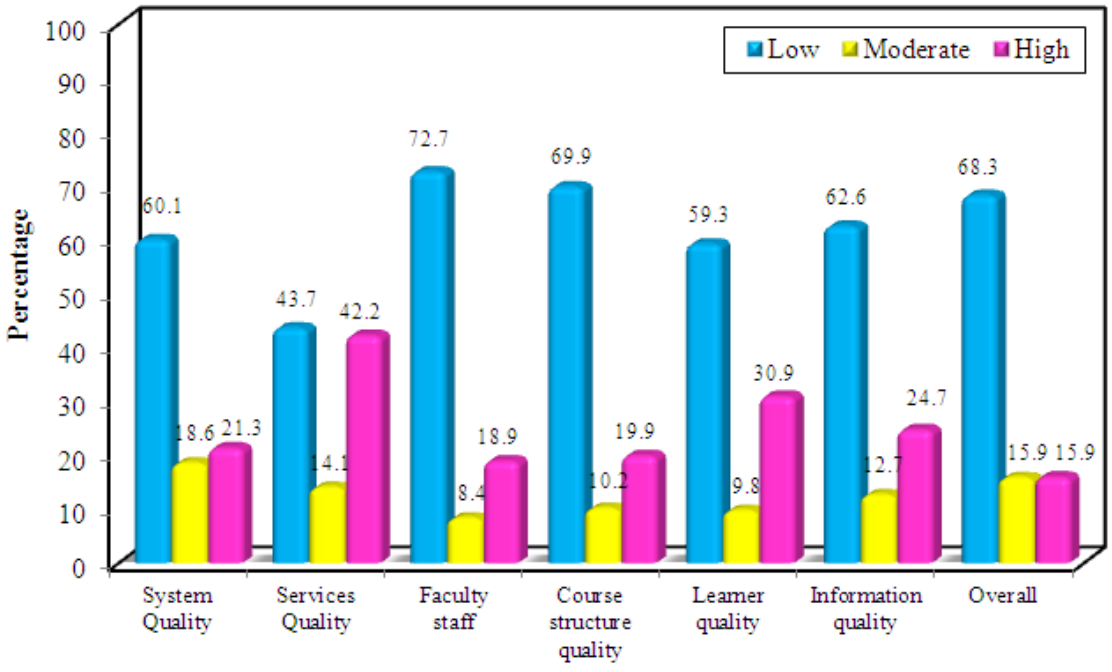

Figure (1): Distribution of nursing student according to levels of quality of remote learning

Table (3): Mean percent score and ranking of quality of remote learning dimensions as perceived by nursing students (n = 794)

Quality of Distance Learning dimensions	Mean%	Rank
System Quality	52.41	3
Services Quality	**60.47**	**1**
Faculty staff quality	**45.62**	**5**
Course structure quality	**45.48**	**6**
Learner quality	53.78	2
Information quality	51.55	4

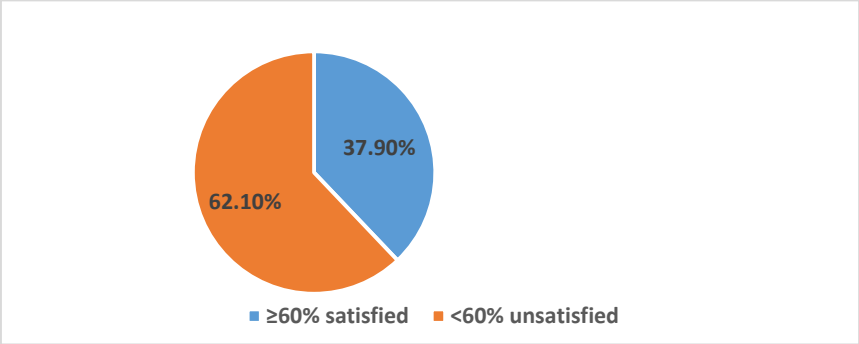

Figure (2): levels of overall nursing students' satisfaction of remote learning

Table (4): Correlation between overall satisfaction and overall quality of remote learning(n = 794)

Quality of Distance Learning	Overall satisfaction	
	R	**P**
System Quality	0.070	0.049*
Services Quality	0.052	0.144
Instructor quality	0.066	0.063
Course structure quality	0.049	0.167
Learner quality	0.067	0.060
Information quality	0.076	0.033*
Overall	**0.075**	**0.035***

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Discussion

Sudden threat of COVID-19, pandemic that transpired in late 2019 and the beginning of 2020 forced all organizations of education around the world to be shifted from traditional face to face teaching methods to remote learning. But the implementation of remote learning method during this period has certain challenges to university and to any participated individual in the process of learning where all parties seek to improve quality of learning as possible [(20)]**.** So, present study aimed to assess the quality of remote learning as perceived by nursing students and assess its effect on their satisfaction.

System quality

The study result revealed that more than three quadrants of nursing student disagree that Moodle always available for them to perform learning activities and more than half disagree that Moodle launches and runs right away promotion. This may be due to high pressure from users of model from all nursing student and staff. This is agreed with **Bao, (2020)**[(21)]who found that overload from users often closedown platform andservers unable to provide services to many users. **Favale et al. (2020)**[(22)]mentioned that users can face many technical difficulties that hinder and slow-down remote learning. **Adnan andAnwar (2020)**[(23)]found that a vast majority of students are unable to access the internet due tosystem problems. In this regard**Mahmoud**,**El- Magrabi, and Mohamed (2015)**[(24)], **Kaur and Bhatt (2020)** [(25)]**and Ali (2020)**[(26)]recommend about significance of improving capacity of learning management system (LMS) and network at universities.

Service quality

Result of the study revealed that the highest mean percent score was for service quality and more than half of nursing students agree that the IT services staff is available and cooperative when facing an error at Moodle. This is exactly due to large effort done from faculty's IT members during the period of COVID-19. This study supported by **Markova, Glazkova and Zaborova(2017)**[(27)]who found that work of the support staff was rated as excellent and good from students. **Al-Fraihat et al. (2020)**[(7)]also in agreement with the result and stated that presence of technical staff who support students, provide guidance and train on how to use the model contribute to high level of service quality of online learning.

Faculty staff quality

Analysis of the present study results revealed that more than half of nursingstudent disagree that faculty staff give them chance to talk about the crisis of COVID-19 and more than forty percent of them disagree that faculty staff provide emotional support to students, and receive a prompt response to questions and concerns. This is may be due to the sudden closure of university during COVID-19 has left many faculty staff uncertain about their role and unable to use technology effectively to communicate and teach. This result agreed with**Gillett-Swan(2017)**[28]who mentioned that university staff need to be proficient in using technology. Also, **Tara et al. (2020)**[29] stressed about the importance of university role in providing educators with required opportunities to develop technologically skill. On contrary**Alabdullaziz et al. (2011)**[30]not support result and found that instructors are confident in their abilities when using internet and e-learning environments. Also, **Markova et al.(2017**)[27]result found that student perceived instructor as well in their e- learning skills.

Course structure quality

Result of this study showed that the lowest mean percent was for course structure quality, where, More than fifty percent of nursing student disagree that learning materials are presented in an attractive way and more than forty disagree that the materials arranged in a logical sequence and understandable and the learning objectives are conveyed properly. This is due to urgent switch to remote learning with restricted time plan does not give any opportunity for faculty staff members to prepare and organize learning materials that are suitable to this new method of learning. The same result founded by **Doghonadze et al. (2020)**[31]who revealed that learning materials that exist are not well organized and with low quality. In this regard, **Elfriantoet al. (2020)** [32]stressed that teaching materials must be properly planned, so they are tested and ready in time. Also, **Kaur (2020)**[25]**, Adnan andAnwar (2020)**[23] indicated that educational organizations need to improve and redesign their curriculum with appropriate content that is suitable for online lectures. While**Demuyakor (2020)**[33]disagree with our result and found that students are satisfied with the learning materials presented.

Learner quality

The study result showed that more than two fifth of nursing student disagreed that

they could learn actively in the e-learning environment. This may be due to students' loss motivation to engage in this new learning environment due to the lack of face-to-face contact with teachers and peers.This is congruence with **Dhawan (2020)**[5]who mentioned that students want two-wayinteraction which sometime gets difficult to implement in this new environment. Also, **Zhu et al. (2020)**[34]recommended about important of strengthening social interactions in e-learning environment. But, **Ali (2016)** [6]disagree with result and found that majority of nursing students' willingness to learn in this process. **Hung et al. (2010)**[35] disagree with result and found that students are highly motivated for e-learning.

Information quality

Result of study showed that more than forty percent of nursing student agreed that information in Moodle presented in a form readily useable. Information shaped by learning management system is important as computer hardware and software because it helps students to use the system appropriately. This result supported with**Alkhalaf et al. (2013)**[36]who revealed that more than forty percent of student confirmed that an e-learning system provides information in an easy, simple, clear, and well-coordinated way.

Total quality

Result of the study revealed that more than sixty percent of nursing student perceived quality of remote learning as low especially for faculty staff, course structure, information, and system quality. This is because quality of remote learning requires significant planning and teamwork from all participant in learning process especially stakeholders of e-learning system as learners, faculty staff, institution, and administration. This result is in agreement with**Lassoued et al. (2020)**[37]who mentioned that there are four basic obstacles for achieving quality in remote learning including personal, academic, technical and financial and organizational obstacles. Additionally,**Abbasi et al.(2020)**[16] found that more than seventy percent of students have negative perceptions towards e-learning. Also, **Adnan andAnwar (2020)**[23] highlighted that online learning cannot produce desired results in underdeveloped countries. **Doghonadze et al. (2020)**[31]concluded that many countries need to do more to be able to switch to high-quality of distance education. In contrast, **Allo, (2020)**[38]study showed that online

learning is good during COVID-19 pandemic. Also, **Bączek et al.(2020)** [39]found that high percent of respondents rated e-learning as enjoyable.

Student satisfaction

Our result showed that nearly two thirds of nursing student dissatisfied with remote learning. This is due to considerable percentage of students believe that remote learning did not gives them any opportunity to acquire new knowledge due to difficulties in remote learning environments such as technical problems, sense of isolation, and lack of social support. This is agreed with **Ghaderizefrehand Hoover (2018)**[40]who recommended that higher levels of understandability, interest, and promoting awareness led to increased students' satisfaction with the online learning experience. Also, **Pingle's (2011)**[41] stressed on the importance of presence of student right attitude and preparedness to apply e-Learning program successfully. The result disagrees with result of **AboSeadaand Mostafa. (2017)**[19]who found that majority of nursing students highly satisfied with e-learning experience.

Correlation

Study result showed statistical positive correlation between overall nursing student satisfaction and overall quality specifically quality of system and information. This result agreed with **Pham et al. (2019)**[42] who found that overall e-learning quality was positively related to e-learning students' satisfaction**. Shahzad et al. (2020)**[43] who found that information quality and system quality have direct relationships with user satisfaction. Also, **Chen et al. (2020)**[1] found platform availability has the greatest influence on user satisfaction and **Fleming et al.(2016)**[44]result indicate that technological support are considered as a predictors for users' satisfaction.

Conclusion

Remote learning becomes a prerequisite for any higher education institute that strive for recognition at this era. This institute has to apply this new type of learning with high quality in order to satisfy students who are considered the customers of this service.

Recommendation

Educational authorities (decision makers) need to:

- Improve the online education platform**,** internet infrastructure and access to the internet.
- Support faculty staff by providing continuous training and education

opportunities in the field of distance education and its requirements.

- Exert effort to provide students with sufficient, concise, clear and will organized information at Moodle.
- Designing framework to assess and ensure quality of remote learning.
- Empower and prepare student for e-learning through educational programs.

Faculty staff

- Redesign curriculum, study materials to be suitable to new learning environment.
- Seek continuously for methods that improve their knowledge and skills in distance learning.
- Make efforts to humanize the learning process to the best possible extent to help students to adapt to remote learning.
- Future research is required to study competency of nursing student and faculty staff in e-learning.

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Exploring the Relationships between Job Burnout, Job Satisfaction, and Missed Nursing Care Among Staff Nurses

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Abstract:

Background: Job satisfaction in nursing is associated with increased nurse retention, better organizational performance, and lower reports of staff nurses' job burnout. Burnout staff nurses are at greater risk of making mistakes, which can involve mistakes that arise from missing or delayed nursing care. Missed nursing care is a factor that has been related to job satisfaction. **Aim:** To explore the relationships between job burnout, job satisfaction, and missed nursing care among staff nurses. **Methods:** Descriptive correlational design. This study was included a convenience sample of 124 staff nurses who were providing nursing care at emergency hospital Mansoura University. Three scales were utilized for data collection namely; Maslach burnout inventory, job satisfaction scale, and missed nursing care scale. **Results:** The majority of staff nurses had a high level of job burnout regarding emotional exhaustion and depersonalization, but regarding personal accomplishment, the majority of staff nurses had a low level of job burnout. In addition to a moderate level of job satisfaction and a low level of missed nursing care. **Conclusion:** There was a statistically significant negative relationship between staff nurses' job burnout and job satisfaction, but staff nurses' job burnout was correlated positively with their perception of missed nursing care. **Recommendations:** Nursing managers should develop training programs that will help staff nurses to utilize effective coping strategies toward work stress and burnout, create a safe and healthy work environment with adequate staff and resources to avoid the occurrence of job burnout, missed nursing care, as well as improve job satisfaction among staff nurses.

Keyword: Job Burnout, Job Satisfaction, Missed Nursing Care, Staff nurses.

Introduction

Nursing is a demanding career concerned with extreme facets of health and illness inhuman beings. Consequently, nursing's stressful nature will inevitably contribute to job burnout. Burnout is a mental illness described as the reaction of the body to the failure of the coping mechanisms that people usually use to relieve work stress. Stress accumulation exhausts staff nurses to the point that their energy resources are inadequate to try to overcome the stress of a situation[8,9].

Burnout includes three key aspects; (i) Emotional exhaustion, which refers to the state of physical and emotional exhaustion due to job stress, which is associated with low energy, fatigue, depression, hopelessness and helplessness. (ii) Depersonalization, meaning the interpersonal component of burnout that manifests in unfeeling, hostile attitudes towards others and detachment from treatment and instructions. (iii) Low personal achievement that has been identified as the state of negative evaluation [27].

Burnout is occurring due to prolonged imbalance between a nurse and at least one of the following six dimensions of work; first, workload; unreasonable workload and requirements. Second, control; staff nurses do not have adequate control over the services required to complete or perform their job. Third, reward; the incentives may be economical, social and intangible without enough incentive for the job done. Fourth, community; staff nurses do not experience a sense of supportive relationships with their peers and administrators, contributing to frustration and decreasing the probability of social support. Fifth, equity; staff nurses who experience occupational unfairness, workload inequity, and compensation. Finally, values; staff nurses feel constrained by their work to behave against their own values and expectations or when contradictions between the values of the organization are experienced [10,13].

Burnout described as physical and emotional exhaustion that occurs from exposure to continuous stress. Emotional exhaustion can associate with physical exhaustion. Burnout may be harmful to the staff, organization and patients. Exhausted staff nurses are risk for health problems, psychological damage, a decrease in the sense of personal achievement and work dissatisfaction. Negative outcomes of burnout syndrome on personal level are high blood pressure, and cholesterol, tachycardia, abdominal

disorders, cold and exhaustion, physical and psychological symptoms, decline in trust and self-respect, unhappiness, work dissatisfaction, depression, anxiety, agitation, failure in communication and family related issues. Organizational effects caused by burnout syndrome include a decrease in service quality, absenteeism, poor morale, desire to leave work, and increased nursing errors [(33)].

Job satisfaction is defined as the affective response of staff nurses to a job based on contrasting real results with desired results and is a multi-faceted construct that involves both intrinsic and extrinsic work factors. Extrinsic variables include observable aspects of the job, such as wages and benefits, while intrinsic variables include opportunities for personal and professional growth and recognition. Also, job satisfaction is conceptualized as the feelings associated with a job based upon fulfillment of expectations and needs within the working environment [(26)].

Job satisfaction of the nurses refers to the degree to which staff nurses like and appreciate their jobs. It can refer to the general attitude or perceptions of staff nurses towards their job. The degree of work satisfaction may be dependent on the degree of importance that staff nurses have put on their workplace incentives and/or benefits. Staff nurses indicate that the rewards of his / her work and greater job satisfaction resulted in good emotional states, quality and continuous patient care [(40)].

Job satisfaction improves the development of positive attitude, which establishes the relationship between nursing staff, improves peer interactions, staff nurses-patients relationship, and the trust among staff nurses. Subsequently, job satisfaction by collaborative and partnered patient care will enhance teamwork and thereby increase patient satisfaction with care. There are many factors that impact job satisfaction, such as interpersonal relationships, interaction, burnout avoidance, professionalism, career growth, organizational policy, autonomy, and pay [(3, 12)].

Job burnout and job dissatisfaction linked to missing nursing care, in other words, enhancing job satisfaction and avoiding job burnout is crucial to preventing missed nursing care among staff nurses[(40)]. Missed nursing care means as any lapse in essential patient care. Moreover, missed nursing care is defined as any aspect of standard, required nursing care, not provided to the patient. For instance, a failure to ambulate an older adult patient

can contribute to muscle deconditioning and functional decline. These losses can subsequently extend hospitalization, increase mortality and increase the risk of hospital-acquired conditions, post-hospital rehabilitation and nursing home placement [32].Furthermore, it refers to nursing task incompletion, care left undone or implicit rationing of nursing care may represent a form of cognitive prioritization that occurs during external influence. This form of prioritization may be based upon immediate and direct patient care needs, such as medication administration and mandatory nursing tasks such as documentation [30,41].

Nursing care is considered missed if staff nurses reported that one or more activities undone. These tasks include: proper patient supervision, mouth care, administration of medication timely , skin care, pain control, ambulation /or range of motion, proper reporting, coordination of care, patient comfort, discharge planning for patients and families, development or / updating care plans, patient and family teaching[32].

There are many reasons for missing nursing care, such as labor resources (e.g. number and types of nursing staff, level of nursing staff competency, staff qualifications and experience; material resources (e.g. availability of required medications, supplies and equipment); and resources for coordination and communication (among members of the patient care team, between staff nurses and physicians, between staff nurses). Staff nurses must priorities their care activities when one or more of these services are absent from an agency or during a working period, and the stage is set for delayed or omitted nursing care [15].

Significance of the study

Staff nurses are performed critical roles in achieving patient safety and quality because they provide most of the bedside care and are well-positioned to recognize and prevent patient harm. However, nursing care for patients may not be reliable or amply provided; care tasks can be missed, and care omissions can lead to adverse patient outcomes to date, efforts to improve healthcare quality and safety have intentionally emphasized the reduction of omission errors such as administering the wrong dose of medication to a patient because they are easier to detect and more frequently reported [32]. Health care managers seek to maintain quality of patient care through avoid missing nursing care by identifying factors that contributes to missing nursing care, these factors may be staff nurses' burnout and job dissatisfaction. Therefore the present study

will be conducted to explore the relationships between staff nurses' job burnout, job satisfaction, and missed nursing care among staff nurses.

Aim of the study

The present study aims to explore the relationships between job burnout, job satisfaction and missed nursing care among staff nurses through (1) Assessing job burnout, job satisfaction, and missed nursing care among staff nurses, (2) Exploring the relationships between job burnout, job satisfaction, and missed nursing care among staff nurses.

Research questions

1. What is the level of job burnout, job satisfaction, and missed nursing care among staff nurses?
2. Is there a relationship between job burnout, job satisfaction, missed nursing care, and staff nurses' personal characteristics?
3. Does staff nurses' job burnout correlates with their job satisfaction?
4. Does staff nurses' job burnout correlates with missing nursing care?
5. Does staff nurses' job satisfaction correlates with missing nursing care?

Subject and methods

The research design, setting, and participants

The research design was descriptive correlational design. The present study was undertaken at emergency hospital that affiliated to Mansoura University. It concerned with providing health care for acute, critically and emergency cases with 141 bed capacity. It includes inpatient units as neurosurgery, vascular surgery, cardiothoracic surgery, orthopedic surgery, and surgical intensive care units, in addition to other departments as radiology, blood bank, pharmacy, operations. The study includes a convenience sample of 124 staff nurses who were providing nursing care during the time of data collection.

Tools of data collection

Three tools were utilized to collect the data of the current study as follows;

1. Maslach Burnout Inventory

This scale was developed by Maslach and Jackson(1981)[23]to assess job burnout among staff nurses. It includes two sections; the first section concerned with personal data of the studied staff nurses as age, gender, marital status, education, working hours, and experience. The second section includes 22 items that categorized under three domains as follows; (1) Emotional exhaustion includes 9 items. (2) Depersonalization includes 5 items and (3) Personal accomplishment includes 8 items.

Scoring system

Theses 22 items rated on seven-point Likert scale ranging from zero for never to six for every day. The emotional exhaustion and depersonalization dimensions with higher scores indicate a higher degree of job burnout, while personal accomplishment with high scores representing a low degree of job burnout. The total scores of staff nurses' job burnout subscales were classified into three levels as showed in the table (1) [25].

Table (1): Levels of staff nurses' job burnout subscales.

Burnout levels	Emotional Exhaustion	Depersonalization	Personal Accomplishment
• Low	≤18	≤5	≥40
• Moderate	19-26	6-9	34-39
• High	≥27	≥10	≤33

2. Job satisfaction scale

This scale was developed by Spector (1985) [35]to assess job satisfaction of staff nurses. It includes 36 items under nine domains namely; pay, promotion, supervision, benefits, contingent rewards, operating procedures, co-workers, nature of work, and communication. Each domain includes four items.

Scoring system

The staff nurses' responses were rated on six point Likert scale as (1= strongly disagree, 2= disagree, 3=somewhat disagree, 4= somewhat agree, 5= agree, 6= strongly agree). The negative items were reversed before computing the total score of staff nurses' job satisfaction. The total score was divided into three levels as follows; low <50% (36-107), moderate 50-75% (108-162), and high >75% (163-216).

3. Missed nursing care scale

This scale was developed by Kalisch and Williams (2009)[14]to measure nurse's perception of missed nursing care. It includes two sections; the first section includes 22 items that represent missed nursing activities (e.g., Monitoring intake/output). The second section concerned with reasons for missing nursing care (15 items) (e.g., inadequate number of staff).

Scoring system

The responses were rated on a five-point Likert scale ranging from 1 for never to 5 for always. The total score of 22 items classified into four levels based on cutoff point as follows; no missing care ≤ 20% (22), low 21-40% (23-44), moderate >40-60% (45-66),and high >60% (67-110).

Pilot study

Pilot study was included 14 staff nurses that represents (10%) from total study sample (n=138). It was conducted before starting data collection to assess the applicability and clarity of the tools. It helped the researchers to recognize

possible hinders and issues that could occur during the data collection process. It also helped to estimate the time required to complete the questionnaire. The pilot study sample was excluded from the main study sample. The data obtained from the pilot study was analyzed.

Validity and reliability

The data collection tools were translated into Arabic and back translated into English to ensure accuracy and clarity. Panel of five professors in nursing administration specialty reviewed the tools to test face and content validity of these tools. The reliability of tools was confirmed by Cronbach alpha test; it was 0.84, 0.89, and 0.87 for three scales; job burnout, job satisfaction, and missing nursing care, respectively.

Ethical considerations and data collection

The purpose of this study was explained to the hospital director, head staff nurses of the units and staff nurses. Written permission was obtained from the faculty of nursing, Mansoura University to the hospital director to carry out this study. Ethical approval was obtained from ethical research committee - faculty of Nursing, Mansoura University. All staff nurses were informed that participation in the study is voluntary and oral consent was obtained from each participant in the study. Confidentiality of the collected data maintained. The staff nurses were informed that the content of the tools will be used for the research purpose only. The staff nurses had right to withdraw from the study at any time was ascertained. The researchers were utilized a self-administered questionnaire for collecting the data from the beginning of October 2019 to the end of November 2019. The time that staff nurses were spent to fill questionnaire was ranged between 20 to 25 minutes.

Statistical analysis

The collected data were statistically analyzed using SPSS software version 25. Data were presented in form of frequencies and percentages for qualitative data and mean & SD for quantitative data. Independent t-test was used to compare between two means of continuous variables. ANOVA test was conducted to compare more than two means of continuous variables. Correlation between continuous variables was evaluated using Pearson correlation coefficient (r). Statistically significant was considered at (p-value $\leq$ 0.01 &0.05).

Results

Table (2) illustrates that the majority of the studied staff nurses aged from 20-30 years

(90.3%) with mean aged 26.04±4.16, females (85.5%), having a technical degree of nursing (82.3%), working day shift 12 hours (60.5%), experienced (1-5) years (61.3%), and half of them were married (50.8%).

Table (3) shows that the majority of the studied staff nurses had high level of burnout regarding emotional exhaustion and depersonalization, but regarding personal accomplishment, the majority of the studied staff nurses had low level of burnout. The personal accomplishment has the highest mean score (40.43±6.60), followed by emotional exhaustion (39.58±13.56), and depersonalization (14.76±6.94) respectively.

Table (4) shows that overall staff nurses' job satisfaction mean score was 113.24±19.39. The highest mean score was 19.03±3.32 for nature of work domain while the lowest mean score was 9.49±3.41 for benefits domain.

Figure (1) illustrates that more than half of studied staff nurses (65.3%) reported moderate level of job satisfaction, while slightly more than one third of the studied staff nurses (37.7%) reported low level job satisfaction.

Figure (2) illustrates that the majority of the studied staff nurses (83.9%) reported a low level of missed nursing care, followed by 11.3 % of the studied staff nurses reported a moderate missed nursing care level, 3.2 % of the studied staff nurses reported a high missed nursing care level, and 1.6% of the studied staff nurses reported a low missed nursing care level.

Table (5) shows that mean score of staff nurses' missed nursing care was 37.41±14.05.The highest mean score of missed nursing care was for patient bathing/skin care (1.76±1.09) and the lowest mean score of missed nursing care was for monitoring glucose for patients (1.22±0.63).

Table (6) illustrates that the most reason for missed care was inadequate handover from previous shift or sending unit with mean and SD (3.35±1.29), while the lowest reason for missed nursing care was for unexpected rise in patient volume and/or acuity on the unit with mean and SD (2.48±1.14).

Table (7) shows that there was statistically significant relationship between staff nurses' emotional exhaustion and their age and marital status. There was statistically significant relationship between staff nurses' depersonalization, marital status,

working shift, and experience years. There was statistically significant relationship between staff nurses' personal accomplishment, and working shift. The overall staff nurses' burnout was statistically significant correlated with marital status, and working shift.

Table (8) shows that there was statistically a significant relationship between staff nurses' job satisfaction, and their marital status. There was a statistically significant relationship between staff nurses' missing nursing care, and their age, gender, marital status, and educational level.

Table (9) shows that there was a high statistically significant negative relationship between staff nurses' emotional exhaustion, depersonalization, and overall burnout with their job satisfaction. While personal accomplishment correlated positively with job satisfaction. Staff nurses' emotional exhaustion, depersonalization, and overall burnout were correlated positively with their missed nursing care. But staff nurses' personal accomplishment correlated negatively with their missed nursing care. There was no statistically significant relationship between missed nursing care with staff nurses' job satisfaction.

Table (2): Personal characteristics of the staff nurses (n=124).

Variables	No	%
Age years		
▪ 20-30	112	90.3
▪ 31-40	9	7.3
▪ >40	3	2.4
Mean±SD	26.04±4.16	
Gender		
▪ Male	18	14.5
▪ Female	106	85.5
Marital status		
▪ Single	52	41.9
▪ Married	63	50.8
▪ Divorced	9	7.3
Level of education		
▪ Diploma degree	6	4.8
▪ Technical degree	102	82.3
▪ Bachelor degree	16	12.9
Working hours		
▪ Morning shift	22	17.7
▪ Evening shift	17	13.7
▪ Day shift (12hrs)	75	60.5
▪ Night shift	10	8.1
Experience		
▪ 1-5 years	76	61.3
▪ 6-10 years	31	25.0
▪ >10 years	17	13.7
Mean±SD	5.33± 3.73	

Table (3): Levels of staff nurses' job burnout (n=124)

Job burnout levels	Emotional exhaustion		Depersonalization		Personal accomplishment	
	No	%	No	%	No	%
▪ Low	13	10.5	2	1.6	86	68.4
▪ Moderate	12	9.7	34	27.4	26	21.0
▪ High	99	79.8	88	71.0	12	9.7
Mean±SD	39.58±13.56		14.76±6.94		40.43±6.60	

Table (4): Descriptive statistics of staff nurses' job satisfaction(n=124).

Job satisfaction domains	Min- max	Mean±SD
1. Pay	4.0-20.0	9.75±3.38
2. Promotion	4.0-22.0	12.33±3.98
3. Supervision	4.0-22.0	13.65±4.02
4. Benefits	4.0-18.0	9.49±3.41
5. Contingent rewards	4.0-19.0	10.84±3.44
6. Operating procedures	4.0-24.0	11.15±3.43
7. Co-workers	4.0-22.0	14.59±3.20
8. Nature of work	12.0-24.0	19.03±3.32
9. Communication	4.0-19.0	12.38±3.24
Overall job satisfaction	70.0-157.0	113.24±19.39

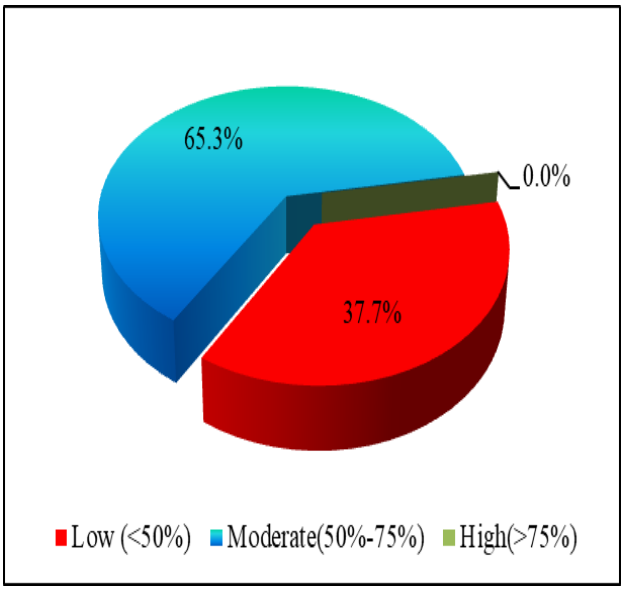

Figure (1): Levels of staff nurses' job satisfaction (n=124)

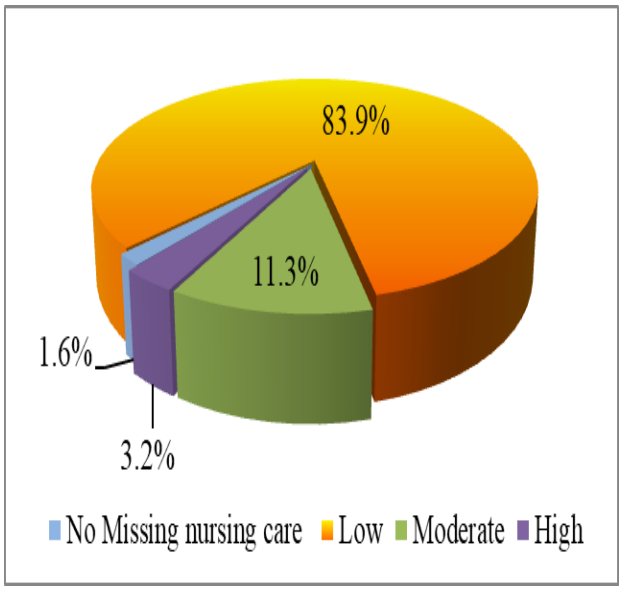

Figure (2):Levels of missed nursing care as perceived by the staff nurses (n=124).

Table (5): Mean scores of missed nursing care as reported by the studied staff nurses (n=124).

Missed nursing care	Mean±SD
1. Ambulation three times per day or as ordered	1.69±1.07
2. Turning patient every 2 hrs as requested	1.75±1.06
3. Medications administered within 30 min before or after scheduled time	1.53±0.80
4. Teach patient about plans for his/her care and when to call after discharge	1.69±1.00
5. Provide care for IV/central line site and conducting assessments according to policy	1.33±0.75
6. Perform oral hygiene	1.61±1.11
7. Provide emotional support to patients and/or their families	1.66±0.93
8. Teach patient about his/her procedures, tests and other diagnostic studies	1.62±0.91
9. Full documentation of all necessary data	1.41±0.84
10. Assess effectiveness of medications	1.52±0.87
11. Assist with toileting needs within 5 min of request	1.71±0.94
12. Monitoring intake/output	1.33±0.75
13. Response to patients' call light within 5 min	1.45±0.86
14. PRN medication requests acted on within 15 min	1.54±0.96
15. Reassessments done according to patient condition	1.50±0.82
16. Assessment Patients' condition each shift	1.47±0.87
17. Feeding patient when the food is still warm	1.51±0.81
18. Assess vital signs as physicians' order	1.48±0.92
19. Skin/wound care as ordered	1.25±0.72
20. Monitor glucose for patients as ordered	1.22±0.63
21. Perform hand washing	1.50±0.89
22. Patient bathing/skin care	1.76±1.09
Total	37.41±14.05

Table (6): Mean scores of missed nursing care reasons among the studied staff nurses (n=124).

Reasons of missed nursing care	Mean±SD
1. Unexpected rise in patient volume and/or acuity on the unit	2.48±1.14
2. Inadequate number of staff	2.60±1.31
3. Heavy admission and discharge activity	2.65±1.17
4. Inadequate number of assistive personnel (e.g., unit secretaries)	2.50±1.25
5. Urgent patient situations (e.g., a patient's condition worsening)	2.23±1.12
6. Unbalanced patient assignments	2.61±1.24
7. Tension or communication breakdowns with the medical staff	2.87±1.23
8. Medications not available when needed	3.10±1.29
9. Lack of backup support from team members	3.30±1.27
10. Supplies/equipment not functioning properly when needed	2.94±1.28
11. Supplies/equipment not available when needed	3.25±1.26
12. Nursing assistant did not communicate that care was not done	2.98±1.22
13. Tension or communication breakdowns within the nursing team	2.78±1.31
14. Other departments did not provide the care needed (e.g.,physical therapy)	2.68±1.26
15. Inadequate handover from previous shift or sending unit	3.35±1.29

Table (7): Relationship between staff nurses' job burnout, and their personal characteristics (n=124).

Variables	Emotional exhaustion	Depersonalization	Personal accomplishment	Overall burnout
Age years	Mean±SD	Mean±SD	Mean±SD	Mean±SD
▪ 20-30	40.80±13.23	14.87±7.07	40.77±6.65	62.90±19.16
▪ 31-40	28.25±11.67	13.75±5.69	37.25±5.29	52.75±12.83
t-value / p-value	3.15 / **0.002****	0.53 / 0.59	1.77 /0.07	1.78 /0.07
Gender				
▪ Male	37.44±8.89	17.33±4.37	39.61±5.14	63.16±12.81
▪ Female	39.95±14.20	14.33±7.21	40.57±6.82	61.70±19.72
t-value / p-value	0.72 / 0.47	1.70 / 0.09	0.57 /0.56	0.30 / 0.76
Marital status				
▪ Single	40.57±12.50	16.94±6.35	39.00±7.24	66.51±15.55
▪ Married	41.03±13.69	14.09±6.99	41.17±6.25	61.95±19.15
▪ Divorced	23.77±8.77	6.88±1.05	43.55±1.94	35.11±11.29
F-value / p-value	**7.28 /0.001****	**9.88 /0.000****	2.70/0.07	12.68 / **0.000****
Level of education				
▪ Diploma degree	39.50±10.07	17.16±7.54	40.16±5.98	64.50±14.34
▪ Technical degree	40.50±12.96	14.56±7.18	40.52±6.72	62.53±19.06
▪ Bachelor degree	33.81±17.40	15.12±5.13	39.93±6.36	57.00±19.12
F-value / p-value	1.69 /0.18	0.41 /0.66	0.06 /0.94	0.65 /0.52
Working shift				
▪ Morning shift	33.45±16.43	11.31±5.90	41.22±4.57	51.54±19.38
▪ Evening shift	38.47±10.54	15.41±7.32	41.00±4.76	60.88±14.51
▪ Day shift (12hrs)	40.90±13.44	15.02±6.69	40.84±6.39	63.09±18.20
▪ Night shift	45.10±7.66	19.30±7.80	34.70±11.42	77.70±17.98
F-value / p-value	2.40 /0.07	**3.51 /0.02***	**2.88 /0.04***	5.14/**0.002****
Experience years				
▪ 1-5 years	40.30±13.43	15.82±7.01	40.69±6.58	63.43±18.60
▪ 6-10 years	38.61±13.23	11.90±6.12	40.09±7.73	58.41±20.57
▪ >10 years	38.17±15.31	15.23±6.94	39.88±4.35	61.52±16.70
F-value / p-value	0.27 / 0.76	**3.72 /0.03***	0.15 /0.85	0.78 / 0.46

"***** Statistically significant (P≤0.05) / ** highly statistically significant (P ≤0.01)"

Table (8): Relationship between staff nurses' job satisfaction, missed nursing care and their personal characteristics (n=124).

Variables		Job satisfaction	Missed nursing care
		Mean±SD	Mean±SD
Age years	▪ 20-30	112.82±19.83	33.62±7.65
	▪ 31-40	117.16±14.67	57.16±29.48
	t-value / p-value	0.73 /0.46	**6.75 / 0.000****
Gender	▪ Male	119.00±13.39	45.00±27.00
	▪ Female	112.26±20.12	34.35±8.69
	t-value / p-value	1.36 /0.17	3.23/ **0.002****
Marital status	▪ Single	107.46±21.41	32.98±8.85
	▪ Married	115.52±14.93	40.01±17.42
	▪ Divorced	130.66±23.02	32.55±5.17
	F-value / p-value	7.00 / **0.001****	4.47 / **0.01****
Education	▪ Diploma degree	115.50±8.40	51.33±32.67
	▪ Technical degree	113.27±19.36	34.77±11.27
	▪ Bachelor degree	112.18±23.08	37.31±12.40
	F-value / p-value	0.06 /0.93	4.69 /**0.01****
Working shift	Morning shift	116.81±22.49	38.40±11.50
	Evening shift	122.17±10.50	41.52±29.40
	Day shift (12hrs)	111.17±19.64	34.13±7.16
	Night shift	105.70±17.55	34.10±8.96
	F-value / p-value	2.31 / 0.08	1.78 / 0.15
Experience	▪ 1-5 years	112.53±21.73	35.40±9.71
	▪ 6-10 years	115.64±15.41	36.90±20.52
	▪ >10 years	112.00±14.70	36.29±11.98
	F-value / p-value	0.31 / 0.72	0.14 / 0.86

***** Statistically significant (P≤0.05) / ** highly statistically significant (P ≤0.01)

Table (9): Relationships between missed nursing care, job burnout, and job satisfaction as reported by the studied staff nurses (n=124).

Variables	Job satisfaction		Missed nursing care	
	r	**p**	**r**	**p**
Emotional exhaustion	-0.51	**0.000*****	0.21	**0.02***
Personal accomplishment	0.23	**0.008****	-0.45	**0.000****
Depersonalization	-0.43	**0.000****	0.20	**0.03***
Overall job burnout	-0.60	**0.000****	0.22	**0.011***
Job satisfaction	1		0.04	0.68

** Highly statistically significant (P ≤0.01).

Discussion

To achieve the aim of the present study and answer the research questions, the discussion of the study findings will be presented through two main sections as follows;

Section I: Assessment the study variables (job burnout, job satisfaction, and missed nursing care among staff nurses) and its relationship with their personal characteristics

Regarding staff nurses' burnout, present study revealed that the majority of the staff nurses had a high level of burnout regarding emotional exhaustion and depersonalization, while a low level of burnout regarding personal accomplishment. This may be due to stressful work environment, lack of support or respectful relationships within the health care team, or lack of recognition and rewards. In the same line, Mudallal, Othman, and Al Hassan[27]declared high levels of burnout as demonstrated by their high scores for emotional exhaustion and depersonalization and moderate scores for personal accomplishment. Also, Lahana et al., [20] reported that burnout dimensions of emotional exhaustion were at high levels while personal accomplishment was at low levels. These results disagreed with the study of Mashego et al., [24] reported a moderate level of burnout among staff nurses who were selected for participation from six hospitals in Limpopo province, South Africa. It also disagreed with this study of Abed-Ali et al., [9] who reported that majority of studied staff nursesmore felt burned due to their nursing care and workplace.

Regarding relationship between staff nurses' burnout, and their personal characteristics, the present study revealed that overall staff nurses' job burnout had significant relation with their marital status and working shift. Staff nurses' emotional exhaustion had significant relation with their age, and marital status. Staff nurses' depersonalization had significant relation with their marital status, working shift, and experience years. Staff nurses' accomplishment was correlated with working shift. This may be due to family environment provides staff nurses with security, and support that protect staff nurses from job burnout, in addition to they may spend their working shift with their supported colleagues. These results in the same line with Van Doorn et al, [38] who reported staff nurses' age associated with emotional exhaustion. Also Lahana et al, [20] reported marital status, daily routine and relationships with supervisors were significantly related with emotional exhaustion and personal accomplishment and professional experience with higher

levels of emotional exhaustion and depersonalization. These results disagreed with Mefoh, Ude, and Chukwuorji[22] showed the age was not significantly related with emotional exhaustion.

Regarding job satisfaction, more than half of studied staff nurses have a moderate level of job satisfaction, while slightly more than one third staff nurses reported a low job satisfaction level, the staff nurses had highest perception related nature of work domain, whereas the lowest perception was related pay domain. Staff nurses with a low job satisfaction may be due to unfair salaries, low autonomy, they were not satisfied their needs through their job, hospital management does not concerns with their opinion or creates healthy work environment for staff nurses. These results in the same line with the study of Kalinowska, and Marcinowicz [16] showed that the staff nurses were moderately satisfied with their job. Also the study supported with Chien and Yick [3] who showed that the majority of staff nurses had an overall moderate level of satisfaction with their work. The present study also supported by the study of Alshahraniand Baig[6] that reported the staff nurses were moderately satisfied with their work. Also the study of Edoho et al, [11] was conducted at three public hospitals in Calabar, Cross River State found that the majority of the staff nurses were moderately satisfied with their work.

Regarding relationship between staff nurses' job satisfaction, and their personal characteristics, the present study revealed that overall staff nurses' job satisfaction had significant relation with their marital status. This could be due to satisfying with marital status had a positive effect on job satisfaction. The happier staff nurses will be satisfied with job. These results agreed with Kemunto, Raburu and Bosire[19] who found a relation between marital status and job satisfaction. Hsu et al, [17] found that there was a significant difference was found between satisfaction and marital status of staff nurses who were recruited from a hospital in northern Taiwan. Also the study of Olatunji and Mokuolu [28]showed that job satisfaction is influenced by marital status of health care providers. These results disagreed with Ogboenyiya[26] who revealed there was statistically significant between nurses' job satisfaction, and their experience. Tarcan et al, [37] found that gender, age, education, marital status had no significant effect on job satisfaction among staff nurses. Also Chien and Yick [3] reported nurses' job satisfaction of the study is strongly and positively correlated with staff nurses' age, and years of experience.

Regarding missed nursing care, the present study revealed that majority of the nurses reported low perception level of missed nursing care. This may be due to effective patient care assignment, supervision, or having a high level of loyalty and commitment. White, Aiken and McHugh [40] disagreement with this study and reported majority of missing one or more necessary care tasks on their last shift due to lack of time or resources.

The present study revealed that highest missed nursing care was patient bathing/skin care and the lowest missed nursing care was monitoring glucose for patients. This may be due to the bathing skin care to patient is little importance and nurse independent on patient relative to make it, but the monitoring glucose is the main activities to nurse. White, Aiken and McHugh [40] support the present study and verified that tasks most often left undone were patient bathing skin care, comforting speaking with patients, providing adequate patient observation, patient family education and care planning.

Regarding Winsett et al., [30] also reported that the most commonly missed care was ambulation as ordered, medications given within thirty-minute window, patient bathing skin care and mouth care. While the lowest reasons reported for the missed care were unexpected rise in volume acuity, monitoring glucose for patients, heavy admissions discharges, inadequate assistants, and inadequate staff. While, Schmidt [32] not support the present study and stated majority of respondents indicated that assessing patients each shift, monitoring patients' glucose levels, and reassessing patients but respondents reported that missed was low such as patient bathing skin care, attending interdisciplinary care conference, ambulation three times per day and turning every two hours.

Regarding the most reason for missed nursing care among staff nurses was inadequate handover from previous shift or sending unit, while the lowest reason for missed nursing care was for unexpected rise in patient volume and/or acuity on the unit. This may be due to the nurse at end of shift like to hurry to traveling and go to home to your family but the unexpected rise in patient volume and/or acuity on the unit it's the main function in the unit and the nurse still in the unit. Verrall et al, [39] agree with this study and mentioned a significant reasons for missed care include the variety of daily tasks as interruptions to their daily routine such as visitor requests, important meetings with inter-professional colleagues, the enormity of paperwork, inadequate handover from previous shift or sending unit and an unpredictable

workload with increasing intensity a formula for missed care. On the other hand, they mentioned three overriding factors as contributors of missed nursing care. These factors have been identified as: competing demands that reduce time for patient care; ineffective methods for determining staffing levels; and inadequate skill mix including insufficient staff numbers. These factors describe tension between what staff nurses perceive as essential care, staffing allocations and the resultant missed care or delayed care the staff nurses describe in their daily practice. Regarding the relationship between missed nursing care, and staff nurses' characteristics, the study revealed that there was a statistically significant relationship between staff nurses' missing nursing care, and their age, gender, marital status, and educational level. This may be due to old age staff nurses with high level of education had ability and experience about missed nursing care, therefore they avoid its occurrence, through effective managing their time, full documentation the required nursing care for the patients. The female nurses who are married may not achieve balance between work and home life, and load with more needs related their home life; therefore this may increase missed nursing care among married and female staff nurses more than others. These results agreed with the study of Bragadóttir, Kalisch, and Tryggvadóttir[5] who reported missed nursing care was significantly related to staff nurses' age. Also it supported by the study of Palese et al, [29] that was conducted at 12 north eastern acute medical units, included 314 nursing staff members and reported that missed nursing care associated with staff nurses' age. The present study disagreed with Phelan, McCarthy, and Adams [34] reported that the number of nursing experience years was most likely to be related with missed care. Srulovici and Drach-Zahavy[36] reported staff nurses' age, gender, and education had no significant relation with missed nursing care. It also disagreed with Cho et al, [2] who revealed educational level was not significantly related to the missed nursing care. It also in contrast with Kalisch et al, [18] who reported that missed nursing care was not correlated with staff nurses' age and gender.

Section II: The relationships between job burnout, job satisfaction, and missed nursing care among staff nurses

The present study revealed that staff nurses' emotional exhaustion, depersonalization, and overall burnout were correlated negatively with their job satisfaction. This may be due to staff nurses with large workload, highly

emotionally exhausted from her job, relation with your peer and supervisor all of this led to feel of frustration, depression from their job and increase job dissatisfaction. These results agreed with Ogboenyiya[26] who revealed that there was statistically significant association originate between burnout dimensions of emotional exhaustion and depersonalization and job satisfaction. Tarcan et al., [37] found that a significant relationship exists between burnout and job satisfaction. Also, it agreed with Abed-Aliet al., [9] showed that a highly significant impact of the nurses' burnout on the patient and staff nurses' satisfaction with nursing care. Alharbi et al., [7] found that emotional exhaustion of burnout, is a predictor of low job satisfaction among Saudi critical care staff nurses. The study of Chien and Yick[3] also stated that the staff nurses' job satisfaction was negatively correlated with their job burnout and intention to quit. Also Lambrou el al., [21] reported that there was a high negative relationship between overall job satisfaction and staff nurses' burnout. Regarding this study revealed that there was statistically significant positive correlation between nurses' job burnout and missing nursing care. This may be due to staff nurses with job burnout feel a lack of motivation, appreciation and stressful work environment. These results in the same line with the study of Clark and Lake [1] that revealed staff nurses' burnout increases missed nursing care. It also agreed with White, Aiken and McHugh [40] who reported that nurses' burnout correlated positively with missing nursing care. Also Singh [31] stated that burnout was significantly associated with variations in missed care and then by showing that missed care attenuated the relationship between nurse burnout and frequent adverse events. On the other side, the study results disagreed with Ogboenyiya[26] revealed that there were no statistically significant relationships found between any dimensions of burnout (emotional exhaustion, depersonalization, and personal accomplishment and missed nursing care among nurses. The study revealed that nurses' job satisfaction was not correlated significantly with their missing nursing care. This may be due to staff nurses had high level of career conscientiousness, or utilize time management strategies. These results in the same line with the study of Clark and Lake [1] that revealed staff nurses' dissatisfaction increases missed nursing care. It also agreed with Ogboenyiya[26] who revealed that there was no significant relation between nurses' job satisfaction and missed nursing care. Also Schmidt [32]

stated that there was not a significant relationship between the nurses' job satisfaction and the types of missed nursing care.

Conclusion

Based on the findings of the present study, it was concluded that nurses' job burnout was correlated negatively with their job satisfaction, but staff nurses' job burnout was correlated positively with their perception of missed nursing care. Nurses' job satisfaction was not correlated with their perception of missed nursing care.

Recommendations

On the light of the findings of the present study, the following recommendations were suggested:-

-Nursing managers should develop training programs that will help staff nurses to utilize effective coping strategies toward work stress and burnout.

-Create safe and healthy work environment with adequate staff and resources to avoid occurrence of burnout, and missed nursing care among staff nurses.

- Develop educational training for staff nurses to increase their perception about the concept of missed nursing care, why it occurs, the risks/benefits of care tasks that are completed or omitted, and the potential impact on outcomes.

-Develop non-punitive system of reporting missed nursing care to encourage staff nurses to report missed nursing care. Therefore they can identify barriers of completing nursing care in addition to prevent reoccurrence of missed nursing care.

- Health care organization should have fair payment and benefits system for nursing staff to maintain their job satisfaction.

Nursing curriculum should include the concept of missed nursing care, its preventive measures and negative outcomes for patients, nurses, and health care organizations.

-Further study should be directed towards identifying the other important contributing factors of missed nursing care as patient acuity, teamwork, and workplace bullying.

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Effect of an Emotion Regulation Training Intervention on Social Functioning of Patients with Psychiatric Disorders

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Abstract

Emotion dysregulation and social dysfunction are core characteristic of many psychiatric disorders such as schizophrenia and mood disorders. Medication-based treatment for patients with psychiatric disorders may alleviate acute clinical symptoms; however, it is limited in terms of its ability to improve social and emotional functions. There is evidence highlighting the central role of emotion regulation deficits in determining social functioning in individuals with psychiatric disorders. Therefore, emotion-related training intervention is needed to enhance patient's awareness and expression of emotions and for successful social functioning.**Aim:** the aimof this study wa**s** to evaluate the effect of an emotion regulation training intervention on social functioning of patients with psychiatric disorders.**Setting**: The present study was conducted at psychiatric inpatient department of TantaUniversity Hospital that is affiliated to Tanta University. **Subjects**: 60 patients with psychiatric disorders divided randomly into experimental and control group (30 patients in eachgroup).**Tools:**Difficulties in Emotion Regulation Scale and Social Functioning Scale were used to collect the study data. **Design**:A randomized controlled trial was conducted. The intervention was conducted through 9 training sessions, each session lasting from (60-90) minutes; 3 times per week for a period of 4 weeks. **Results:** there was a statistically significant improvement in social functioning and emotion regulation in the experimental groupthan the control group after the implementation of the intervention. Also, a statistically significant negative correlation was found between emotion regulation difficulties and social functioning.**Conclusions :**Emotion regulation training intervention has a salient effect on reducing emotion regulation difficulties and improving social functioning in patients with psychiatric disorders. **Recommendations:** this non-pharmacological evidence-based-nursing practice should be incorporated in the psychiatric hospital protocol for cumulative and consistent effects

***Keywords*:** Social functioning, emotion regulation, psychiatric disorders, emotion regulation training intervention.

Introduction

Emotion is generally viewed as a relatively brief form of affect that arises when external or internal stimuli signal to the individual that something important may be at stake [(1)].Psychologists identified several important functions of emotion in our daily lives; it serves as a guide for human behavior; helps to prepare behavioral reactions quickly and in an automatic fashion and shapes future behavior, makes life interesting, and helps to interact more effectively with others [(2)]. Emotional responses are typically considered to be comprised of multiple components including cognitive, behavioralor expressive, physiological, and subjective components [(3)].

Emotion are not passively experienced and expressed but are often regulated and this is called emotional regulation[(4)]. Emotional regulation is defined as the intrinsic and extrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features to accomplish one's goals [(5)]. By regulating emotion individuals can determine which emotions they have, when they have, and how they experience and express these emotions[(2)]. Emotion regulation plays an important role in shaping not only momentary emotion experience and behavior, but also broader and more enduring features of psychological functioning such assatisfying hedonic needs that aimed at producing pleasure and reducing pain, facilitatingof specific goals and tasks,and optimization of social functioning[(6,7)].Emotion impairment problems are cardinal feature of many psychiatric disorders such as schizophrenia, major depressive disorders, bipolar disorders, and personality disorders [(8)]. Patients with schizophrenia display a facial emotional bias and perception impairment. Many disorders such as depression, mania, dementia, and autism have demonstrated these deficiencies[(9)].They can't recognize negative emotions such as anger or worries and view them as neutral expression[(10)]. These defects can be observed in all stages of schizophrenia including the prodromal stage [(11)].It is also found in patients with bipolar disorder and still present even after remission[(12)]. Moreover, they have restriction in the range of emotional experience and expression in response to emotional stimuli. The disjunction between the experience and the expression of emotion may reflect disturbances in emotion regulation which interfere with the

achievement of these important emotion-related functions and evoke negative responses from others. Consequently it leads to difficulties in engaging or maintaining social functions [9, 13].Emotion regulation refers to the set of processes whereby people seek to monitor, appraise, and redirect the spontaneous flow of their emotions in accordance with their needs, goals and related demands [5]. By regulating emotion individuals can determine which emotions they have, when they have, and how they experience and express these emotions[4]. It is a cornerstone of normal development and optimal psychological functioning such as shaping momentary emotion experience and behavior, satisfying hedonic needs that producing pleasure and reducing pain, facilitatingspecific goals and tasks, and optimization of social functioning[6, 14].

Emotions are essential for social functioning as they provide information about the significance of current social situations, and also give clues for the actions to be taken in such situations. Social functioning includes everything needed to successfully live such as independent living skills (cooking, cleaning, hygiene, etc.), engaging in positive relationships with family, friends, and significant others, as well as performance at school and work [15].

Patients with psychiatric disorders experience problems in social functioning; these problems are significantly resulting from emotion awareness and regulation difficulties. Medication-based treatment for patients with psychiatric disorders may alleviate acute clinical symptoms; however, it is limited in terms of its ability to improve social and emotional functions. Therefore it is necessary to implement an intervention for managing emotion in order to improve their social functioning[16].

Emotion regulation training intervention is considered an evidence-based nursing care focused on emotional problems of patients with psychiatric disorders. Through it the patients will be aware of their emotions, label and express it in socially appropriate manner, become emotionally regulated, and have better social functioning [17].

Aim of the study

To evaluate the effect of an emotion regulation training intervention on social functioning ofpatients with psychiatric disorders.

Subjects and method

Study Design

A randomized controlled trial.

SettingThe present study was conducted at Psychiatricin patient department of TantaUniversity Hospitalwith a capacity of 31 beds divided into two wards for men

(17 beds) and two wards for women (14 beds).

Subjects

A purposive sample of 60 patients with psychiatric disorders**randomly allocated into experimental and control group using concealed sealed envelops**. Once the patient has consented to enter the trial an envelope is opened to randomly assign patients to (experimental group 30 patients) or (control group 30 patients).The sample size estimated using EPi-Info created by World Health Organization and Center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002 ;95% confidence limit, 80% power of the study, Ratio between treatment and control group 1:1, and Expected level of social functioning 30% before intervention that will be improved to 70% after intervention. Based on these criteria the sample size was N>25(for each group).

Inclusion criteria

Age at least 18 years, both sexes, able to communicate relevantly, agree to participate in the study.

ExclusionAcute stage of illness and any evidence of organic brain disease, mental retardation, and or substance use disorders.

Tools of data collection

Difficulties in Emotion Regulation Scale

It is developed by Gratz & Roemer (2004)[18]to measure the difficulties with emotion regulation. Itconsisted of 36 items;all wererated on a five Likert scale ranging from (1) almost never to (5) almost always, excepteleven itemsrepresent negative responses which must be reversed score.Higher score reflectinggreater problems with emotion regulation. Cronboch' s alpha was 0.93

Social Functioning Scale

It is developed by Birchwood (1991)[19]. It is composed of 77 items divided into seven subscales whichmeasure thepatient's performance and abilities in the following :Social engagement/withdrawal (5items).Interpersonal communication (4items) , Independence performance (13 items) . Independence competence (13 items),Recreation (15 items). Prosocial activities (22 items) , occupation / employment (5 items) Four items were rated as Yes or No, one item records the time of getting up, one item was rated on a three-point Likert scale, two items wererated on a five-point Likert scale, and the rest of items were rated on a four-point Likert scale ranging from 0=never to 3=often. Higher score indicating better social functioning. Cronboch' s alpha was 0.80.

Sociodemographic and clinical data

A structured interview schedule used to elicit data aboutage, sex, occupation, level of education, marital status, duration of

illness, insight, mode of admission and medical diagnosis.

Method

An official permission was addressed from the dean of the faculty of nursing Tanta University to the manager of psychiatric department to gain approval and cooperation for data collection.

Ethical consideration

- Study procedure was revised and approved by the ethical Committee of the Faculty of Medicine, Tanta University (approval code 32502/08/18)and Faculty of nursing, Tanta University.
- Approved in Iranian Registry of Clinical Trial (registration reference is IRCT20200402046920N1).
- Written informed consent was taken from the patient and Privacy was protected and answers kept confidential.
- The study subjects had the right to withdrawn from this study at any time without any negative impact on services they were currently receiving or were received in the future.
- The study would not produce any harm or pain to the patients.

Actual study: the actual study consisted of four phases:

Preparation phase

The measures were translated by the researcher into Arabic language then reviewed for translation accuracy and tested for content validity by three experts in the psychiatric nursing and medicine field and back translated by other two experts. A pilot study carried out on 6 patients to test the applicability and clarity of the study measures. No modifications were done. These patients were excluded from the total study subjects.The study measures were applied on both groups using the interview method on an individual basis as a baseline.

Planning phase

Emotion regulation training intervention was developed by the researcher based on reviewing the related literature[17, 20]. Its content was prepared by the researcher under the direction of the supervisors including; pictures, colored papers, different colors, some vignettes containing different emotions, and cartoon films.

The experimental group was divided into subgroups. Each subgroup ranged between 4to 6 patients. The emotionregulation training program was conducted through9 trainingsessions, each lasting from (60-90) minutes; 3 times per week for a period of 4 weeks started from February to July 2019.

Implementation phase

The emotion regulation training program was conducted by covering the following four stages with a series of 9 training exercises . **Stage (one) Emotional**

perception training : The aim of this stage is to help the patient to identify and understand emotions. It comprisedfour exercises that conducted into twosessions (two exercises in each). **Session (1): The first and second exercise intended to help the subjects to recognize emotion**

- **Understanding emotional words:** expressing emotion by using emotion word cards (happy)
- **Learning emotional words**: matching emotional word cards and emotional face cards.

Session (2): The third and fourth exercises intended to help the subjects to identify emotion

- **Finding emotional words**:choosing emotional word cards from emotional face cards that represent different emotions.
- **Identifying emotion by context**:choose emotional word cards from a short film cartoon that represent certain emotions.

Stage (two)Emotion expression training: The aim of this stage was to help the patient to express emotions. This stage comprisedfour exercises that wasconduct into three sessions.

Session (3): The fifth and sixth exercise intended to help the subjects to express emotions

- **Making facial expression**: the patients expressed emotions by emotional face cards.
- **Facial expression relay**: Identifying one's facial expression and passing it to the next person. This procedure was applied on all emotional face cards where each patient in the group will draw different facial expressions

Session (4): The seventhexercise wasperformed to help the patients to express emotion by using image.

Storytelling and watching a film and expressing emotion. The researcher asked the patients to write or draw their feelings after emotional storytelling and watching a film cartoon.

Session (5): The eighth exercise in this session wasto help the patients to express emotion byusing sentence.

Expressing emotionusing written instructions: Each patient by turnwas picking a card with a written instruction of certain emotional expression in a group.

Stage(three)Emotion application training. The aim of this stage was to help the patient to share their feelings, understand complex emotionand emotional inference. This stage comprisedthree exercises that conducted into two sessions.

Session (6): The nineth exercise was appliedto help the patients to share their feelings.

Emotional mask: making emotional mask by drawing one's feeling on a mask then wearing each emotional mask and expressing their feelings.

Session(7): The tenth and eleventh exercises were used to help the patients to understand complex emotion and emotion inference

Making facial expressions by context: expressing feelings using written emotional sentences.

Exercising emotional inference: making up a story with emotional sentence cards.

Stage(four) Emotionalcontrol training.

Sessions (8,9): The aim of this stage is to help the patient to develop self -awareness and cope with negative emotions.

The researcher used the following learning strategies: modeling, role play/ behavioral rehearsal, getting participant's feedback (e.g. providing corrective feedback) and positive reinforcement.

Evaluation phase

At the end of the intervention immediately and after 3 months, posttest was done using the study measures for both the experimental and control groups

Statistical analysis

The Statistical Package for Social Sciences (SPSS version 20) was utilized. Kolmogorov-Smirnov test was used to evaluate the normality of the data. For numerical values the range, mean, and standard deviations were calculated. The differences between two mean values were used using student's t testwhen the variable presented normal distribution and Mann-Whitney - test was used when the normal distribution of data was not guaranteed.

Differences of mean values between more than two groups were tested by analysis of variance.For categorical variable; the number and percentage were calculated and differences between subcategories were tested by Chi square and Fisher Exact test. Correlation between variables was evaluated using Pearson's and spearman's correlation coefficient r. Statistical analyses were consideredsignificant at $p < .05$.

Results

Table(1) illustrates the sociodemographic &clinical characteristics of the studied groups. No statistically significant difference was found in relation to all socio-demographic &clinical characteristics. The absence of any statistically significant difference between the studied groups can reflect that both groups were almost matched .

Figure (1) shows the distribution of thestudied patients by their emotion regulation difficulties throughout the phase

of intervention. At pre intervention phase there was no statistically significant difference between the experimental and control group(X^2=1.052, P= 0.590). At post intervention phase the percentage of the studied patients who had high emotion regulation difficulties dropped to 23.3% for the experimental group compared to 53.3% for the control group. Likewise, 50% of patients in the experimental group had low emotion regulation difficulties compared to 20% in the control group. With statistically significant difference between them (X^2=7.379, P= 0.025). At the follow up phase 20% of the patients in the experimental group had a high emotion regulation difficulties compared to 50% in the control one, while 36.7 % of patients in the experimental group had low emotion regulation difficulties compared to 16.7 % in the control group. With a statistically significant difference between them (X^2=6.501, p = 0.039).

Figure (2)shows the distribution of the studied patients by their social functioning throughout the phases of intervention. At pre intervention phase there was no statistically significant difference between the experimental and control group (F^{ET} = 0.218, P=0.896). At post intervention phase 23.3% of the patients in the experimental group had good social functioning compared to only3.3% in the control group. Whereas 16.7% of patients in the experimental group had poor social functioning compared to 76.7% in the control one with a statistically significant difference between them (F^{ET} =22.073, P=0.001). At the follow up phase 16.7% of patients in the experimental group had a good social functioning compared to 3.3% in the control one, while 43.3% of patients in the experimental group had poor social functioning compared to 83.3 % in the control group with a statistically significant difference between them (F^{ET} = 6.491 p= 0.030).

Table (2) Comparison between the experimental and control group regarding their emotion regulation difficulties throughout the phases of intervention .It can be noticed that the mean score of total emotion regulation difficulties of the experimental group decreased from 135.5±42.8 pre intervention to 89.8±44.16 post intervention with a statistically significant difference P1:0.001, and also decreased to108.8±32.6 at follow up with a statistically significant difference P2:0.020. Whereas the mean score increased from 89.8±44.16 post intervention to 108.8±32.6 at follow up with a statistically significant difference between them P3:0.046. This means there was a statistical improvement in the emotion regulation immediately after implementation of the intervention

and this improvement declined at follow up but still significant than pre intervention.

Table (3) represents Comparison between the experimental and control group regarding their social functioning throughout the phases of intervention . It can be noticed that the mean score of total social functioning of the experimental group increased from 74.40± 37.24 pre intervention to 125.33±30.91post intervention with a statistically significant difference P1:0.001, and also increased to 97.41±38.42 at follow up with a statistically significant difference P2:0.037.Whereas the mean score decreased from 125.33±30.91 post intervention to97.41±38.42 at follow up with a statistically significant difference between them P3:0.001. This means there was a statistical improvement in the social functioning immediately after implementation of the intervention and this improvement declined at follow up but still significant than pre intervention.

Table (4) describes the correlation between emotion regulation difficulties and social functioning, there was a statistically significant negative correlation between social engagement, interpersonal communication, independence performance, independence competence, prosocial activities, total social functioning and emotion regulation difficulties (r= -0.493 P=0.006 , r= -0.743 P=0.001 , r=-0.570 P= 0.001 , r= - 0.503 P= 0.005 , r=-510 P=0.004 , r=-0.738 P= 0.001 respectively).This means decreasing difficulties in emotion regulation leading to improvement in social functioning. While there was no statistically significant correlation between recreational activities and employment subscale and emotion regulation difficulties (r = -0.326 p=0.079, r = -0.252 p= 0.179) respectively

Table (1) Distribution of the studied patients by their socio-demographic &clinical characteristics

Sociodemographic & clinical characteristics	Experimental group		Control group		Test of significance
	N	%	N	%	
Age					F^{ET}=3.302
< 20	0	0	1	33.3	P=0.509
20 – 29	11	36.7	11	36.7	
30 – 39	13	43.3	10	33.3	
40 – 49	5	16.7	4	13.3	
≥ 50	1	3.3	4	13.3	
Range	20-60		19-58		T= 0.137
Mean ± S.D	32.93 ± 9.07		33.87 ± 10.44		P= 0.713
Sex					X^2=0.067
Male	16	53.3	15	50	P=0.796
Female	14	46.7	15	50	
Occupation					X^2= 0.077
Not worked	20	66.7	21	70	P= 0.781
Worked	10	33.3	9	30	
Education					
Illiterate/ read and write	2	6.7	1	33.3	
Primary	2	6.7	3	10	F^{ET}=1.128
Preparatory	5	16.7	3	10	P= 0.890
Secondary	12	40	13	43.3	
University	9	30	10	33.3	
Marital					
Single	14	46.7	14	46.7	
Married	11	36.7	11	36.7	F^{ET}=1.111
Divorced/ separated	5	16.7	4	13.3	P= 0.774
Widowed	0	0	1	3.3	
Duration of illness					
<5	14	46.7	14	46.7	F^{ET}=1.111
5 –	١١	36.7	11	36.7	P= 0.774
10 –	٥	16.7	4	13.3	
≥ 15	٠	0	1	3.3	

Range **Mean ± SD**	1 – 26 7.42 ± 6.52		1 – 24 7.20 ± 5.94		Z_{MW} = 0.018 P= 0.893
Insight					
Yes	4	13.3	6	20	F^{ET}=0.480
No	26	86.7	24	80	P=0.488
Mode of admission					
Voluntary	5	١٦.٧	٧	٢٣.٣	X^2= 0.408
Involuntary	25	٨٣.٣	٣ ٢	٧٦.٧	P= 0.519
Diagnosis					
Schizophrenia	17	56.7	15	50	X^2= 0.462
Depression	5	16.7	7	23.3	P=0.795
Bipolar	8	26.7	8	26.7	

T: student t- test X^2: Chi-square test F^{ET}: Fisher's exact test Z_{MW}: Mann-Whitney test

*Significant at level P≤0.05

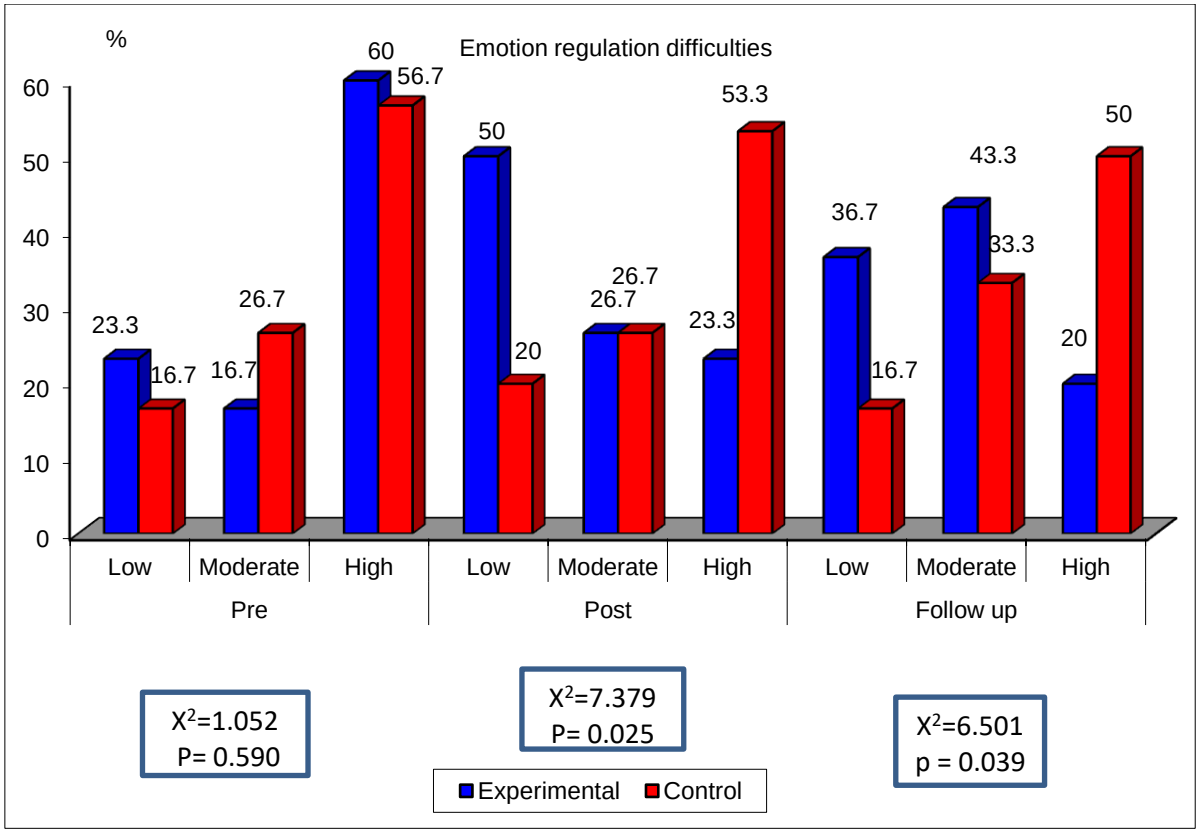

Figure (1) Distribution of the studied patients by their emotion regulation difficulties throughout the phases of intervention

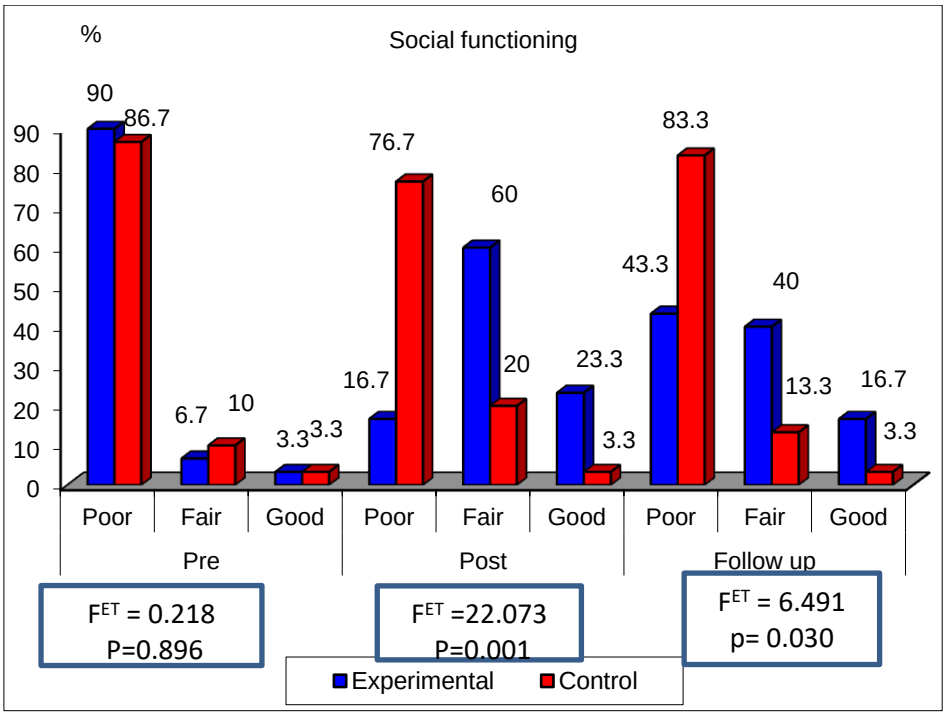

Figure (2) Distribution of the studied patients by their social functioning throughout thephases of intervention

Table (2) Comparison between the experimental and control group regarding their emotion regulation difficulties throughout the phases of intervention.

Emotion regulation difficulties	Experimentalgroup	Control group	Test of significance
Pre intervention			
Range	52 – 175	59 – 174	T=0.028
Mean ±SD	135.5 ± 42.8	135.8 ± 37.9	P= 0.980
Post intervention			
Range	41 – 173	65 – 174	T=4.042
Mean ±SD	89.8 ± 44.16	133.1 ± 38.6	P= 0.001*
Follow up			
Range	56 – 174	59 – 174	T=2.169
Mean ±SD	108.8 ± 32.6	128.0 ± 35.9	P=0.039*
Test of significance	^{F} P1: 0.001* ^{F} P2: 0.020* ^{F} P3: 0.046*	^{F} P1: 0.786 ^{F} P2: 0.424 ^{F} P3: 0.597	

T: student t- test **F:** ANOVA test *Significant at level P≤0.05

P1: comparison between pre and post intervention. P2: comparison between pre intervention and follow up.

P3: comparison between post intervention and follow up.

Table (3) Comparison between the experimental and control group regarding their social functioning throughout the phases of intervention

Social functioning	Experimental group	Control group	Test of significance
Pre intervention			
Range	7 – 193	23 – 169	ZMW =0.312
Mean ±SD	74.40 ± 37.24	71.60 ±33.75	P=0.761
Post intervention			
Range	74 – 183	30 – 172	ZMW =5.273
Mean ±SD	125.33 ±30.91	81.03 ±34.10	P=0.001*
Follow up			
Range	27 – 196	32 – 167	ZMW =2.233
Mean ±SD	97.41 ±38.42	76.67 ± 33.40	P=0.030*
Test of significance	^{F} P1: 0.001* ^{F} P2: 0.037* ^{F} P3: 0.001*	^{F} P1: 0.282 ^{F} P2: 0.562 ^{F} P3: 0.618	

F: ANOVA testZ_{MW}: Mann-Whitney test *Significant at level P≤0.05

P1:comparison between pre and post intervention. P2: comparison between pre intervention and follow up.

P3: comparison between post intervention and follow up.

Table (4) Correlation between emotion regulation difficulties and social functioning of the experimental group post intervention (n=30)

Social functioning	Emotion regulation difficulties	
	r	P
Social engagement	-0.493	0.006*
Interpersonal communication	-0.743	0.001*
Independence (performance)	-0.570	0.001*
Independence (Competence)	-0.503	0.005*
Recreational activities	-0.326	0.079
Prosocial activities	-510	0.004*
Employment	-0.252	0.179
Social functioning total	-0.738	0.001*

*Significant at level P≤0.05 r=spearman's rho coefficient

Discussion

Patients with psychiatric disorders have many emotional problems because they can't express their emotions although they have feelings. Patients are appeared apathetic because their emotional expressions do not work effectively while the biological responses are preserved. Emotional deficits affect different processes such as face emotional expression as well as the domains of perception and recognition[21-23]. Clinical researchers stated that individuals who have serious psychiatric disorders have problems with emotion regulation that affects their social functioning in consequence [24]. Therefore, improving patients' emotion regulation skills has been suggested as a promising target in the treatment of various psychiatric disorders[25].

Results of the present study showed that patients who received emotion regulation training intervention were significantly improved in the total emotion regulation than control group immediately after implementing theintervention. Although this improvement declined after three months but still significantly better than pre intervention which means it needs to be provided continually for cumulative and consistent effect. This finding may be attributed to the skills acquired during the implementation of emotion regulation training intervention itself, as the intervention incorporates a wide variety of exercises that all aimed at providing patients with the opportunities to learn and apply several emotional skills such as expressing emotions by mean of facial expression ,verbal language, and behaviors.These exercises were applied by materials more attractive and interesting for the patients which enhance learning and acquisition of skills such as cartoon films & telling stories containing different emotions, as well as emotions cards.

Additionally , a variety of behavioral techniques were used in the current emotion regulation training intervention , the demonstration of the modeled behavior helped patients of the experimental group to selectively attend to emotional training exercises such as pictures ,stories, and cartoon films , ignore extraneous sensory output in order to maintain adequate task-relevant information and select appropriated actions, hence improve their emotion recognition ,identification ,and expression. Moreover, Positive reinforcement for the desired behavior was another related technique used throughout the training intervention in the present

study. The researcher provided continuous reinforcement for the engagement and compliance on attending the sessions. Behavioral theories argued the importance of direct reinforcement as a way to modify or change undesirable behavior as well as increase the probability of a behavior being repeated. According to Rodewald et al (2010)., positive reinforcement was particularly relevant to the basic cognitive training, in which learning from positive reinforcement and feedback was essential for improving the emotion regulation difficulties among patients with psychiatric disorders[26]

This result consistent with **Wonet al.(2012)**[17]who stated that the experimental group who attended ERM showed a significant improvement in emotional regulation scores than those in the control group. Moreover,**Mennin&Fresco(2014)**[27]stated that interventions that focus on emotion regulation skills such as Emotion Regulation Therapy (ERT) have been shown to reduce emotional difficulties among patients with psychiatric disorders.Additionally**Cho &Jang(2019)**[10] stated that after attending the emotion management program, the emotion recognition and emotional expression of the experimental group were found to have significantly increased, whereas those of the control group had significantly decreased.

Social dysfunction is the deterioration of functioning in one or more basic domains, such as: interpersonal relationships, employment, or self-care. It was noticed in inability to fulfill societal defined roles such asworker,student,and spouse,also inability to care for themselves including their leisure and recreational activities. According to the diagnostic-classification system (DSM-5) it is a criterion for all psychiatric disorders including schizophrenia, mood disorders, and anxiety disorders. **Kimhy et al. (2012)**[28] stated that successful social functioning requires adaptive forms of emotion regulation.Also **Fett et al., (2011)**[29]emphasize the crucial role of emotion awareness impairment in determining social functioning in individuals with schizophrenia. Moreover, a study by **Kimhy et al. (2016)**[16]stated that patients showed considerable difficulties in emotion awarenessandregulation describing feelings contribute significantly to poor SF.

It was noted that,there was a highly statistically significant improvement in social functioning in the experimental group than control group immediately after the implementation of the intervention. This is may be explained by the effect the

intervention as it is not only facilitating the patient's emotional process regarding interpretation and regulation of their own emotion but also emotion interpretation for others which had a positive effect of interpersonal relationships.For example (exercise 3&4) allows patients when they are involved in a relationship, they should understand others' implied emotions through their facial expressions. **Irani et al. (2012)**[30] found that teaching patients to recognize other's emotions is successful in solving everyday social problems and developing social interactional skills.

From another perspective, Negative emotion such as anger expression modes are important aspects on social relationship. Prolonged state of anger hinders not only the individual's mental and physical health but also his\her work performance and interpersonal relationship [31]. **Park et al. (2011)**[32]stated that people who used the anger-control mode had little interpersonal problems. This was the focus of emotion regulation training intervention in session (10) teaching the patients how to cope with negative emotion such as anger, anxiety, and depression.

Moreover, the intervention focused also on improving patient's emotional self-awareness. Awareness of one's emotion is essential in every social interaction because a substantial amount of information about one's emotion, attitude, status, and acceptance in social interactive situations is expressed and communicated to others through facial expressions [33].In the same line**Qu et al.(2017)**[34]stated that the awareness of one's emotion allows better understanding , prediction, and regulation of his/her states to adjust to different social interactions..

In parallel a study by **Won et al. (2012)**[17]found that experimental group attended emotion management training intervention showed a significant improvement in emotional behavior, interpersonalrelationships, and social behavior than those in control group. Similar findings were reported by**Kimhy et al. (2012)**[28]stated that better social functioning was associated with the ability to identify, and in particular to describe emotions, and better emotion management. Moreover **Javed& Charles(2018)**[35]found that emotion management programmes enhance emotional expression, personal relations, and social behaviours in patients with schizophrenia.Recently **Favrod et al.(2019)**[36]found that participation in The Positive Emotions Program for Schizophrenia (PEPS) is accompanied by an improvement of social functioning.

The present study provides an evidence for the hypothesisdeclaredby **Gratz et al. (2015)**[37]that enhancing emotion

regulation skills might be not only a promising target in the treatment of many psychiatricdisorders but also a significant factor encouraging change in various evidence-based treatments.

Conclusion

Emotion regulation training intervention had a positive effect on social functioning of patients with psychiatric disorders.

Recommendation

This study recommended that

- This non-pharmacological evidence-based-nursing practice should be incorporated in the psychiatric hospital protocol for cumulative and consistent effects.
- Provide family members or patient's caregiver with an educational program about how to deal with negative emotions and use effective emotion regulation strategies

Conflictofinterest

None declared.

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Effect of Abdominal Massage on Clinical Outcomes of Enterally Fed Mechanically Ventilated Patients

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Abstract

Background: Ventilator-associated pneumonia was a severe healthcare associated infectionin intensive care units. Abdominal massage is non-pharmacological nursing intervention for decreasing elevated gastric residual, vomiting frequency and abdominal distension. Gastric distension and increased gastric residual are important risks for developing ventilator-associated pneumonia. Mechanically ventilated patients who are enterally fed, abdominal massage decreases the duration of the nutrition passage through the gastrointestinal tract, induces peristaltic movement, and thus lowers intra-abdominal pressure and the risk of aspiration. **Aim*:*** Was to assess the effect of abdominal massage on Clinical Outcomes of Enterally Fed Mechanically Ventilated Patients. **Method:** a quasi-experimental study, purposive sample of 60 adult's patient will be enrolled sequentially into two groups, each group consists of (30) patients. Four tools were used to conduct the study. Tool I: Patient Assessment Tool, Tool II: Glasgow coma scale, Tool III: Enteral nutrition Assessment Tools which include five parts and Tool IV: Clinical Pulmonary Infection Score (CPIS) to assess Ventilator-Associated Pneumonia (VAP). **Results:** The present study showed that there was a significant differences found among the intervention group throughout 1st, 3rd and 7th day of follow up regarding gastric residual volume assessments score pre and one hour post abdominal massage since p= 0.000*, 0.003*, 0.000* respectively. In addition; the study showed that 6.7% of the control group had≤6 Negative VAP compared to majority 86.7% of the study group have≤6 Negative VAP in the 7thday of follow up. **Conclusion:** Based on the results of the current research, it can be argued that abdominal massage is beneficial on decreasing abdominal distension; nasogastric tube feeds side effects, gastric residual volume (GRV) and reducing Ventilator-Associated Pneumonia (VAP) in the study than control group. Moreover, the results established that minority of the control group have ≤6 Negative VAP compared to majority of the study group have ≤6 Negative VAP in the 7th day of follow up. **Recommendations:** Abdominal massage for mechanically ventilated patients with enteral nutrition should be performed as routine nursing care if not contraindicated to lower the aspiration risk and consequently Ventilator Associated Pneumonia (VAP).

Key Wards: Clinical Outcomes, Abdominal Massage, Enteral Feeding, Mechanically Ventilated Patient.

Introduction

Mechanically ventilated patients need nutritional support because they are seriously ill and unable to take oral feeding. A catabolic condition with an elevated level of metabolic stress is frequent in ventilated patients as a result of a systemic inflammatory response. They're more likely to experience complications including ventilator-associated pneumonia or urinary tract infection, as well as organ failure, prolonged hospitalization, and death. Enteral feeding is also considered a treatment option for people who are unable to consume oral nutrition. Enteral feeding is believed to preserve gut health and thereby modulate the stress response to critical illness andreduce the disease severity. [(1)]

Mechanical ventilator (MV) should help in exchange of gases without inducing pulmonary trauma. Unfortunately, it can also cause pulmonary effects such as strain and stress. High pressure and volume can result in pulmonary trauma, which can lead to biotrauma and atelectasis. Also, ventilator-associated pneumonia is another complication that may occur.[(2)]

More than half of the patients in the critical care unit have irregular gastric motility, which causes sluggish gastric emptying. Delayed gastric emptying can cause a number of problems,

including insufficient caloric intake and infrequent use of enteral nutrition in the intensive care unit (ICU). The risk of ventilator-associated pneumonia is increased by nausea, regurgitation, and aspiration .[(3-4)]

As a result, assessing the gastric residual volume (GRV) is recommended to reduce the frequency of these complications. consequently, in cases of high GRV, it is important to reduce the amount of enteral feeding or the osmolality of the formula. The monitoring of gastric residual volume in critically ill patients undergoing mechanical ventilation has been the subject of many studies. Previous studies that found a correlation between GRV and VAP were not well designed to demonstrate GRV as a reliable marker of increased VAP risk, and they concluded that monitoring GRV in mechanically ventilated patients is unnecessary and provides no additional benefits. [(5-7)]..

Ventilator-associated pneumonia is a form of nosocomial bacterial infection that affects patients who have had invasive ventilation for at least 48 hours before being diagnosed. It's a common form of

pneumonia acquired in hospitals (HAP).

When a chest X-ray reveals new infiltration and at least one of the following criteria is present: fever, leukocytosis, and purulent tracheobronchial secretions, it may be diagnosed. The second most common hospital-acquired infection is pneumonia caused by a ventilator. The average or crude mortality rate associated with VAP varies from 40% to 70%, depending on the underlying disease, the etiologic pathogen of lung infection, the associated bacteremia, and the sufficiency of prophylactic antibiotic treatment.[8,9].

Abdominal massage, was a nursing intervention for minimizing elevated gastric residual, vomiting frequency, and abdominal distension, has been indicated in numerous studies. Abdominal massage shortens the time it takes for food to pass through the digestive tract, stimulates and preserves peristaltic activity, and decreases intra-abdominal pressure. Furthermore, it was a nonpharmacological, noninvasive, and safe approach with no side effects.[10.]

Moreover, abdominal massage often changes intra-abdominal pressure and increases vagal stimulation. This boosts gastric motility and improves gastric emptying. The favored nursing intervention for treating and decreasing gastrointestinal complications is the abdominal massage, because it has many benefits, including the simplicity of which nurses may apply it individually and the absence of side effects.[11,12].

Significance of the study

Ventilator-associated pneumonia was defined as nosocomial pneumonia that occurs at least 48 hours after the initiation of mechanical ventilation and affects from 6 % to 52% of total cases of nosocomial infection in critical care units. Also, it accounts 9–13% of the total deaths in patients with ventilator support devices . There have been several risk factors reported for the incidence of ventilator-associated pneumonia. It is possible to count factors relevant to the patient such as age and health condition, medication and care procedures such as enteral feeding, antacid prophylactic therapy, and infection control related factors. [13-15]

Enteral feeding was shown to be a three-fold increase in the development of ventilator-associated pneumonia in patients on mechanical ventilation. Reflux, aspiration, diarrhea, abdominal distention, constipation, and intestinal ischemia are also potential side effects. Patients who received enteral nutrition documented them in 62% of cases. [16-18]

Increased gastric residual volume was observed in 32 % to 39 percent of enterally fed patients, as well as feeding intolerance in 60 percent. Increased gastric residual

volume due to enteral feeding can cause pulmonary aspiration, which is one of the most dangerous mechanical problems and one of the major causes of Ventilator-associated pneumonia VAP. Aspiration was seen at a rate of 8 percent to 95 percent in intensive care units. The true incidence remains unclear due to the lack of standardized diagnostic criteria and silent aspiration.[19-25]

Gastric distention, high residual volume can be reduced by abdominal massage and this lowers the rate of ventilator-associated pneumonia. Several researches have shown that abdominal massage can affect constipation, gastric residual volume, and abdominal distention [26-29,30-34.] There hasn't been any research conducted on the influence of abdominal massage on the growth of Ventilator-associated pneumonia VAP. As a result, the aim of this study was to evaluate how abdominal massage affected the enterally fed patient's clinical outcomes who are mechanically ventilated.

Operational Definition of Clinical Outcomes: the clinical outcomes involved in this study include; *tolerance of enteral nutrition* as indicated by decreased occurrence of abdominal distension, constipation, diarrhea, vomiting, and low gastric residuals and decreased incidence of ***ventilator-associated*** **pneumonia (VAP).**

Aim of the study

The Aim of the study was to assess the effect of abdominal massage on Clinical Outcomes of Enterally Fed Mechanically Ventilated Patients.

Research hypothesis

H1: There would be a relationship between the Abdominal Massage and the Clinical Outcomes.

H2: The abdominal massage would decrease abdominal distension; episodes of vomiting, gastric residual volume in the intervention group compared to control group.

H3: The abdominal massage would decrease occurrence of Ventilator-Associated Pneumonia in the intervention group than those in the control group.

II. Materials and method

Design

A quasi-experimental design was used in this research

Study settings

This study was conducted in Anesthesia Intensive Care Unit of the Emergency Hospital affiliated to Tanta University Hospitals, Tanta City, Egypt.The hospital has one floor for Anesthesia Intensive Care Unit which consist of 4 wards, each ward contains 6 beds (The capacity of the unit includes24 beds).

Subjects

A purposive sample of 60 critically ill adults' patients and meeting the inclusion criteria. they would be enrolled sequentially into two groups; each group consisted of (30) patients. The sample size estimated by Power analysis of independent t tests [One tail, Effect size = 0.55; The significance level (α) at 0.05; Power (1-β) = 0.85]

The two groups were as following:

Group (I): was the control group and not received the abdominal massage

Group (II): was the study group, they would receive the intervention measure which was the abdominal massage

The subjects were selected according to the following Criteria;

- Their age ranged from 18 to less than 60 years,
- The Sequential Organ Failure Assessment Score (SOFA) lower than 14,
- The patients used only H2 receptor antagonists as gastric prophylaxis,
- Mechanically ventilated for at least 48 h,
- Absence of infection manifestations and infiltration on chest X-ray for 48hours post intubation,
- on nasogastric enteral feeding.

Exclusion criteria were:

-The patients with tracheostomy, abdominal wound, surgery gastrostomy and jejunostomy tubes, radiotherapy, ileus, diarrhea,

-The patients used pro-kinetic agents,

-The patients were hemodynamically unstable, HIV infection, or cytotoxic drugs-induced neutropenia.

Tools of the study

The data was collected using four tools as following:

Tool I:bio Socio-demographic characteristics of the patient

The tool was designed by the researcher after researching the literature[(35)]to collect the data. It involved three parts

Part (A): Socio-demographic characteristics of the patients:

Socio-demographic data involves, gender, marital status, age, educational level, working and residence

Part (B): Patients' clinical data

It was formulated by the researcher after reviewing of the relevant literatures [(35)] which include data such as admission diagnosis, length of ICU stays, mechanical ventilation related clinical data, past medical history and current medications.

Part (C): The Sequential Organ Failure Assessment Score (SOFA) [(36-37)]

The tool was used to estimate the morbidity and mortality for critically ill patients according to the level of organ dysfunction based on the clinical data. It

was designed by **Lambden et al., (2019**) and adopted by the researcher.

The Sequential Organ Failure Assessment Score **(**SOFA) included six organ system, respiratory, cardiovascular, hepatic, coagulation, renal and neurological systems every organ system is assigned scored from 0 (normal) to 4 (high degree of organ malfunction). It was used to assess patients on intensive care unit admission. It was calculated using online software on **ClinCalc.com**. The SOFA score ranges from 0 to 24. The SOFA score ranged from 0-6 ,7-9,10-12, 13-14,15-24, correlated to less than10%,15-20% ,40-50%, 50-60%, and more than 80% mortality respectively.

Tool II: Glasgow Coma Scale;[(38)]

It was used to assess the level of consciousness. The scale assesses patients' responsiveness through eye-opening, motor, and verbal responses. It was used on the first, second, and seventh days of the study, and the scores ranging from 3 (worst) to 15 (best).

Tool III: Enteral Nutrition Assessment Tools:

It was designed by the researcher after extensive search of the literature to evaluate the effect of abdominal massage on the enteral feeding related gastrointestinal complications. It included five parts as following;

Part(A): Enteral feeding follows up sheet

This was included data about the rate, type and amount of feeding/ml, feeding regimens and type of feeding tube used.

Part (B): Gastric residual volume assessment sheet:

It was used to assess the amount of gastric residual before the abdominal massage and the second time one hour after the second massage. It was done three times; on the first, second and 7th day of the study [39-40]

Part (C): Abdominal circumference assessment sheet:[21]

It was done before the abdominal massage and one hour after the second massage on the first, second and 7th day of the study**.**

Part(D): Vomiting assessment sheet

It was done on the first, second and 7th day of the study.

Part (E): Defecation assessment sheet;

which include assessment of frequency and consistency of defecation on the first, second and 7th day of the study.

Tool IV:Clinical Pulmonary Infection Score (CPIS) for Ventilator-Associated Pneumonia(VAP) [(41-42)]

It was designated and used by (**Mohamed, E. E., &AbdAlla, A. E. D. A.,2013)** and **(Fernando, et al., 2020))** and adopted by the researcher to assess ventilator associated pneumonia (VAP) on the first, second and 7th day of the study. It was

calculated using on line software on **mdcalc.com**.[43] It includes assessment of six parameter: **Patient temperature, Leukocytic count, Tracheal secretions**, **oxygenation , Chest x-ray, andQuantitative growth of pathogenic bacteria in tracheal aspirate culture**. every parameter had score according to its result. The total score ranges from 0 to 12. The patients with CPIS more than 6 were evaluated as VAP positive while others with CPIS less than or equal 6 were evaluated VAP negative.

The following table show the scoring system of Clinical Pulmonary Infection Score (CPIS)[44]

parameter	point
Patient temperature	
≥36.5 ° C and ≤38.4 ° C	(0 points)
≥38.5 ° C and ≤38.9 ° C	(1 point)
≥39 ° C	(2 points)
≤36 ° C	(2 points
Leukocytes	
≥4000 / mm $^{-3}$ and ≤11000 / mm $^{-3}$	(0 points)
<4,000 / mm $^{-3}$ or> 11,000 / mm $^{-3}$	(1 point)
<4,000 / mm $^{-3}$ or> 11,000 / mm $^{-3}$ with ≥500 bands	(2 points)
Tracheal secretions (0-4 + counts summed over hours)	(0 points)
<14+	(1 point)
≥14 +	(2 points)
≥14 + and purulent	
PaO2 (mmHg) / FIO2	
> 240 or presence of ARDS	(0 points)
≤240 or no presence of ARDS	(2 points)
Chest x-ray	
Without infiltrator	(0 points)
Patchy or diffuse infiltrate	(1 point)
Localized infiltrators	(2 points)
Quantitative growth of pathogenic bacteria in tracheal aspirate culture	(0 points)
≤1 + or no growth	(1 point)
> 1+	(2 points)
> 1+ and the same bacteria on Gram stain	

Method of data collection:

The study was accomplished through the following steps:

1-An official hospital permission was received from the responsible authority in the selected Intensive Care Unit, Tanta University Hospitals before conducting the study.

2- Tool development:

The study involved four tools. Tools (I, and III) were formulated by the researcher after searching the relevant literature. While Tools (II, and VI) were adopted and used by researcher, this included Glasgow Coma Scale and Clinical Pulmonary Infection Score (CPIS).

3- Validity of the tools

The tools were tested for content validity by experts in the field of the study and accordingly the needed modifications were done.Content validity index = 98.8%.

4. Reliability of the tools.

Alpha Cronbach's test was used, and reliability factor was =0.896, Cronbach's Alpha for Tool I was 0.856, Tool II was 0.873. Tool III was 0.855, and Tool IV Was 0.866.

5. A pilot study: -

It was conducted on 10% of the patients (six critically ill patients). The needed modifications were done before the main study. Data obtained were excluded from the present study.

6. The data was collected in duration of time approximately 8 months from **April 2019 to November 2019**

and include **the following three phases:**

A- Assessment phase: Was carried out for both study and control groups to collect baseline data from patients or their families in both control and intervention groups by using all tools(Tool I,II,III,IV).Data was collected first from control group to prevent contamination of data, over a period of 3 months. then data collection from the intervention group started and lasted 5 months to be completed.

B- Implementation phase:

Control group;The patients in this group did not receive the abdominal massage , they received only routine hospital care for enterally feed patients on mechanical ventilation. Prior to enteral feeding, Gastric residual volume was assessed **(**GRV) and abdominal circumference were measured for all patients in the control group.

Study group;the subjects received the abdominal massage as a suggested nursing intervention for enterally feed patients on mechanical ventilation plus the routine hospital care.

All patients in the study group received abdominal massage. The massage was performed in the privacy of the patient.

The massage patient was lying in a supine position with his or her legs slightly bent through placing the patient's legs on a pillow. The bed's head was raised 30 to 45 degrees. The upper anterior iliac projection under the chest ribs was exposed, while the rest of the body was covered. The researcher took a position to the right of the patient's pelvis.

The abdominal massage was done to the abdominal wall in the direction of the bowel. It was performed twice daily for 20 minutes in a clockwise direction over the intestines on the abdominal wall. The massage was performed half an hour before enteral feeding to minimize the risk of aspiration, with a 6-hour period between massages. lubricant gel was used to make the massage easier. During the study, the head of the bed elevated to angle 30 to 45 degrees and was maintained 24 hours a day, with a 30-degree angle for performing the massage.

Five stages of abdominal massage were used: **the first stage** started with a gentle relaxing stroke up the abdominal wall, followed by motions likes brushing the skin in the abdominal region. **The second stage**, elastic deformation movement of the thoracic lumbar fascia, was performed by putting the dominant hand on the abdominal skin, the other hand on it, and applying pressure then squeezing the skin under pressure. **The third stage**; the abdominal skin is picked and kneaded by the fingers as if it was dough. **The fourth stage** includes shock motions from top to bottom and conversely around the armpit. The muscles in the intercostal spaces of false ribs moved during the **final stage**.[40,45]

The gastric residual volume (GRV) and abdominal circumference were measured before **the** Abdominalmassage and 1 hour after second massage**.**

Gastric residual volume was measured by aspirating the gastric contents using a 60-ml syringe before each feeding. Extra syringes were used if the amount exceeds one syringe. the evaluation of gastric emptying of patients on continuous enteral feeding, enteral feeding was stopped for 30 minutes before aspirating the gastric residual and abdominal circumference measurements. Patients in the intervention group had their measurements taken just before receiving an abdominal massage.

Abdominal circumference measurements were done using soft flexible, plastic tape. The starting point for the measurement was umbilicus. During expiration, the subject's waist was labelled with a marker pencil, and measurements were taken at the same point each time

The light and deep palpation were used to assess abdominal distension. Applying

pressure adequate to form a 1 to 2cm depression for light palpation and 2.5- to 7.5-cm depression for deep palpation. It was assumed that there was no distension if the abdomen was soft and not tense. The distension was considered when the abdomen was tense and hard.**(40)**

C- Evaluation phase: This phase was carried out for both control and intervention group using tool II: (Glasgow coma scale),tool III:(Enteral nutrition Assessment Tools)Part A-E and tool IV(Clinical Pulmonary Infection Score (CPIS) for Ventilator Associated Pneumonia three times; 1st, 3rd and 7th day of study period .Comparison will be done among the studied groups to define the effect of abdominal massage on tolerance of enteral nutrition **as indicated by absence of abdominal distension, constipation, diarrhea, vomiting, and low gastric residuals; and *ventilator-associated* pneumonia (VAP) risk** as a clinical Outcomes of enterally fed mechanically ventilated patients.

7. **Ethical consideration:**

The researcher clarified the aim of the study to the relatives of the all eligible patients.

- The researcher assured maintenance of anonymity and confidentiality of the subject data using code number.
- the patients' families were informed that they could withdraw at any time of the study
- Patients' guardian informed about their rights to agree for their patient to participate or withdraw from the study at any time.

  Informed and written consent was obtained from the patient's family before their patients enrolling in the study.
- The researcher was start with control group then study group to prevent contamination of data
- Privacy of the studied patients will be maintained

Statistical analysis:

SPSS software statistical computer package version 25 was used to organize, tabulate, and statistically analyze the collected data. The range, mean, and standard deviation were calculated for quantitative data. For qualitative data, comparison was done using Chi-square test ($\chi 2$). For comparison between means of variables for two groups, independent samples T-test was used. The paired samples T-test was used to compare the means of variables before and after intervention in a group. The F-value of analysis of variance (ANOVA) was calculated to compare means for variables over three periods of intervention in a group, or for more than two variables.

Pearson and Spearman's correlation coefficient **r** were used to assess the correlation between variables. For the purposes of interpreting the results of significance tests (*), a significance level of P<0.05 was chosen. In addition, for the interpretation of the results of the significance tests (**), a highly significant value of P<0.01 was used[(46)] .

Result

Table (1): Showed percent distribution of the studied patients according to their socio–demographic characteristics among the studied groups. The results of the present study illustrated that; more than third 36.7%, majority (80%)and more than half (53.3%) of the control group were in the age group 30-<40years, males and lived in rural area respectively; in addition same percent of them 30% are singles and have university education. For study group; same percent 23.3% in the age group 30-<40years and car read and write as level of education; in addition, more than three quarter of them 76.7% and more than half60% and 63.3% of them males, married and doing work respectively.

Table (2) Showed percent distribution of the studied groups according to their past and current health relevant data. The results revealed that ; half percent 50% of control and study group patients had past history of hypertension and diabetes respectively, while more than half 60% and 46% of them had past history of respiratory disorders and hypertension respectively, in addition more than half 60% compared to half 53.3% of control and study were smoker.

Regarding current medication, the majority (73.3%) and (83.3%) of control and study group patients respectively recently undergoing antibiotic medication. Additionally the same percentage (60%) and (56.7 %) of the control group patients respectively undergoing antihypertensive, sedatives, calcium channel blockers and narcotics medication respectively; while; less than half and same percent of(43.3%) of the studied group undergoing sedatives, narcotics and muscle relaxant medication.

According to admission diagnosis; the table shows that small and same percent (6.7%), (13.3%), (6.7%), (3.3%) ,(23.3) and(3.3%)of the control and study group patients admitted to ICU with acute respiratory distress syndrome, drug intoxication, respiratory acidosis ,shock, traumatic brain injury and pulmonary edema respectively, while none of control group compared to small percentage (3.3%)of study group patients admitted with cardiac arrhythmias.

Regarding to length of ICU stay , the mean value of control and study group was (11.20±2.04)and (9.57±2.05)respectively

with significant difference between the two groups in which p= 0.003*****.There was no significance differences between control and study group in relation to past medical history, current medication and admission diagnosis.

Table (3): Revealed Percent distribution of the studied groups according to their mechanical ventilation related clinical data**.** It was revealed that less than half 40% and 36.7% %of control and study group patients respectively undergoing SIMV as a mode of ventilation. Also; the mean value of extubation time for control group was (8.57±3.01) compared to (6.07±3.11) for the study group with a significant difference since p= 0.002.

Regarding duration of mechanical ventilation, it was observed that the mean value of control and study group was (7.00±2.56) and (4.97±2.83) respectively and there was a significant difference among the studied groups since p= 0.005*****.

Concerning the patients' status on discharge, more than half (53.3%) of control group were transferred to other wards compared to the same percentage of study group were completely recovered. while (10%) compared to none of control and study group respectively were died.

Table (4): Showed Percent distribution of the studied groups according to their enteral feeding data. It was shown that more than half (56.7%) compared to third (33.3%) of control and study group respectively were receiving intermittent feeding. **In relation to the size of the tube feeding used**; it was found that; more than half (63.3%) and (66.7%) of control and study group respectively used large diameter tube.

Table (5). Demonstrated percent distribution of the studied groups according to enteral feeding data throughout the periods of study. It was revealed that a significant difference among the studied groups throughout the study periods (at **At 1st day,3rd day** and **At 7th day**) **regarding** type, amount and rate of feeding since p=0.000*. In addition; there were a significant difference among the study versus control group in relation to type, amount and rate of feeding throughout the study period since p =<0.05 except amount and rate of feeding in the 1st day of follow up.

Table (6): Demonstrated Percent distribution of the studied groups according to their **(SOFA)** score on admission to intensive care unit. It was shown that near half (43.3%) of control and study group undergoing score from (7-9). In addition, tenth (10%) compared to (3.3%)of control and study group respectively scored 13-14.Also, this table showed that the mean value of control and

study group regarding SOFA level on ICU admission was (9.13±2.32) and (9.03±1.99) respectively and there was no significant differences were found among the studied patients since p= (0.858) .

Table (7): Presented the Mean scores of Glasgow Coma Scale among the studied groups throughout study periods; it demonstrated that Glasgow Coma Scale mean value of control group was(7.70±2.003, 8.03±2.076 and11.43±2.285) in the 1st, 3rd and 7thday of the study period respectively compared to(6.40±1.429, 7.30±1.705, 11.60±1.404) for the study group in the same study period. Moreover, this table illustrated that there was a significant difference for the study and control throughout the study period where p= (0.000) *.

in addition; there was a significant difference between the control versus study group regarding first day of study periods where P value = 0.005*.

Table (8): Demonstrated the Mean scores of Gastric Residual Volume and Abdominal Circumference Assessments Score among the studied groups throughout the periods of the study. There were proven that no significant difference was found among the control group related to gastric residual volume and abdominal circumference assessments score throughout the study period since p => 0.05.On contrary side, a statistical significant differences among the study group throughout 1st, 3rd and 7thday of follow up regarding gastric residual volume assessments pre and one hour post abdominal massage since p= 0.000*, 0.003*, 0.000* respectively. In addition, there was a statistically significant differences found among the study group only in the 7thday of follow up regarding abdominal circumference assessments pre and one hour post massage since p=0.047*.

Table (9): Showed Percent distribution of the studied groups according to vomiting episodes and defecation frequency throughout the periods of the study. According to frequency of vomiting episodes; it was shown that a statistically significant differences among study and control group throughout the periods of follow up since p= 0.000* and 0.015* respectively. In addition, there were a significant difference between control versus study group throughout the study period in relation to frequency of vomiting episodes since (P= 0.044*, 0.000*) and (0.000*) in the 1st, 3rd and 7th day of follow up respectively.

Regarding to frequency of defecation, there was a statistically significant differences among the study and control group throughout the periods of follow up since p=0.000 *and 0.008 *respectively.

Moreover, there was a high significant difference between control versus study group in the 3rd and 7th day of follow up related to frequency of defecation since (P= 0.000 *).

Table (10): Presented Percent distribution of the studied groups according to their Clinical Pulmonary Infection Score parameters (CPIS) and risk of Ventilator-Associated Pneumonia (VAP) throughout the periods of the study

According to Total CPIS level; this table revealed that small percent 6.7% of control group compared to majority 86.7% of the study group have≤6 Negative VAP in the 7thday of follow up. Also, there was a statistically significant differences among the control group related to; white blood cell count, tracheal secretion, pulmonary radiology and culture of tracheal aspirate throughout the study period where (P=<0.05*)

In addition; there was significant differences among the study group related to tracheal secretion, oxygenation, and pulmonary radiology where P=<0.05. Also, there was a high statistically significant difference between study versus control group throughout the study period where P = 0.000 each.

Table (11): Revealed the correlations between Patient Clinical outcomes and Clinical Pulmonary Infection Score (CPIS) among the studied groups throughout the periods of the study. **Concerning the correlation between different clinical outcomes and Clinical Pulmonary Infection Score (CPIS),** this table showed that there was a significant negative correlation between Glasgow Coma Score and Clinical Pulmonary Infection Score for control group in the 7th day of follow up since r = - 0.431 and p= 0.017 while ; there was a significant positive correlation between SOFA score and Clinical Pulmonary Infection Score in the same group in the 1st day of follow up since r = 0.380 and p= 0.038. Furthermore; this table reveals that there was a significant negative correlation between abdominal circumference assessment and Clinical Pulmonary Infection Score in the study group in the 3rd day of follow up since (r = - 0.461) and (p= 0.010).

Table (1): Percent distribution of the studied groups according to their socio–demographic characteristics.

Characteristics	The studied patients (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
Age (in years)					
▪ (20-<30)	6	20.0	3	10.0	
▪ (30-<40)	11	36.7	12	40.0	2.627
▪ (40-<50)	9	30.0	7	23.3	0.453
▪ ≥50	4	13.3	8	26.7	
Range	**(22-56)**		**(23-59)**		t=0.875
Mean ± SD	**39.20±9.38**		**41.53±11.20**		P=0.385
Gender					
▪ Male	24	80.0	23	76.7	FE
▪ Female	6	20.0	7	23.3	1.00
▪ Marital status					
▪ Single	9	30.0	4	13.3	
▪ Married	13	43.3	18	60.0	3.796
▪ Widow	6	20.0	4	13.3	0.284
▪ Divorced	2	6.7	4	13.3	
Level of education					
▪ Illiterate	4	13.3	4	13.3	
▪ Read and write	6	20.0	7	23.3	
▪ Basic primary education	4	13.3	3	10.0	0.803
▪ Diploma	5	16.7	7	23.3	0.977
▪ Secondary education	2	6.7	2	6.7	
▪ University education	9	30.0	7	23.3	
Occupation before disease					
▪ Work	20	66.7	19	63.3	FE
▪ Not work	10	33.3	11	36.7	1.00
Place of residence					
▪ Rural	16	53.3	16	53.3	FE
▪ Urban	14	46.7	14	46.7	1.00

FE: Fisher' Exact test

Table (2): Distribution of the studied groups according to their past and current health relevant data.

History	The studied patients (n=60)				χ^2 P
	ontrol group (n=30)		Study group (n=30)		
	N	%	N	%	
Past medical history					
▪ Hypertension	15	50.0	17	50.0	
▪ Cardiac diseases	7	23.3	13	43.3	
▪ Malignancy diseases	6	20.0	5	16.7	1.071
▪ Respiratory disorders	18	60.0	14	46.7	0.796
▪ Liver diseases	14	46.7	11	36.7	
▪ Diabetes	15	50.0	15	50.0	
Smoking Habits					
▪ Yes	18	60.0	16	53.3	
▪ No	12	40.0	14	47.7	
Current medications					
1. Antibiotics					
▪ Ongoing for ≥ 72 hours	8	26.7	5	16.7	FE
▪ Recently (< 72 hours) introduce	22	73.3	25	83.3	0.532
2. Antihypertensive drugs	18	60.0	17	56.7	
3. Hypoglycemic drugs	16	53.3	15	50.0	
4. Calcium channel blockers	17	56.7	13	43.3	4.80
5. Beta blockers	6	20.0	14	46.7	0.054
6. Sedatives	18	60.0	13	43.3	
7. Narcotics	17	56.7	13	43.3	
8. Muscle relaxant	15	50.0	13	43.3	
Admission diagnoses					
▪ Acute respiratory distress syndrome	2	6.7	2	6.7	
▪ Drug intoxication	4	13.3	4	13.3	
▪ Respiratory acidosis	2	6.7	2	6.7	
▪ Guillain–Barré syndrome	2	6.7	1	3.3	
▪ Myasthenia gravis	2	6.7	1	3.3	
▪ Spinal cord injury	3	10.0	2	6.7	3.343
▪ Shock	1	3.3	1	3.3	0.993
▪ traumatic brain injury	7	23.3	7	23.3	
▪ Stroke	1	3.3	3	10.0	
▪ Chest trauma	4	13.3	3	10.0	
▪ Cardiac arrhythmias	0	0.0	1	3.3	
▪ Pulmonary edema	1	3.3	1	3.3	
▪ Respiratory failure	1	3.3	2	6.7	
Length of ICU stay **Range** **Mean ± SD**	(8-15) 11.20±2.04		(7-14) 9.57±2.05		**t=3.096** **P=0.003***

* Significant at level P<0.05

Table (3): Percent distribution of the studied groups according to their mechanical ventilation related clinical data

Mechanical ventilation related clinical data	The studied patients (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
Mode of ventilation					
▪ Control	11	36.7	13	43.3	0.287
▪ SIMV	12	40.0	11	36.7	0.866
▪ Assist mode	7	23.3	6	20.0	
Time of extubation					
Range	(3-14)		(1-13)		**t=3.170**
Mean ± SD	8.57±3.01		6.07±3.11		**P=0.002***
Duration of MV					
Range	(2-12)		(1-12)		**t=2.916**
Mean ± SD	7.00±2.56		4.97±2.83		**P=0.005***
Status on discharge					
▪ Transferred to other wards	16	53.3	14	46.7	4.059
▪ Complete recovery	11	36.7	16	53.3	0.131
▪ Died	3	10.0	0	0.0	

* Significant at level P<0.05.

Table (4): Percent distribution of the studied groups according to their enteral feeding data

Enteral feeding data	The studied patients (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
Feeding regimen					
▪ Intermittent	17	56.7	10	33.3	4.344
▪ Continuous	13	43.3	20	66.7	0.114
Type of feeding tube used					
▪ Small diameter tube	11	36.7	10	33.3	FE
▪ Large diameter tube	19	63.3	20	66.7	1.00

FE: Fisher' Exact test

Table (5): Percent distribution of the studied groups according to enteral feeding data throughoutthe periods of study.

Enteral feeding data	The studied patients (n=60)													
	Control group (n=30)						χ^2 P	Study group (n=30)						χ^2 P
	At 1st day		At 3rd day		At 7th day			At 1st day		At 3rd day		At 7th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
1.Type of feeding														
▪ Blended	0	0.0	4	13.3	9	30.0	35.937	0	0.0	14	46.7	16	53.3	51.131
▪ Commercial	0	0.0	11	36.7	13	43.3	0.000*	8	26.7	13	43.3	14	46.7	0.000*
▪ Milk and juice	30	100.0	15	50.0	8	26.7		22	73.3	3	10.0	0	0.0	
Control group Vs Study group														
χ^2	FE		13.722		9.997									
P	0.005*		0.001*		0.007*									
2.Amount of feeding/ml/2 Hours														
▪ 200	30	100.0	30	100.0	0	0.0	90.00	25	83.3	0	0.0	0	0.0	82.905
▪ 300	0	0.0	0	0.0	26	86.7	0.000*	5	16.7	17	56.7	6	20.0	0.000*
▪ 400	0	0.0	0	0.0	4	13.3		0	0.0	13	43.3	24	80.0	
Control group Vs Study group														
χ^2	FE		60.00		FE									
P	0.052		0.000*		0.000*									
3.Rate of feeding (ml /hour)														
▪ 80		100.0	21	70.0	0	0.0	66.176	30	100.0	0	0.0	0	0.0	115.714
▪ 100		0.0	9	30.0	25	83.3	0.000*	0	0.0	22	73.3	6	20.0	0.000*
▪ 150		0.0	0	0.0	5	16.7		0	0.0	8	26.7	24	80.0	
Control group Vs Study group														
χ^2	-		34.452		FE									
P			0.000*		0.000*									

* Significant at level P<0.05

Table (6): Percent distribution of the studied groups according to their Sequential Organ Failure Assessment Score (SOFA) on admission to intensive care unit.

The Sequential Organ Failure Assessment Score (SOFA)	**The studied patients (n=60)**				χ^2 **P**
	Control group (n=30)		**Study group (n=30)**		
	N	**%**	**N**	**%**	
SOFA level on ICU admission					
▪ (0-6)	5	16.7	4	13.3	
▪ (7-9)	13	43.3	13	43.3	1.540
▪ (10-12)	9	30.0	12	40.0	0.673
▪ (13-14)	3	10.0	1	3.3	
Range	**(6-13)**		**(6-13)**		t=0.179
Mean ± SD	**9.13±2.32**		**9.03±1.99**		P=0.858

* Significant at level P<0.05

Table (7): Mean scores of Glasgow Coma Scale among the studied groups throughout study periods.

GCS score	The studied patients (n=60) Range Mean ± SD							
	Control group(n=30)			F P	Study group(n=30)			F P
	At 1st day	At 3rd day	At 7th day		At 1st day	At 3rd day	At 7th day	
Glasgow Coma Score	(5-13) 7.70±2.003	(5-12) 8.03±2.076	(5-14) 11.43±2.285	**28.372 0.000***	(4-9) 6.40±1.429	(4-10) 7.30±1.705	(8-14) 11.60±1.404	**100.438 0.000***
Control Vs Study								
t	**2.894**	1.495	0.340					
P	**0.005***	0.140	0.735					

* Significant at level P<0.05

Table (8): Mean scores of Gastric Residual Volume and Abdominal Circumference Assessments Score among the studied groups throughout the periods of the study

Assessment parameters	The studied patients (n=60) Range Mean ± SD								
	Control group (n=30)			Study group (n=30)					
				At 1st day		At 3rd day		At 7th day	
	At 1st day	At 3rd day	At 7th day	Before massage	1 Hour after massage	Before massage	1 Hour after massage	Before massage	1 Hour after massage
Gastric residual volume Assessment	(120-250) 70.33±33.16	(120-250) 69.00±33.15	(120-300) 83.00±38.25	(150-250) 80.67±32.68	(70-200) 15.00±26.49	(50-250) 39.33±55.08	(50-200) 9.33±44.09	(50-120) 3.33±21.389	(30-60) 46.67±9.94
F	**1.467**			**46.93**	**42.02**				
P	**0.236**			**0.000***	**0.000***				
Study group only t				**8.549**		**3.105**		**8.515**	
P				**0.000***		**0.003***		**0.000***	
Abdominal circumference Assessment	**(86-125) 03.77±10.28**	**(90-128) 07.13±9.76**	**(90-129) 07.73±9.85**	**(86-117) 01.50±8.24**	**(84-115) 98.90±8.21**	**(90-128) 07.13±9.76**	**(86-125) 03.77±10.28**	(86-125) 03.77±10.28	(84-115) 98.90±8.21
F	1.380			2.688	2.953				
P	0.257			0.074	0.057				
Study group only t				**1.224**		**1.30**		**2.026**	
P				**0.226**		**0.199**		**0.047***	

* Significant at level P<0.05.

Table (9): Percent distribution of the studied groups according to vomiting episodes and defecation frequency throughout the periods of the study.

Assessment	The studied patients (n=60)													
	Control group (n=30)						χ^2 P	Study group (n=30)						χ^2 P
	At 1st day		At 3rd day		At 7th day			At 1st day		At 3rd day		At 7th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
Frequency of vomiting episodes														
▪ None	13	43.3	3	10.0	4	13.3	12.348	12	40.0	21	70.0	28	93.3	25.217
▪ Once/day	12	40.0	17	56.7	15	50.0	0.015*	18	60.0	7	23.3	2	6.7	0.000*
▪ **Twice/day	5	16.7	10	33.3	11	36.7		0	0.0	2	6.7	0	0.0	
Control group Vs Study group														
χ2	6.240		23.00		38.941									
P	0.044*		0.000*		0.000*									
Frequency of defecation														
▪ None	28	93.3	24	80.0	18	60.0	9.771	25	83.3	2	6.7	0	0.0	61.27
▪ Once/day	2	6.7	6	20.0	12	40.0	0.008*	5	16.7	28	93.3	30	100.0	0.000*
Control group Vs Study group														
χ2	FE		FE		FE									
P	0.424		0.000*		0.000*									

* Significant at level P<0.05
**Twice/day equal zero for frequency

Table (10): Percent distribution of the studied groups according to their Clinical Pulmonary Infection Scoreparameters (CPIS) and risk of Ventilator-Associated Pneumonia (VAP) throughout the periods of the study

CPIS items	The studied patients (n=60)													
	Control group(n=30)						χ^2 P	Study group(n=30)						χ^2 P
	At 1st day		At 3rd day		At 7th day			At 1st day		At 3rd day		At 7th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
1.Temperature (°C)														
▪ (36.5-38.4)	1	3.3	0	0.0	1	3.3	**5.079**	3	10.0	5	16.7	5	16.7	3.070
▪ (38.5-38.9)	25	83.3	19	63.3	21	70.0	**0.279**	21	70.0	22	73.3	23	76.7	0.546
▪ ≥39.0 or ≤36.0	4	13.3	11	36.7	8	26.7		6	20.0	3	10.0	2	6.7	
2.White Blood Cell Count														
▪ (4-11)	21	70.0	6	20.0	5	16.7	**24.248**	0	0.0	2	6.7	1	3.3	**4.942**
▪ <4 or >11	6	20.0	11	36.7	11	36.7	**0.000***	22	73.3	21	70.0	26	86.7	**0.293**
▪ Either <4 or >11 plus band forms ≥500	3	10.0	13	43.3	14	46.7		8	26.7	7	23.3	3	10.0	
3.Tracheal Secretions														
▪ <14+ Small	0	0.0	0	0.0	0	0.0	**6.817**	2	6.7	9	30.0	12	40.0	**10.05**
▪ ≥14+ moderate/large	24	80.0	15	50.0	22	73.3	**0.033***	25	83.3	20	66.7	17	56.7	**0.040***
▪ ≥14+ plus purulent secretions	6	20.0	15	50.0	8	26.7		3	10.0	1	3.3	1	3.3	
4.Oxygenation														
▪ >240 or ARDS	5	16.7	4	13.3	6	20.0	**0.480**	21	70.0	5	16.7	3	10.0	**29.712**
▪ ≤240 and no ARDS	25	83.3	26	86.7	24	80.0	**0.787**	9	30.0	25	83.3	27	90.0	**0.000***
5.Pulmonary Radiography														
▪ No infiltrate	0	0.0	0	0.0	0	0.0	**8.038**	10	33.3	21	70.0	22	73.3	**18.828**
▪ Diffuse or patchy infiltrate	23	76.7	13	43.3	21	70.0	**0.018***	12	40.0	8	26.7	8	26.7	**0.001***
▪ Localized infiltrate	7	23.3	17	56.7	9	30.0		8	26.7	1	3.3	0	0.0	

Continued …

le (10): Percent distribution of the studied groups according to their Clinical Pulmonary Infection Score parameters (CPIS) and risk of Ventilator-Associated Pneumonia (VAP) throughout the periods of the study

CPIS items	The studied patients (n=60)													
	Control group(n=30)						χ^2 P	Study group(n=30)						χ^2 P
	At 1st day		At 3rd day		At 7th day			At 1st day		At 3rd day		At 7th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
6.Culture of tracheal aspirate specimen														
▪ Pathogenic bacteria cultured ≤1 or no growth	6	20.0	23	76.7	7	23.3		30	100.0	29	0.0	30	100.0	
▪ Pathogenic bacteria cultured >1+	20	66.7	3	10.0	20	66.7	**28.79 0.000***	0	0.0	0	96.7	0	0.0	-
▪ Pathogenic bacteria cultured >1+ plus same pathogenic bacteria on gram stain >1+	4	13.3	4	13.3	3	10.0		0	00	0	0.0	0	0.0	
Total CPIS level														
▪ ≤6 Negative VAP	5	16.7	0	0.0	2	6.7	**5.886**	25	83.3	27	90.0	26	86.7	**0.577**
▪ >6 Positive VAP	25	83.3	30	100.0	28	93.3	**0.053**	5	16.7	3	10.0	4	13.3	**0.749**
Range	(5-9)		(6-11)		(5-11)		**t=3.348**	(4-6)		(4-7)		(4-7)		**t=1.297**
Mean ± SD	6.57±1.17		7.70±1.44		7.40±1.48		**P=0.001***	4.93±0.640		4.70±0.750		4.70±0.877		**p=0.200**
Control Vs Study														
t	**6.731**		**10.110**		**8.613**									
P	**0.000***		**0.000***		**0.000***									

Table (11): Correlationsbetween Patient Clinicaloutcomes and Clinical Pulmonary Infection Score (CPIS)among the studied groups throughout the periods of the study.

Patient's Clinical Outcome	Clinical Pulmonary Infection Score (CPIS)											
	Control group						Study group1 hour after massage					
	At 1st day		At 3rd day		At 7th day		At 1st day		At 3rd day		At 7th day	
	r	P	r	P	r	P	r	P	r	P	r	P
Length of ICU stay	-0.137	0.469	-0.152	0.423	-0.009	0.963	0.027	0.886	0.094	0.623	0.240	0.201
Mechanical ventilation related clinical data												
▪ Time of extubation	-0.184	0.331	-0.143	0.452	-0.037	0.845	-0.223	0.236	0.009	0.963	0.248	0.186
▪ Duration of MV	-0.197	0.298	-0.103	0.589	-0.082	0.666	-0.191	0.311	0.028	0.885	0.259	0.166
SOFA score	0.380	0.038*	0.012	0.948	0.216	0.252	-0.188	0.321	0.169	0.373	0.243	0.196
Glasgow coma score	-0.043	0.822	-0.285	0.128	-0.431	0.017*	-0.309	0.096	0.100	0.600	-0.101	0.596
Gastric residual volume assessment	0.147	0.439	0.325	0.079	0.149	0.432	-0.122	0.520	0.244	0.194	0.000	1.000
Abdominal circumference assessment	0.063	0.740	-0.129	0.496	0.313	0.092	-0.080	0.674	-0.461	0.010*	-0.100	0.599
Frequency of vomiting episodes	0.134	0.482	-0.151	0.427	0.172	0.364	0.341	0.065	0.216	0.251	-0.255	0.174
Frequency of defecation	0.016	0.933	-0.148	0.435	-0.185	0.328	0.183	0.334	0.060	0.754	-	-

* Significant at level P<0.05

Discussion

Ventilator associated pneumonia (VAP) in intensive care units was the most common hospital acquired infection developed within 48 hours of intubation. Ventilator associated pneumonia affected nearly a percentage of 6% to 52% of patients in intensive care units. Among predisposing factors for VAP was the enteral feeding. Moreover, the incidence of VAP in mechanically ventilated patients was increased by enteral feeding. It increased the development of VAP three-fold. The enterally fed patients were developed increased gastric residual volume in 32% and feeding intolerance in 46% of them. Increased gastric volume was found to be a sign of feeding intolerance, and an association between gastric volume and nosocomial pneumonia was detected. Enteral feeding causes an increase in gastric residual volume, which leads to pulmonary aspiration, that is one of the most severe mechanical complications.**(10)**

Aspiration is one of the essential factors causing the VAP whichresult from elevated gastric residual and delayed gastric emptying. Hence, prevention and treatment of feeding intolerance in critically ill patients receiving enteral nutrition were a significant nursing consideration. These necessitate the use of techniques that increase the rate of gastric emptying, thus increasing tolerance to feeding.**(47,31)**

Currently, the abdominal massage was considered a non-pharmaceutical method that knew to be effective in reducing aspiration. which has been proved to decrease various enteral feeding-related gastrointestinal complication via its direct impact on gastric residual which is a significant predictor of enteral feeding tolerance**.** **(47,26-27,12).**

The present study was conducted in order to know how effective abdominal massage was on ventilator-associated pneumonia and gastric residual volume among patients with enteral feeding. The result of the present study illustrated that the mean age and SD of control and study group was (**39.20±9.38**) and **(41.53±11.20**) respectively were in the age group from 20-50 years; in relation to sex majority of control and study group were males. Regarding place of residence near half of the control group and more than half of the study group lived in urban and rural areas equally; **this finding was contradicted with Elpasionyet.al (2017)** **[48]**who mentioned that a total 60 patients were participated in the study with mean age and SD (60 ± 19.70) years for study and

(55.07 ± 20.16) years for control group and noted that (60%) in the study group and (53.3%) in the control group were males. The current study revealed that there were no statistically significant differences between both groups regarding socio–demographic characteristics. These results are **in the same line with Aysal et al., (2012),** who reported that there were no statistical significant differences between groups in term of age and sex.**(12)**

Regarding to admission diagnoses; the present study revealed that near than quarter of the control and study group admitted to ICU with a diagnosis of traumatic brain injury and minority of them had drug intoxication. Regarding to length of ICU stay; the current study showed that the mean value of control group was 9.40±2.11 compared to 9.00±1.97 of study group and there was a statistically significant differences among the studied patients regarding to length of hospital stay. This can be explained that the SOFA score for the studied group was the same for nearly half of admitted patient to intensive care unit. The score was designed to describe a sequence of complications of critical illness and among this complication was the longer hospital stay due to their morbidity **(49)**

This finding was **in line with Elpasiony et.al (2017)**(48)**,** who noted that neurological problems were the most common cause of ICU admission in both groups and there was no statistical significance difference between the two groups in relation to past medical history.

Regarding to mechanical ventilation related clinical data; the current study showed that about half of control group undergoing Synchronized intermittent mandatory ventilation (SIMV) compared to about half of study group who were undergoing control mode of ventilation. Also, the result presented that there was a significant difference among the studied groups **regarding duration of mechanical ventilation.concerning the patients' status on discharge**, more than half of the control group were transferred to other wards compared to the same percent of study group who were completely recovered.

In relation to the distribution of the studied groups according to their SOFA score on ICU admission, the present study showed that near half of control and study group undergoing score from (7-9), also this result presented that the mean value of control and study group regarding SOFA level on ICU admission was 9.13±2.32 and 9.03±1.99 respectively and there was no significant difference among the studied groups .**This finding was in agreement with Elbilgahy et al. (2015) (50),** who

found that there was strong association between increased days on mechanical ventilation **MV**& long duration of length of ICU stay in both groups. As the length of stay at the hospital is prolonged, the patients have more chances to get hospital-acquired infections.

The findings of the present study revealed that there was a significant difference of the study group in the 1st, 3rd and 7thday of follow up and there was a significant difference between control and study group throughout periods of study related to Glasgow coma scale. **This finding was in contradicted with Elpasiony et.al (2017)[48],** who noted that there was no statistical significance difference between the two groups related to Glasgow coma scale.

Regarding the mean values of gastric residual volume(GRV) **assessments score**, the present study showed that there was a statistical significant differences found among the study group throughout 1st, 3rd and 7thday of follow up regarding gastric residual volume assessments score before and one hour after the abdominal massage. **This is congruent with Yaghoubinia et.al (2017) [51]** who reported that when comparing changes in GRV measurements between the first and last day of the study, there was statistically significance difference between both groups as near to three quarter of patients in the study group had equal amount of GRV at the first and last day of the study in relation to near half of patients in the control group. Moreover; another randomized controlled study on adult patients receiving enteral nutrition, showed that abdominal massage was effective in decreasing excess GRV and abdominal distention .[10,52]

Abdominal massage can stimulate peristaltic movement mechanisms, alter intra-abdominal pressure, and cause mechanical and reflexive effects on the intestines, reducing food transition time in the intestines, increasing intestinal movements, and thus facilitating food flow through the digestive tract. Furthermore, according to **Momenfar et al (2018)**, abdominal massage will stimulate touch and pressure receptors, resulting in sympathetic nervous system stimulation, which enhances gastrin secretion and accelerates gastric peristalsis, reducing abdominal distention and consequently gastric residual volume (GRV).[53]

In addition, the current result presented that there was a statistically significant among study group only in the 7th day of follow up regarding **abdominal circumference assessments** score before and one hour after the abdominal massage. This finding was in line with **Fareed et.al**

(2017) [54] who reported that the intervention massage group had a statistically significant difference on the first and last day compared to the other group. When the results of abdominal circumference of both groups were measured on the first and last day, abdominal circumference was substantially higher in the control group, according to **Uysal et al., (2012)**[12].**Similarly, the study done by Dehghan et al. (2018)** [44] it was observed that the abdominal circumference of the massage group decreased significantly after the study, although it increased significantly in the control group, and there was a considerable difference between the two groups.

Moreover, the study done by **Wang, Huang, & Jin, (2019)**[55]revealed that the abdominal massage helps to relieve abdominal distension, gastric residual, and vomiting. Abdominal massage did not reduce abdominal circumference in ICU patients when the intervention was less than 7 days long., but it did reduce abdominal circumference in ICU patients when the intervention time was equal to 7 days.

Regarding to vomiting episodes and defecation assessment among the studied groups throughout periods of study; the current study showed that there was a statistically significant difference among study group throughout the periods of follow up regarding frequency of vomiting episodes. **This is supported with Fareed et.al (2017)** [55]**,** who reported that there were significant decreases of vomiting frequency among study than control group in all times of follow up. In addition, there are studies indicating that abdominal massage reduces vomiting. [12,56]

Also, there was a statistical significant difference among study group throughout the periods of follow up regarding frequency of defecation this agreed with the stud done by**Altun Ugras et al (2020)** [57] **who stated that**, the patients who underwent abdominal massage had earlier bowel evacuation than the control group. Also, this in the same line of a previous study that showed that the abdominal massage decreased defecation periods and reduced the incidence of constipation in patients who were admitted to a trauma ICU, were fed enterally, and were on mechanical ventilator assistance.[44]

Moreover,according to **Okuyan and Bilgili (2019)**a comparison of the post-intervention constipation status of individuals in the massage and control groups revealed that the massage group's constipation status decreased with a significant difference between the groups.

Similarly, **Cevik et al. (2018)** found that the mean scores for the number of defecations increased after abdominal massage than before and during it, in a sample of twenty-two elderly patients[58,59] This agreed with the study done by (**Turan et al 2016) [60] who revealed that the** abdominal massage in orthopedic patients, was found to alleviate constipation symptoms and reduce the time to defecation. Furthermore, abdominal massage has been shown to activate the parasympathetic nervous system by increasing muscle activity, releasing digestive enzymes, and relaxing sphincters in the GI tract. Furthermore, abdominal massage causes a mechanical and reflex influence in the intestines due to changes in intraabdominal pressure, which increases peristalsis. The movement of nutrients across the gastrointestinal tract is accelerated by increasing peristalsis. As a result, stool stays in the large intestine for less time, and bowel movements become more frequent.[44,60]

In relation to Clinical Pulmonary Infection Score (CPIS) and the risk of Ventilator-Associated Pneumonia (VAP) throughout the periods of the study, the current study showed that minority of the control group hade ≤ 6 Negative VAP compared to majority of the study group who have ≤ 6 Negative VAP in the 7thday of follow up. Finally, there was a statistically significant differences among the massage group throughout the study period in relation to; tracheal secretions, oxygenation and pulmonary radiography. **This results were in line with Elpasiony et.al (2017)[49],** who stated that the finding of the study revealed that at the last day of the study there was statistically significance difference between study and control group patients regarding development of VAP as one third of the study group had developed VAP compared to near two thirds of control group.

Concerning the correlation between different clinical outcomes and Clinical Pulmonary Infection Score (CPIS); the present finding raveled that there was a significant negative correlation between Glasgow coma score and Clinical Pulmonary Infection Score in the control group in the 7th day of follow up and there was a significant positive correlation between SOFA score and Clinical Pulmonary Infection Score in the same group in the 1st day of follow up .In addition there was negative correlation between Gastric residual volume assessment and Clinical Pulmonary Infection Score in the study group at the first and third day one hour after the abdominal massage.

Abdominal massage has been shown in the literature to induce parasympathetic activity, resulting in a gastrointestinal response. As a result, abdominal massage increases intestinal movements and gastric emptying, reducing the risk of reflux and aspiration by changing intra-abdominal pressure and producing a mechanical and reflexive impact on the intestines, decreasing abdominal distension**.**[(29)]

Aspiration may occur due to increased gastric content as a result of reflux and vomiting. Consequently, elevated gastric residual volume and vomiting are harmful in enteral feeding patients.[61]Furthermore, the present study showed that there was a significant negative correlation between abdominal circumference assessment and Clinical Pulmonary Infection Score in the study group in the **3rd day of follow up**. Therefore, it is important to perform abdominal massage for enteral feeding patient on mechanical ventilation to avoid complications like a high gastric **residual volume** (GRV), abdominal distension, vomiting and consequently ventilator associated pneumonia.

Conclusion

Based on the results of the current study, it can be argued that abdominal massage is more effective in decreasing abdominal distension; nasogastric tube feeds side effects, gastric residual volume (GRV) in the massage group than the control group. Also, the results concluded the beneficial effect of abdominal massage on decreasing of Ventilator Associated Pneumonia **VAP** in the intervention massage group than control group. Also, the minority of the control group have ≤ 6 Negative VAP compared to majority of the study group have≤6 Negative VAP in the 7th day of follow up.

Recommendations

- Intensive care units nursing staff must focus on early assessment of abdominal distension; nasogastric tube feeding side effects, and gastric residual volume (GRV) before every feeding.
- Involve the abdominal massage as a regular part of the routine care for enterally feed critically ill patients unless contraindicated to reduce gastric residual volume (GRV), risk of aspiration and consequently prevention of ventilator associated pneumonia.
- Further research with large probability sampling is needed.

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The Relationship between Self-reported Chronic Pain and Pain related Functional Limitations among Patients with Rheumatoid Arthritis

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Abstract:

Chronic pain of patients with rheumatoid arthritis is a very exhausting complaintfor them either physically, socially, emotionally, or economically. Chronic pain has a vital role in determining the functional abilities of patients with rheumatoid arthritis. **Aim:** Determine the relationship between self-reported chronic pain and pain related functional limitations among patientswith rheumatoid arthritis. **Subjects and method:Setting:** Rheumatoid outpatient clinics of Mansoura UniversityHospital.**Subjects:** 178 patientswere recruited. **Tools**: Three tools were used for datacollection: 1) Socio-demographic and Clinical Data of Patients with Rheumatoid Arthritis Structured Interview Schedule, 2) Self-Reported Chronic Pain Assessment of Patients with Rheumatoid Arthritis Structured Interview Schedule, 3) Pain Related Functional Limitations Assessment of Patients with Rheumatoid Arthritis Structured Interview Schedule. **Results:** More than one half of the study subjects reported greater suffering from chronic pain such as longer duration of chronic pain history, frequent daily pain which persist for longer duration oftime and characterized by greater level of severity. Also, the similar percentage of them reported severe level of pain related functional limitations. **Conclusion:** Suffering from chronic pain is significantly associated with greater level of pain related functional limitations among the study subjects. **Recommendations:** nurses should assesspatientsfor their pain history, and their perceived pain related functional limitations. The nurse should act collaboratively with the patients and health team members to alleviate the patients' suffering and pains to enhance their functional abilities and to decrease their functionallimitations.

***Keywords*:** Rheumatoid arthritis; Patients; Functional limitations; Chronic pain.

Introduction

Rheumatoid Arthritis (RA) is an autoimmune disease characterized by a chronic symmetrical polyarthritis of large and small joints, and morning stiffness, which can lead to musculoskeletal impairment, and functional disabilities[1, 2].The burden of disease course varies and the prediction of the prognosis is difficult to estimate. In the long term, RA reduces function which leads to difficulties of doing daily living activities, and subsequently impact negatively onpsychosocial aspect [3].

Rheumatoid Arthritis affecting 0.5 to 1% of the adult population of developed regions with predominance of 2 to 3 times more in females. It affects all age groups but is more prevalent among 40 to 60 years people [4]. In rural Egypt, prevalence of up to 0.3% was found in the adult population.

Pain is defined as chronic if persists for more than three months and usually lasts for several months or years [5]. Chronic pain involves more thanonesite and usually leads to the utilization of greater number of pain relieving drugs, poor outcomes of interventions, low quality of sleep, and greater emotional problems. It influences daily functional abilities and becomes chiefcomplain formany patients[5, 6].

Most patientswith rheumatoid arthritis experience limitations in performing daily basic activities and one quarter of them are found to have poor general physical performance. These limitations may be related to the pathological changes associated with the disease, such as morning stiffness, decreased joint movement, crepitation, and muscle weakness, or due to the effect of chronicpain [12, 13].

Chronic pain can restrain abilities to do daily activities, like housekeeping, dressing or food preparation. The outcomes of chronic pain on the functional status can be wide reaching and overwhelming of patients diagnosed with rheumatoid arthritis.While, the pain-related functional limitations are characterized by loss of the capability to perform necessary tasks in any important life domain such as physical, social, emotional, and cognitive function. It supposed to be the chief reasons to look for medical attention [14, 15].

Managing chronic pain differ from the acute pain management where its treatment emphasizes on lowering of pain related functional limitations, reduction ofemotional distress and decrease of pain. Managing chronic pain involves a

comprehensive approach which is basedon detailed assessment of pain and assessing its effects on functional ability [16].

The association between chronic pain and perceived pain related complaints received little attention from the scientific researches. So, this research aimed to determine this relation.

Aim of the Study

Determine the relationship between self-reported chronic pain and pain related functional limitations among patients with rheumatoid arthritis.

Research Question

What is the relationship between self-reported chronic pain and pain related functional limitations among patients with rheumatoid arthritis?

Subjects and Method

Design: The study followed a descriptive correlational research design.

Setting: The study was carried out at the outpatient clinic for rheumatologyof Mansoura UniversityHospital. These clinics are specialized in diagnosis and treatment of rheumatoid. They are 2 clinics that work five days per week from Saturday to Wednesday from 9 am to 2 pm. The monthly patients' attendance rate is about 280 to 300 females and males patients with rheumatoid conditions. Among those patients about 140 to 150 patients are diagnosed with rheumatoid arthritis.

Subjects: The study involved 178 patients diagnosed with rheumatoid arthritis and fulfilling the following criteria:

- Age 21-60 years old
- Suffer from chronic arthritic pain for more than three months.
- Did not have any auditory, visual or psychological problems.
- Free from cancer related pain or diabetesmellitus.
- Free from any acute pain conditions such as, surgery, fracture, burn, injury, or dental problems that may alter the study subjects' perception of chronic pain related functionallimitations.

The number of the study subjects was estimated using the EPI info 7.0 program according to the following parameters; population size: 300, 5 % possible error and confidence coefficient 95%, and minimal sample size equal 168.

Tools

Three tools were used in this study to collect the necessary data as follows:

Tool I: Socio-demographic and Clinical Data of Patients with Rheumatoid arthritis Structured Interview Schedule Researchers developed this toolbased on review of relevant literature to assess the socio-demographic and clinic data of the study subjects asfollows;

- Socio-demographic data such as sex, age, marital status and level of

education, and place of residence.

- Clinical data such as the current medical history of other health problems rather than rheumatoid arthritis.

Tool II: Self-Reported Chronic Pain Assessment of Patients with Rheumatoid arthritis Structured Interview Schedule

This tool was developed bythe researchers based on review of relevant literature [17,18] to assess the history ofchronic pain as perceived by the studysubjectswithin the last week. Itincluded questions related to:

- The duration of chronic arthritic pain in years.
- Sites of pain.
- Type, frequency, duration (per day), and severity ofpain.
- Presence of associated symptoms with pain.
- Factors increasing pain intensity.
- Pain management among the study subjects such as consumption of medications and its perceivedeffectiveness (percentages of its effectiveness to relieve pain ranges from 0% to 100%) and the use of non-pharmacological pain management interventions.

Tool III: Pain Related Functional Limitations Assessment of Patients with Rheumatoid arthritis Structured Interview Schedule

This tool was developed by the researchers to assess the degreeoffunctional limitations due to chronic pain as reported by the patients with rheumatoid arthritis within the last week. This tool covered 8 domains as follows; 1) Basic self- careactivitiessuch asfeeding anddressing,mobility such as walking and transfer,Sleeping quality, 4) Social relations such as family visits, 5) Memorization and mental concentration, 6) Instrumental activities either indoor or outdoor activities such as housekeeping and shopping respectively, 7) Recreational activities such as practicing hobbies and watching TV, and 8) Emotional health and general feeling condition. Foreach domain, the respondent were asked to indicate to what extent theirchronic pain limits their functioning this domain using a three points Likert scale ranged from zero (no limitations), 1 (mild limitations), 2 (moderate limitations) and 3 (severe limitations). By calculating all 8 domains, a total pain related functionallimitations index wasderived. The higherthe score,thegreater the pain relatedfunctional limitations. The total score wasclassified into four levels asfollows;

- No pain related functionallimitations: take score ofzero.
- Mild pain related functional limitations: take score of1-8.
- Moderatepainrelatedfunctional limitations: take score of9-16.

- Severe pain related functional limitations: take score of 17-24.

Method

- Permission to carry out the study from the responsible authorities from the Faculty of Nursing, MansouraUniversity wasobtained.
- Permission to gather the required data from the head of the study setting was obtained, after being informed about the purpose of the study, the date and timeof datacollection.
- Tool I was developed by the researchers through reviewing of relevantliterature to assess the socio-demographic and clinical data of the studysubjects.
- Tool II, III were developed by the researchers based on reviewing the relevant literature[17,18] to assess the self-reported chronic pain and pain related functional limitations of the study subjectsrespectively.
- Tools II and III were tested for content validity by seven experts in the related field of the study and the required modifications were doneaccordingly.
- Tool II and IIIweretestedfor reliability. The Cronbach's Coefficient alpha was 0.80 for tool II, and 0.76 for toolIII
- A pilot study was conducted on 20patientswho were selected from the study setting and were not included in the study sample. The pilot study aimed to assess the tools fortheirclarity and applicability and essential modifications were done accordingly.
- The researchers were availableduring the time of physical examination of the patients to ensure the medical diagnosis by the attending physician.
- After ensuring the diagnosis of rheumatoid arthritisby theattending physicians, the researchers start to select their study subjects according tothe other inclusioncriteria
- Patients with rheumatoid arthritisand who fulfilled the study inclusion criteria were interviewed individually by the researchers in the waiting area of the outpatient clinics tocollectthe necessary data after explaining the study purpose.

Ethical considerations

Informed witness consent was obtained from each study subject included in this study after explaining the study purpose. Anonymity and privacy ofthestudy subjects, confidentiality ofthecollected data and the subjects' right to withdraw atany time wereassured.

Statistical Analysis

The collected data were analyzed by computer using the Statistical Package for Social Sciences (SPSS) software version 20. Reliability of the tools was determinedby Cronbach's Coefficient alpha. Data were presented by descriptive statistics inthe

form of frequencies and percentages for qualitative variables, and arithmetic mean and standard deviation for quantitative variables. Comparison of means wasdone by Student's t test and One Way Analysis of Variance (ANOVA).Significant difference was considered if p≤0.05.

Results

Table (1)shows that 80.9% of the study subjectsarefemales with their mean age was 39.50± 6.997years,59.0% married,more than half of the study sample was63.5% illiterate, and 68.5% are housewives. Only 6.2%of the study subjects are current workers. The monthly income as reported by82.6%of the study subjects is to be inadequate. As regards the place of residence, 60.1% of the study subjects live in urban areas and 88.2% of them are living with theirfamily.

Table (2) indicates that 32.0%, 12.4%, 11.2% of the study subjects suffer from either hypertension, heart diseases, or gastrointestinal disordersrespectively.

Table (3) shows that both knees joints, vertebrae, and both ankles jointsarethe most sites of pain as reported by the study subjects, 73.0%, 43.3%, and 32.6% respectively. Other sites ofpaininclude neck joint 24.7%, and bilateral shoulders joints14.0%.

The same table shows that 61.8% of the study subjects reported either 1 or 2 sites of pain, while, 30.9%, 7.3% of them reported suffering from pain in 3 to 6 sites or more than 6 sites respectively. Also, 51.1% of study subjects suffer from chronic arthritic pain for more than three years with a mean duration of4.74±3.55.

Table (4) indicates that dull aching pain and stabbing pain are the main two types of pain which reported bythe study subjects as follows, 39.9%, 16.9% respectively. In addition, the higher percentages of the study subjects experience severe pain intensity 59.0%, frequent pain more thanonceper day 55.1%, persistence of pain for long duration per day57.9%.

Regarding factors which increase pain intensity, 79.2%, 59.6%, and 50.6%of the study subjects reportedthatwalkingfor long distances, standing for long time, and sitting for long periods aggravatetheir pain respectively.

Furthermore, joints stiffness, headache, and sleep disturbance are themain symptoms associated with pain asreportedby the study subjects as follows, 70.2%, 25.8%, and 22.5% respectively.

Table (5) shows despitethatthe majority of the study subjects 83.1% consume pain relievingmedicationsand 50% of them reportedthatthese medications are prescribed, 35.4%, and 33.1% of the study subjects reported no or moderate satisfaction with their pain medications

respectively due to the occurrence of adverse side effects or their ineffectiveness. The mean score of pain medications' effectiveness asreportedby the study subjects is 50.98±31.35.

Concerning theusage of non-pharmacological pain management among the study subjects, 23.9% of them depend only on medications forrelievingtheir pains, while 28.7%, 21.3%, 20.0%,19.1%used to relieve their pain by depending on personal assistance of others in managing their dailyactivities,expressingtheir feeling about their pain with others, walking or physical exercises, andhavingaperiod of rest or sleeprespectively.

Table (6) illustrates that all domains of functional status are severely affected by pain as reported by thehigherpercentages of the study subjects except for basic self- care activities domain. For illustration, self- care activities show either no, simple, or moderate limitations due to pain among 27.0%, 39.9%, and 27.0% of the study subjectsrespectively.

Regarding the levels of total pain related functional limitations, this table indicates that only 2.2% of the study subjects do not suffer from any pain related functional limitations, while 52.8%, 32.6%, 12.4% of them reported severe, moderate or mild levels of pain related functional limitations respectively with a mean score of 15.63±6.10.

Table (7) indicates that females study subjects have greater overall pain related functional limitations 16.13±6.05,and higher levels ofemotional,sleep,and mental concentration disturbances related to their pains more than males.Thedifferences are statistically significant, p≤0.05.

Moreover, study subjects whoare widows show higher pain related concentrations problems more than theothers 1.94±0.94. The difference is statistically significant, F=5.59,p=0.004.

Table (8) shows that as the duration of suffering from pain increased for more than three years, the studysubjects'complaints of the following pain related limitations increased; emotional disturbance 2.30±0.89, mobility limitations 2.45±0.78, poor sleep quality 2.22±0.94, limited performance of instrumental activities 2.29±0.91, limited participation in recreational activities 2.31±1.04, and greater overall pain related functional limitations 16.75±5.55. The differences are statistically significant p≤0.05.

Furthermore, this table indicates that higher total pain relatedfunctional limitations 20.23±2.80 and higher levels of different domains of functional limitations are associated significantly with moresites of pain, 6 joints and more,p≤0.05.

Table (9) shows that, as the frequency,

severity and duration of pain per day increased among the study subjects, their perception of pain related functional limitations is increased and the differences are statistically significant p≤0.05.

Table (10) illustrates that greater mean scores of pain related functional limitations are significantly associated with greater dissatisfaction of the study subjects with their pain relieving medications. The differences are statistically significant p≤0.05.

Moreover, study subjects who do not use any non-pharmacological pain measures reported greater mean scores of overall and different domains of pain related functional limitations. The differences are statistically significant p≤0.05.

Table (1): Distribution of the study subjects according to their socio-demographic characteristics

Socio-demographic characteristics	No =178	%
Sex		
Male	34	19.1
Female	144	80.9
Age (Mean ± SD)	**39.50± 6.997**	
Marital status		
Married	105	59.0
Widow	67	37.6
Divorced	6	3.4
Level of education		
Illiterate	113	63.5
Read and write	30	16.9
Primary education	25	14.0
Secondary education	10	5.6
Occupation prior to retirement		
House wife	122	68.5
Skilled worker	22	12.4
Unskilled worker	22	12.4
Employee	12	6.7
Current work status		
Yes	11	6.2
No	167	93.8
Monthly income		
Enough	31	17.4
Not enough	147	82.6
Place of residence		
Urban	107	60.1
Rural	71	39.9
Living style		
With family	157	88.2
Alone	21	11.8

Table (2): Distribution of the study subjects according to their health history

Health history	No=178	%
Presence of other health problems rather than rheumatoid arthritiss		
Hypertension	57	32.0
Heart diseases	22	12.4
Gastrointestinal disorders	20	11.2
Respiratory disorders	11	6.2
Ophthalmological disorders	10	5.6
Hyperthyroidism	5	2.8

#

More than one answer was given

Table (3): Distribution of the study subjects according to their sites and duration of chronic pain

Sites of pain (n=178)	Unilateral pain		Bilateral pain	
	No.	%	No.	%
Site of pain #				
Neck joint	44	24.7	- 25	-14.0
Shoulder joint	20	11.3	9	5.1
Elbow joint	2	1.2	19	10.7
Wrist joint	3	1.7	14	7.9
Fingers joints	0	0.0	0	0.0
Hip joint	1	0.6	130	73.0
Knee joint	26	14.6	58	32.6
Ankle joints	10	5.6	0	0.0
Toesjoints	9	5.1	0	0
Vertebrae	77	43.3	0	0
Number of affected sites	**No =178**		**%**	
1-2 sites	110		61.8	
3 – 6 sites	55		30.9	
More than 6 sites	13		7.3	
Duration of suffering from chronic pain in years	**No =178**		**%**	
1-3 year	87		48.9	
>3 year	91		51.1	
Mean ± SD.	4.74 ± 3.55			

More than one answer was given

Table (4): Distribution of the study subjects according to their pain characteristics

Characteristics of pain	No=178	%
Type of pain		
Dull aching	71	39.9
Stabbing	30	16.9
Throbbing	23	12.9
Tingling	21	11.8
Heaviness	19	10.7
Burning	14	7.9
Severity of pain		
Mild	4	2.2
Moderate	69	38.8
Severe	105	59.0
Frequency of pain		
More than one time per day	98	55.1
Once per day	35	19.7
Some days per week	45	25.3
Duration of pain per day		
Short duration	8	4.5
Moderate duration	67	37.6
Long duration	103	57.9
Factors which increase pain intensity#		
Walking for long distance	141	79.2
Standing for long period	106	59.6
Sitting for long period	90	50.6
Climbing stairs	47	26.4
Carry heavy objects	31	17.4
Cold weather	18	10.1
Symptoms associated with pain#		
Joints stiffness	125	70.2
Headache	46	25.8
Sleep disturbance	40	22.5
Inflammatory signs (hotness, swelling)	31	17.4
Tiredness	19	10.7
Crepitation	19	10.7
Muscles spasm	11	6.2
Numbness	9	5.1
Shortness of breath	5	2.8

More than one answer was given

Table (5): Distribution of the study subjects according to their pain management

Pain management	No.	%
Consumption of pain relieving medications(No=178)		
Yes	148	83.1
No	30	16.9
If yes (n = 148)		
Prescribed	89	50.0
Unprescribed	59	33.1
Satisfaction with pain medication (n = 148)		
Not satisfied	63	35.4
Nearly satisfied	59	33.1
Satisfied	26	14.6
Percentage of medication's effectiveness (%)(n=148)		
Min. – Max.	0.0 – 100.0	
Mean ± SD.	50.98 ±1.35	
Usage of non-pharmacological pain management# (n=178) #		
No	51	28.7
Yes,	127	71.3
Personal assistance with daily activities	42	23.6
Express feelings with others	38	21.3
walking and exercises	36	20.0
Rest periods\ sleep	34	19.1
Divert attention	23	12.9
Warm compresses	21	11.8
Elevation of the joints	8	4.5
Joints' support	7	3.9

More than one answer was given

Table (6): Distribution of the study subjects according to their pain related functional limitations (n=178)

Pain related functional limitations	No limitations		Simple		Moderate		Severe		Mean±SD
	No	%	No.	%	No.	%	No.	%	
Subdomains of pain related functional limitations									
1- Basic self-care	48	27.0	71	39.9	48	27.0	11	6.2	1.12±0.88
2- Emotional status	14	7.9	24	13.5	66	37.1	74	41.6	2.12±0.92
3- Mobility	12	6.7	20	11.2	51	28.7	95	53.4	2.29±0.92
4- Instrumental activities	16	9.0	21	11.8	62	34.8	79	44.4	2.15±0.95
5- Socialrelations	17	9.6	29	16.3	45	25.3	87	48.9	2.13±1.01
6- Sleep quality	19	10.7	28	15.7	59	33.1	72	40.4	2.03±1.0
7- Recreational activities	25	14.0	20	11.2	40	22.5	93	52.2	2.13±1.09
8- Mentalconcentration	25	14.0	48	27.0	69	38.8	36	20.2	1.65±0.96
Total levels of pain related functional limitations	**4**	**2.2**	**22**	**12.4**	**58**	**32.6**	**94**	**52.8**	**15.63±6.10**

Table (7): Relation between socio-demographic characteristics and pain related functional limitations of the study subjects

Socio-demographic characteristics	Self-care	Emotional status	Mobility	strumental tasks	Social relation	Sleep quality	Recreational activities	Mental concentration	Total score
	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.
Age									
20 – <40	1.12 ±.90	2.12 ± 0.93	2.25 ± 0.92	2.10 ± 0.96	2.10 ± 1.01	2.04 ± 1.0	2.09 ± 1.10	1.64 ±0.97	15.46 ± 6.11
40 – <50	1.05 ±0.72	2.14 ± 0.94	2.50 ± 0.91	2.45 ± 0.86	2.36 ± 1.0	1.91 ± 1.02	2.36 ± 1.05	1.68 ± 0.89	16.45 ± 6.26
≥ 60	2.0 ± 0.0	2.33 ± 0.58	2.33 ± 0.58	2.33 ± 1.15	2.33 ± 1.15	2.67 ± 0.58	2.33 ± 1.15	2.0 ± 1.0	18.33 ± 5.03
F(p)	1.586(0.208)	0.082(0.922)	0.691(0.503)	1.416(0.245)	0.721(0.488)	0.777(0.461)	0.651(0.523)	0.218(0.508)	0.533(0.576)
Sex									
Male	0.91 ± 0.87	1.79 ± 0.95	2.09 ± 1.03	2.09 ± 1.06	1.94 ± 1.07	1.59 ± 1.02	1.88 ± 1.15	1.21 ± 0.77	13.50 ± 5.96
Female	1.17 ± 0.88	2.20 ± 0.91	2.33 ± 0.88	2.16 ± 0.93	2.18 ± 0.99	2.14 ± 0.97	2.19 ± 1.07	1.76 ± 0.97	16.13 ± 6.05
t(p)	1.566(0.119)	2.339*(0.020*)	1.408(0.161)	0.393(0.695)	1.244(0.215)	2.961*(0.003*)	1.474(0.142)	3.089*(0.002*)	2.288*(0.023*)
Marital status									
Married	1.0 ± 0.84	2.03 ± 0.93	2.21 ± 0.94	2.07 ± 0.91	2.10 ± 1.01	1.92 ± 1.01	2.07 ± 1.14	1.46 ± 0.92	14.86 ± 5.94
Widow	1.30 ± 0.90	2.27 ±0.86	2.37 ± 0.88	2.28 ±0.95	2.19 ± 0.97	2.21 ± 0.99	2.21 ± 1.01	1.94 ± 0.94	16.78 ± 6.13
Divorced	1.33± 1.03	2.17 ± 1.33	2.67 ± 0.82	2.0 ± 1.55	2.0 ± 1.55	2.0 ± 0.63	2.33 ± 1.21	1.83 ± 1.17	16.33 ± 7.61
F(p)	2.570(0.079)	1.392(0.251)	1.191(0.306)	1.138(0.323)	0.213(0.808)	1.691(0.187)	0.455(0.635)	5.590*(0.004*)	2.088(0.127)

*: Statistically significant at $p \leq 0.05$ F: F value for ANOVA test t, p: t and p values for Student t-test

Table (8): Relation between duration and sites of pain and pain related functional limitations of the study subjects

Duration and sites of pain	Self-care	Emotional status	Mobility	Instrumental tasks	Social relation	Sleep quality	Recreational activities	Mental concentration	Total score
	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.
Duration of suffering from pain in years									
1-3 year	1.02 ± 0.86	1.94 ± 0.96	2.11 ± 1.02	2.0 ± 0.98	2.02 ± 1.05	1.84 ± 1.02	1.94 ± 1.11	1.57 ± 0.92	14.46 ± 6.46
>3 year	1.22 ± 0.89	2.30 ± 0.86	2.45 ± 0.78	2.29 ± 0.91	2.24 ± 0.97	2.22 ± 0.94	2.31 ± 1.04	1.73 ± 0.99	16.75 ± 5.55
t(p)	1.495(0.137)	2.596*(0.010*)	2.480*(0.014*)	2.020*(0.054*)	1.448(0.149)	2.588*(0.010*)	2.261*(0.025*)	1.049(0.296)	2.537*(0.012*)
Number of pain Sites									
Less than 3 sites	1.01 ± 0.89	1.85 ± 0.99	2.02 ± 0.99	1.88 ± 1.02	1.85 ± 1.07	1.73 ± 1.04	1.85 ± 1.16	1.37 ± 0.95	13.56 ± 6.29
3 – 6 sites	1.31 ± 0.90	2.47 ± 0.60	2.71 ± 0.57	2.53 ± 0.63	2.56 ± 0.71	2.49 ± 0.72	2.53 ± 0.84	2.07 ± 0.84	18.67 ± 4.16
More than 6 sites	1.31 ± 0.48	2.92 ± 0.28	2.77 ± 0.60	2.77 ± 0.60	2.77 ± 0.60	2.69 ± 0.48	2.77 ± 0.60	2.23 ± 0.60	20.23 ± 2.80
F(p)	2.474 (0.087)	15.669* (<0.001*)	14.241* (<0.001*)	12.999* (<0.001*)	13.775* (<0.001*)	16.201* (<0.001*)	10.414* (<0.001*)	14.195* (<0.001*)	20.543*(<0.001*)

*: Statistically significant F: F value for ANOVA test t, p: t and p values for Student t-test at $p \leq 0.05$

Table (9): Relation between pain characteristics and pain related functional limitations of the study subjects

Pain characteristics	Self-care	Emotional status	Mobility	strumental tasks	Social relation	Sleep quality	ecreational activities	Mental concentration	Total score
	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.
Frequency of pain									
More than one time per day	1.30 ± 0.85	2.48 ± 0.71	2.59 ± 0.67	2.45 ± 0.76	2.39 ± 0.87	2.38 ± 0.84	2.40 ± 0.93	1.97 ± 0.91	17.95 ± 4.68
Once per day	1.09 ± 0.95	1.83 ± 0.98	2.09 ± 0.98	2.09 ± 0.95	2.09 ± 0.98	1.83 ± 0.92	2.09 ± 1.07	1.63 ± 0.81	14.71 ± 6.13
Some days per week	0.78 ± 0.79	1.58 ± 0.97	1.78 ± 1.06	1.53 ± 1.04	1.62 ± 1.13	1.44 ± 1.06	1.58 ± 1.23	0.98 ± 0.81	11.29 ± 6.37
F(p)	5.661*(0.004*)	20.639*(<0.001*)	15.388*(<0.001*)	16.963*(<0.001*)	9.783*(<0.001*)	17.061*(<0.001*)	9.632*(<0.001*)	20.108*(<0.001*)	23.672*(<0.001*)
Types of pain									
Heaviness	1.13 ± 0.63	2.09 ± 0.95	2.22 ± 0.80	2.0 ± 0.90	2.0 ± 0.85	2.09 ± 1.08	2.0 ± 1.0	1.70 ± 0.97	15.22 ± 5.44
Dull aching	1.05 ± 0.80	2.05 ± 0.80	2.29 ± 0.78	2.05 ± 0.86	2.10 ± 1.0	1.90 ± 1.0	1.86 ± 1.24	1.57 ± 0.93	14.86 ± 5.35
Throbbing	1.50 ± 0.85	2.43 ± 0.85	2.57 ± 0.65	2.57 ± 0.85	2.29 ± 1.07	2.43 ± 0.94	2.36 ± 1.01	1.86 ± 0.77	18.0 ± 5.32
Tingling	1.07 ± 0.83	2.17 ± 0.95	2.40 ± 0.86	2.23 ± 0.97	2.23 ± 1.07	2.23 ± 0.86	2.33 ± 1.10	1.77 ± 0.90	16.33 ± 5.76
Burning	0.89 ± 1.05	1.79 ± 1.03	2.11 ± 1.10	2.05 ± 0.85	2.21 ± 0.92	1.89 ± 0.99	2.21 ± 0.98	1.58 ± 1.02	14.74 ± 6.30
Stabbing	1.15 ± 0.95	2.17 ± 0.93	2.25 ± 1.01	2.13 ± 1.03	2.10 ± 1.07	1.93 ± 1.03	2.14 ± 1.12	1.59 ± 1.02	15.46 ± 6.74
F(p)	0.839(0.524)	0.881(0.495)	0.550(0.738)	0.802(0.550)	0.242(0.943)	0.922(0.424)	0.520(0.761)	0.326(0.897)	0.676(0.643)
Severity of pain									
Mild	1.0 ± 0.82	1.25 ± 0.96	1.25 ± 0.96	1.25 ± 1.26	1.25 ± 1.50	0.75 ± 0.96	1.0 ± 1.15	0.75 ± 0.96	8.50 ± 8.06
Moderate	0.80 ± 0.85	1.65 ± 1.07	1.81 ± 1.05	1.67 ± 1.05	1.71 ± 1.0	1.62 ± 1.04	1.64 ± 1.06	1.20 ± 0.90	12.10 ± 6.29
Severe	1.34 ± 0.84	2.47 ± 0.62	2.64 ± 0.61	2.50 ± 0.68	2.45 ± 0.88	2.35 ± 0.82	2.50 ± 0.95	1.98 ± 0.85	18.22 ± 4.32
F(p)	8.738*(<0.001*)	22.319*(<0.001*)	24.868*(<0.001*)	21.731*(<0.001*)	14.600*(<0.001*)	17.202*(<0.001*)	18.003*(<0.001*)	18.650*(<0.001*)	32.003*(<0.001*)
Duration of pain per day									
Short duration	0.50 ± 0.76	1.13 ± 0.83	1.38 ± 1.06	1.13 ± 0.99	1.13 ± 1.36	0.75 ± 0.46	1.13 ±1.36	0.75 ± 0.71	7.88 ± 6.47
Moderate duration	0.91 ± 0.90	1.70 ± 0.97	1.84 ± 1.02	1.75 ± 1.01	1.81 ± 0.99	1.66 ±1.05	1.75 ± 1.09	1.30 ± 0.94	12.70 ± 6.25
Long duration	1.31 ± 0.83	2.48 ± 0.71	2.65 ± 0.61	2.49 ± 0.74	2.43 ± 0.88	2.38 ± 0.81	2.46 ±0.94	1.95 ± 0.87	18.14 ± 4.46
F(p)	6.697*(0.002*)	24.117*(<0.001*)	25.910*(<0.001*)	20.921*(<0.001*)	13.530*(<0.001*)	21.720*(<0.001*)	13.968*(<0.001*)	15.260*(<0.001*)	30.446*(<0.001*)
Factors increasing pain									
Walking for long	1.18 ± 0.85	2.20 ± 0.88	2.45 ± 0.80	2.31 ± 0.85	2.26 ± 0.98	2.14 ± 0.91	2.28 ± 1.04	1.72 ± 0.94	16.55 ± 5.56
distance	1.11 ± 0.87	2.26 ± 0.86	2.40 ± 0.91	2.34 ± 0.91	2.38 ± 0.92	2.18 ± 0.99	2.32 ± 1.04	1.72 ± 1.03	16.71 ± 6.12
Sitting for long time	1.11 ± 0.85	2.27 ± 0.83	2.57 ± 0.66	2.35 ±0.82	2.34 ± 0.95	2.17 ± 0.87	2.36 ± 0.98	1.75 ± 0.92	16.92 ± 5.04
Standing for long time	1.06 ± 0.96	2.48 ± 0.72	2.42 ± 0.76	2.35 ± 0.75	2.29 ± 0.86	2.23 ± 1.02	2.42 ± 0.85	1.61 ± 0.99	16.87 ± 4.86
Carry heavy objects	1.33 ± 0.91	2.22 ± 0.94	2.06 ± 1.11	2.06 ± 1.06	2.17 ± 0.99	2.17 ± 1.04	2.11 ± 1.13	1.44 ± 0.98	15.56 ± 5.99
Cold weather Climbing	1.17 ± 0.79	2.40 ± 0.83	2.66 ± 0.67	2.43 ± 0.83	2.57 ± 0.74	2.21 ± 0.93	2.62 ± 0.74	1.81 ± 0.97	17.87 ± 5.31
stairs									
F(p)	0.333(0.893)	0.841(0.521)	2.014(0.076)	0.521(0.761)	0.973(0.434)	0.069(0.997)	1.104(0.358)	0.466(0.801)	0.615(0.688)

*: Statistically significant at $p \leq 0.05$ F: F value for ANOVA test t, p: t and p values for Student t-test

Table (10): Relation between chronic pain management and pain related functional limitations of the study subjects

Pain management	Self-care	Emotional status	Mobility	ıstrumental tasks	Social relation	Sleep quality	Recreational activities	Mental concentration	Total score
	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.	Mean ±SD.
Satisfaction with pain Medication									
Not satisfied	1.24 ± 0.84	2.51 ± 0.64	2.68 ± 0.59	2.62 ± 0.71	2.75 ± 0.65	2.40 ± 0.73	2.71 ± 0.73	2.02 ± 0.85	18.92 ± 4.14
Nearly satisfied	1.03 ± 0.76	2.14 ± 0.73	2.44 ± 0.68	2.27 ± 0.69	2.32 ± 0.80	2.03 ± 0.87	2.31 ± 0.90	1.53 ± 0.82	16.07 ± 4.37
Satisfied	1.35 ± 1.09	1.92 ± 1.16	1.81 ± 1.10	1.54 ± 1.10	1.19 ± 0.69	1.96 ± 1.22	1.27 ± 1.08	1.38 ± 0.98	12.42 ± 6.17
F(p)	1.478(0.231)	6.197*(0.003*)	13.060*(<0.001*)	17.540*(<0.001*)	43.062*(<0.001*)	3.473*(0.034*)	25.689*(<0.001*)	7.164*(0.001*)	18.791*(<0.001*)
Non pharmacological pain management									
- Joints' support	1.14 ± 1.21	1.71 ± 0.95	1.43 ± 0.98	1.86 ± 0.69	2.14 ± 0.90	2.0 ± 1.15	2.14 ± 1.21	1.43 ± 0.98	13.86 ± 5.70
- Warm compresses	1.14 ± 0.96	1.81 ± 1.08	1.86 ± 0.91	1.71 ± 0.90	1.62 ± 1.02	1.86 ± 0.96	1.81 ± 0.93	1.38 ± 0.86	13.19 ± 5.92
- Exercises and mobility	0.94 ± 1.01	1.75 ± 1.11	1.89 ± 1.12	1.83 ± 1.18	1.69 ± 1.06	1.83 ± 1.13	1.58 ± 1.02	1.44 ± 1.05	12.97 ± 6.73
- Rest period\ sleep	1.0 ± 0.95	1.82 ± 1.11	2.24 ± 1.02	1.97 ± 1.14	1.82 ± 1.17	2.06 ± 1.18	1.91 ± 1.24	1.59 ± 1.18	14.41 ± 7.74
- Nothing	1.21 ± 0.78	2.33 ± 0.87	2.36 ± 0.85	2.24 ± 0.76	2.33 ± 0.87	2.07 ± 0.92	2.33 ± 0.95	1.83 ± 0.82	16.71 ± 5.58
- Raising the joints	1.0 ± 0.76	1.88 ± 0.83	2.63 ± 0.74	2.25 ± 0.71	2.50 ±0.76	2.0 ± 1.07	2.38 ± 1.06	1.13 ± 0.83	15.75 ± 5.52
- Divert attention	1.35 ± 0.88	2.04 ± 1.07	2.04 ± 1.02	2.0 ± 0.95	1.83 ± 1.07	1.83 ± 1.15	1.78 ± 1.24	1.70 ± 1.02	14.57 ± 6.73
- Express feelings with others	1.32 ± 0.96	2.0 ± 0.93	1.89 ± 0.98	1.82 ± 0.98	1.84 ± 1.03	1.79 ± 1.07	1.76 ± 1.15	1.50 ± 1.03	13.92 ± 6.90
- Depend on others for daily tasks management	1.29 ± 1.01	2.0 ± 1.0	2.08 ± 0.96	1.90 ± 0.96	1.82 ± 1.03	2.0 ± 1.06	1.88 ± 1.09	1.59 ± 1.06	14.57 ± 6.72
F(p)	0.763(0.636)	1.141(0.337)	1.723(0.093)	0.886(0.528)	1.799(0.078)	0.344(0.948)	1.556(0.139)	0.797(0.606)	1.014(0.426)
Non pharmacological pain management									
No	1.08±0.76	2.35±0.59	2.70±0.46	2.51±0.69	2.54±0.84	2.22±0.75	2.62±0.76	1.89±0.74	17.92±3.77
Yes	1.13±0.91	2.06±0.99	2.18±0.97	2.05±0.99	2.03±1.03	1.99±1.05	2.0±1.13	1.59±1.0	15.03±6.46
t(p)	0.366(0.715)	2.256* (0.026*)	4.696* (<0.001*)	2.686* (0.008*)	2.796* (0.006*)	1.254(0.212)	3.967* (<0.001*)	2.054* (0.043*)	3.504* (0.001*)

t, p: t and p values

Discussion

Rheumatoid arthritis is accompanied with chronic pain, increased medical services utilization and costs, functional limitations, and disability among patients. To what extent the patients with rheumatoid arthritis perceive chronic pain as the origin of their functional limitations still in need for more investigations[18].

So, this study aimed to determine the relationship between self-reported chronic pain and pain related functional limitations among patients with rheumatoid arthritis.

The present study result reveals that rheumatoid arthritis prevails more among females and house wives. This can be clarified by that, females are liable to more risk factors for rheumatoid arthritis than males. Reduction of estrogen level due to menopause, and increased prevalence of obesity among females are strong predisposing factors for rheumatoid arthritis. Also, house wives have greater responsibilities which necessitate over use of their joints either in their household activities, or their outside home activities suchasshopping and using public transportations that may accelerate the process of joints' cartilage degenerations. At the same time, prevalence of illiteracy among those studysubjects leads to lack of the necessary knowledge about the energy saving behaviors, joints protection techniques, or healthy life style activities to prevent musculoskeletal disorders. Also, they mayperceivetheir pain as a normal partof lifeandignore the need for medical investigations which accelerate the incidence of thedisease among them. This result supports those of Thomas et al. (2018), Srikanth et al. (2020) and Zhang et al. (2017), who reported that womengenerallyareatagreaterrisktohaverheumatoid arthritis[18-20].

The present study result reveals that study subjects inage group 20 – <40 are the most affected group by rheumatoid arthritis. This can be interpretedbythat, rheumatoid arthritis complications areincreasedwith ageing with the development of more pain and functional disabilities. So, those patients mayhavelimited ability to go to the outpatient clinics for examination or follow up because ofdifficult use of public transportation and difficult transfer. So, most of them may depend on going to any pharmacist for prescription of any medication torelieve their pain. Similar result is reported by Muraki et al. in Japan (2019)[21].

Knee, vertebrae, and ankle jointsare the most sites affected with pain as reported by the study subjects. This can be clarified by that, these joints are weight bearing joints with a greater pressure is applied on these

joints' cartilage which will enhance their further degeneration. This result is matching with Peat et al. who reported that common sites of rheumatoid arthritis pain are knee and ankle joints which are associated with low physicalfunctioning [22].

According to the current study finding, femalepatients reportedhigherlevels of pain related functionallimitations. This result can be clarified by that, the majority of the study subjects arefemales and more than two third of them are housewives. As mentioned before, housewives and females patientshave greater risk factors for rheumatoid arthritis more than males. These risk factor do not only increase the incidence of this disorderamong them, but also accelerates cartilage loss, and increase liability to more complications anddisabilitiesofthe disease, which limit their functional activities. Moreover, the pain related functional limitations among female study subjects are mainly related to emotional status, sleep quality, andmental concentration dimensions. These aspects of functional limitations may be related to the nature of female's response to painingeneral which is characterized by more emotional involvements. So, emotional disturbance due to pain among thefemalesstudy subjects will affect their sleep quality and their mental concentration. This result supports those of Murtagh etal. andLamb et al. (2019), who reported that femalespatients with persistent painmore than3 months reported higherphysicallimitations especially in their instrumental activity of daily living (IADL) compared withmales[23,24].

Widows found in the present study to have greater pain related poor mental concentrationand memorization. This may be related to the fact that widows may play their social role beside the role of their lost spouses after their death, having double responsibilities which mean greater load and duties. At the sametime, inadequate monthly income, and poor occupational status as reported by the majority of the study subjectsmayaccelerate their suffering. Also,Widows may have theircopingreserveand emotional tolerance decreased with aging process. Pain can increase theirsufferingand negatively affect their mental concentration and cognitive function. Crompton (2017) reported thatpoor monthly income, widowhood, and unemployment in females areassociated with higher functionallimitations [25].

With reference to pain duration, study subjects, who suffer from chronic pain more than 3 years, reported greater pain related functional limitations. This result may due to the negative impacts of chronic pain for long period on the study subjects' immune system, coping reserve, and quality of life.

Moreover, chronicpainfor prolonged time is associated with prolonged consumption of pain relieving medications which is characterized by its adverse side effects on their functional health. This result support Sharma et al. (2019), Sowers et al. (2016), and Litwic et al. (2018) studies' results[26-28].

According to the current study finding, it was found that as the number of pain sites increased, the study subjects' functional limitations increased. This can be justified by that study subjects whosufferfrom several joints pains may need extra doses of pain relieving medications which is usually associated with more adverse drug effects. Also, when the study subjects suffer from bilateral and several joints pain, they may cannot act or live independentlyor move freely due to pain. So, they may limit their activities to prevent episodes of pain which will induce further joint stiffness and functional limitations. This is supported by Jinks et al.(2017), Neogi et al. (2018), Cross et al. (2019), who reportedthatmore sites of pain predict greater physical limitations[29-31].

The current study result indicatesthat as the pain intensity (frequency,duration, and severity) increased, the study subjects' complaints of pain related functional limitations increased. This may be justified by the fact that greaterpain intensity may induce patients' self- imposed activity limitations to decrease occurrence of pain that is associated with movement. So, their chance to participate in recreational, social, and instrumental activities is limited. Moreover, chronic severe frequent pain may cause the study subjects to lose hope in their pain relieving that induce negative emotional status. The current study result is consistent with the results of other studies done in 2015, 2016, 2018, and2019[32-35].

Regarding the study subjects' satisfaction about their pain relieving medications, it was found that higher pain related functional limitationsare significantly associated with lower satisfaction with pain medication. This result can be clarified by that, study subjects with greater functional limitations may find no need for the consumption of their medications since they do not relieve their pains. The present study result is supported by MacLaughlin et al. who reported that medication noncompliance should be suspected in elderswho experience decline in their functional abilities[36].

According to the present study result, study subjects who did not practice any non-pharmacological pain management and depend on medications only for pain relieve show higher functionallimitations. This result can be clarified by that, despite the accessibility of several pain medications, the improvements in clinical manifestation

of rheumatoid arthritisis not satisfying for most of patients. Inclusion of non-pharmacological interventions will be helpful incontrolling rheumatoid arthritis manifestations, insuring clinical stability, decreasing potential drug side-effects, and minimizing functionallimitations.Rannou et al. reported that the non-pharmacological measures existing for rheumatoid arthritis aidinthe performance of dailyactivities[37].

Conclusion

Based on the present study results, it can be concluded that differentself- reporting of chronic pain among the study subjectscontributedtoasignificant variance in their levels of pain related functional limitations.Forillustration, higher levels of pain related functional limitations are significantly associated with the following variables; prolonged suffering from chronic pain for more than 3 years, several sites of pain more than6 joints, severe frequent pain more than once per day, persistence of painforlong duration of time per day, and managing pain with medication only without any nopharmacological interventions. Also, greater pain relatedfunctionallimitations are associated significantly with lower satisfaction with chronic painmedication.

Recommendations

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

- Conducting a comprehensive chronic pain assessment is necessary to determine the degree of patients' suffering. This will help the nurses to predict their patients' functional status andtheirexpected participation in their care plan to manage pain.
- Identification of all factorswhich may predispose pain or increase its intensity should be evaluated carefully bythenurses and all attempts should be directed to control these factors to limit the patients' suffering and to limit their functionallimitations.
- Educational pain management guidelines for patients with rheumatoid arthritis should include thesafeuse of non-pharmacological pain management interventions, and measures to limit their functional limitations.

The future research in this field couldinclude:

Experimental studies are needed to determine the effect of pain managementnursinginterventions on functional status of patients withrheumatoid arthritis.

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Effect of Teaching Self-care Module on Radiation- therapy' Side Effects and Clinical Outcomes of Head and Neck Cancer Patients

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Abstract: The major concern of health care professionals regarding the value of teaching self-care for management of side effects of radiation therapy of head and neck cancer patients is the improvement of their clinical outcomes. **This study aimed to** evaluate the effect of self-care teaching module on radiation-induced side effects and clinical outcomes among head and neck cancer patient. **Subjets**: a quasi-experimental randomized controlled study design was used . Asample of (50) adult patients with head and neck cancer undergoing recent radiation therapy were divided into two equal groups; control group did not receive self-care teaching module about acute side effect whereas these self-care teaching module was provided by the researcher to the study group.Three tools were utilized to collect data. Tool I was structured patient assessment interview questionnaire. Tool (II) Modified Eastern Cooperative Oncology Group performance scale (ECOG). Tool (III) was Self-care questionnaire. **Results:** The main results revealed that there were improvement of mean scores regarding change of quality grade of functional ability of the study group II in one and three months after receiving self-care teaching module with very high statistical significance difference. Also, the occurrence and severity of acute side effects was improved in the study group II compared to control group I.**Conclusion and recommendations*:*** It was recommended that teaching self-care module to the patients before receiving radiation therapy should be used as routine intervention for all head and neck cancer patients.

Key words: Self- Care- Teaching Module- Radiation therapy- Acute Side Effects- Head and Neck Cancer.

Introduction

Worldwide head and neck cancers are considered the sixth most common type of cancer. According to the International Classification of Diseases, head and neck cancers HNC occur at the following sites lip, tongue, floor of the mouth, gum, other oral cavity sites, salivary glands, oropharynx, nasopharynx, hypopharynx, larynx, nose, sinuses, ear and thyroid. The cells most commonly involved in HNC are squamous epithelial cells that line the upper respiratory and gastrointestinal tract. [1,2]

The exact cause of HNC is unknown but there are risk factors that increase the chance of developing the disease,Tobacco smoking is a dominant risk factor and this risk is correlated with the intensity and duration of smoking habit. The cigarette contains nitrosamines and polycyclic hydrocarbons carcinogens elements that have genotoxic effects and these elements can change the molecular profile of the individuals and cause mutations. [3-5]

Alcohol Consumption, Alcohol acts as a solvent to enhance mucosal exposure to carcinogen. The acetaldehyde, a metabolite of alcohol can form DNA adducts that interfere with DNA synthesis and repair. Furthermore, there is a strong relationship between alcohol and tobacco use and the combined use of these further increases the risk. [6,7]

The clinical manifestations are classified according to type of HNC.Mouth (oral) cancer symptoms include sore, irritation, lump or thick patch in the mouth, lip, or throat, a white or red patch in the mouth, feeling that something is caught in the throat, difficulty chewing or swallowing, difficulty moving the jaw or tongue, numbness in the tongue or other areas of the mouth, swelling of the jaw that causes dentures to fit poorly or become uncomfortable and pain in one ear without hearing loss. [8,9]

The first step for diagnosing HNC is taking history from patient which include a history of tobacco, alcohol use, environmental exposures and take in consideration any adult patient with symptoms referable to the upper aero digestive tract that have lasted longer than 2 weeks or with an asymptomatic neck mass should undergo a thorough examination with a high index of suspicion for carcinoma. [10]

Radiation not only kills slows the growth of cancer cells, it can also affect nearby healthy cells, the healthy cells almost

always recover after treatment is over but sometimes people may have side effects that are sever or do not get better and other side effects may still months or years after radiation is over therefore it classified as acute and consequential late effects depending on the time of appearance of symptoms. Acute side effects usually develop during treatment and usually reversible which include radiation dermatitis, mucositis and difficulty of swallowing while consequential late side-effects appear later and are caused by persistent acute side-effects which include trismus, fibrosis, atrophy and vascular damage. (11-13)

There are many approaches for nurses when caring for HNC Patients as the patients need guidance, support from nurses to navigate the healthcare system and the cancer-care continuum, encouragement and problem-solving help. Teaching is a primary responsibility of nursing care for radiation patients as Patients and families must know what to expect, get a chance to ask questions and have those questions answered to their satisfaction. (14)

Nurses in radiation therapy department apply evidence based practice when providing patient and family education and managing side effects. However, patients receiving radiation therapy are only in the department for a short period of time each day so much of the management of acute side effects of treatment falls on patients and their family so these study adopted patient teaching on self-care (15-17)

Aim of the study

The aim of this study is to evaluate the effect of a teaching module on radiation side effects and clinical outcomes for head and neck cancer patient.

Research hypothesis:

Adult Patients with head and neck cancer undergoing radiation therapy who will receive a teaching module beside hospital routine care expected to minimize side effects of radiation therapy .

Subjects & Method

Study design:

This study used quasi-experimental design.

Setting of the study:

The study was conducted at Radiation Therapy department at outpatient clinic of Tanta University **Subjects:**

A random sample of (50) adult patients who were suffering from head and neck cancer and were receiving Radiation Therapy and meeting inclusion criteria . The sample size calculation according to patient admission to the hospital was found

to be 50 patients. This calculation was based on expected improvement on radiation induced side effects outcomes among study group at 95% confidence power of the study IP information software program:

Steven Thimpsone equation

n=Sample size, N=Total society size, d=error

percentage = (0.05), P=percentage of availability of

the character and objectivity= (0.7) for 70%, Z=The

corresponding standard class of significance 95%=

(1.96), The calculated sample size was 50

The subjects were divided into two equal groups: -

Group I (control group): It consisted of 25 patients with head and neck cancer, received routine nursing care.

Group II (study group): It consisted of 25 patients with head and neck cancer received a teaching module about side effect as designed and implemented by researcher

Data collection tools

Three tools were used for data collection of this study: -

Tool (I) assessment of head and neck cancer patient structured interview questionnaire: -structured interview sheet was developed by the researcher after review of relevant literature[14-17] and consisted of two parts: -

Part one: "Socio-demographic data" Which included patient name, age, sex, marital status, educational level, occupation, address and telephone number [18,19]

Part two: "Health assessment tool" it included medical diagnosis other than cancer, stage of cancer, site of radiation therapy, other received cancer treatment patient , other cancer treatment received previously. [20,21]

Tool (II) "Modified Eastern Cooperative Oncology Group performance scale" (ECOG):

it was developed by the Eastern Cooperative Oncology Group (ECOG), published in 1982 and adopted by the researcher as a standard way of measuring the ability of cancer patients to perform ordinary tasks. The performance status was determined on the five-point scale ranging from (0) to (4) scale. The patient indicated level of his ability to perform ordinary task by marking the point on the scale.

The scoring system is 0-4 and interpreting as follow [22]

ECOG performance status	**Grade**
Fully active, able to carry on all pre-disease performance without restriction.	0
Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work.	1
Ambulatory and capable of all self-care but unable to carry out any work activities; up and about more than 50% of waking hours.	2
Capable of only limited self-care; confined to bed or chair more than 50% of waking hours.	3
Completely disabled; cannot carry on any self-care; totally confined to bed or chair.	4

Tool (III): "Self-care questionnaire ": - Self-care questionnaire was developed by the researcher based on Dodd (1987) as a self-documentation tool which consisted of three parts: [23]

Part one: "Structured knowledge questionnaire schedule ": - It was used to asses

patient Knowledge about radiation therapy, side effects, factors contributing to side effect and possible actions to be taken to alleviate these side effects .it included definition of radiation therapy, benefits of radiation therapy, types and forms of radiation therapy, common acute side effects according to National Cancer Institute, contributing factors, alleviating and aggravating factors, duration of each side effect and actions to be taken to reduce distress from these side effects.

The total score of knowledge items was calculated and categorized as following:

-High level of knowledge was considered when the total score of items response was more than or equal 75%.

-Moderate level of knowledge was considered when the total score of items response was equal to 65-74%.

-Low level of knowledge was considered when the total score of items response was less than 65 %.

Part two: - "side effects experienced by the Patient ": - The patient recorded each side effect that was experienced after the radiation therapy is given and if he was illiterate the researcher asked him and recorded the answer as it was experienced by the patient and indicates the date of the onset of the side effect. Patients rated on a five-point scale ranging from (1) to (5) the intensity of the side effect which indicated: -

- Rarely happen.
-Very simple intensity.
-Simple intensity.
- Moderate intensity.
- Sever intensity.

Also the patient rated the distress of the side effect on another five-point scale ranging from (1) to (5) as follow: -

- Rarely distressing.
- Very simple distressing.
- Simple distressing.
- Moderate distressing.
- Sever distressing.

And the effectiveness of each self-care action in alleviating these side effect was also rated on a three-point scale ranging from (1) to (3) as follow:

- Completely alleviate the side effect.
- Partially alleviate the side effect.
- Did not help at all and the grades were calculated as the following table:

The intensity of side effect	**Grade**
Low intensity.	1-2
Medium intensity.	3
High intensity.	4-5
The distressing of side effect	**Grade**
Minor distressing.	1-2
Moderate distressing.	3
Sever distressing.	4-5
The effectiveness of self-care action in alleviating the side effect	**Grade**
Completely alleviate the side effect.	1
Partially alleviate the side effect.	2
Did not help at all.	3

Method

1- Administrative process:

A written approval Hospital permission was obtained from the responsible authority.

2- Ethical consideration: -

Written informed consent was obtained from patient and their families after explanation of the aim of the study, Confidentiality and privacy were assured .using code number instead of patient name and withdrawal from study was allowed at any time. Data collection was done for eight months' period from the first November 2016 to the end July 2017.

3- Content Validity:

The tools of the study were tested for content validity by jury of nine experts in the academic staff medical-surgical nursing, radiation therapy outpatient clinic professors and biostatistics at the Faculty of Medicine.

4-Reliability of the tools:

All tools of the study were tested for reliability, Cronbach alpha was used and found to be 0.821 for Tool I, 0.842 for Tool II and 0.829 for tool III which consider highly reliable tools.

5- A pilot study

It was conducted on five head and neck cancer patient receiving recent radiation therapy to test the clarity, feasibility and the applicability and modifications were carried out accordingly.

. **The study was conducted on four phases:**

Phase I: Assessment Phase: -

- Each subject of the study was informed about the purpose, benefits and the nature of the study and that he or she had the right to withdraw from the study at any time .
- The researcher reviewed the related literature and a designed program was developed and the teaching methods were selected including demonstration and re-demonstration with illustration graphs.
- Patients of control and study groups were assessed individually immediately before giving radiation therapy session using tool I, II and tool III-part one and photos were taken to the site of radiation before the beginning of radiation therapy and use as a baseline to exclude another cause of side effect after taking the radiation.

- Phase II: The planning phase: -

- Four sessions were designed in this phase by the researcher for study group to provide the patients with information about skills and that were necessary to overcome radiation induced acute side effects and exactly it took 20-30 minutes' duration of time in addition to training them to performing these, a colored booklet was developed by the researcher.

- Session 1: - Anatomy and physiology of head and neck , Definition and types of head and neck cancer

The aim of this session was to provide the patient with information about the anatomy and physiology of head and neck, definition and types of head and neck. The content including definition, types and manifestations of head and neck. It was taking the duration of 30 minutes. The method of teaching used was presentation and discussion. Materials used for teaching was booklet with pictures.

- Session 2: - Causes and treatment of head and neck cancer and radiation therapy

The content including causes and ways of treatment of head and neck and information about radiation therapy including definition, benefits, external and internal radiation and forms of radiation therapy. It was taking the duration of 30 minutes. The method of teaching used was presentation, discussion, demonstration and re-demonstration. Materials used for teaching was color booklet with pictures and real materials (soft towel, electrical razors, irritant soap, perfumes and heating bags)

- Session 3: - Dermatitis and Mucositis

The aim of the study was to provide the

patient with information about dermatitis and Mucositis. The content including definition, time of onset, duration, aggravating and relieving factors and actions to be taken to relieve of dermatitis and Mucositis**.** Materials used for teaching was booklet with pictures and real materials (soft tooth brush, toothpaste, soft tissue, threat and normal saline).

- Session 4: - Dysphagia

The aim of the study was to provide the patient with information about dysphagia. The content including definition, time of onset, duration, aggravating and relieving factors and actions to be taken to relieve of dysphagia. Materials used for teaching was color booklet with pictures.

-Phase IV: The Evaluation phase: -

- Evaluation was done for both groups (the control and the study group) by using tool II and III for experiencing radiation induced acute side effects in head and neck cancer patients immediately, one month and three months after implementing the module .
- Severity of acute side effects was assessed using Modified Eastern Cooperative Oncology Group performance scale (tool II) and Self-care questionnaire (tool III) before and after sessions.

Data processing and 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 the range, mean and standard deviation were calculated. For qualitative data, percentage or proportion of each category using Chi-square test and Fisher Exact test (FE) between means of two groups of parametric data of student t-test was used. For comparison between means of two groups of non-parametric data of independent samples, Z value of Mann-whitney test was used. For comparison between more than two means of parametric data, F value of ANOVA test was calculated For comparison between more than two means of non-parametric data, Kruskal-Wallis (2) was calculated. For comparison between more than two means of non-parametric data of related samples, Friedman test (2 value) was calculated. Significance

was adopted at $p<0.05$ for interpretation of results of tests of significance.

Results

Table (1) Current medical history data among the studied head and neck cancer patients undergoing radiotherapy both

(control and study groups) (n=50).

This table illustrates that equal percentage (24%) of the control group I were diagnosed with laryngeal and salivary gland cancer while near quarter (24%) of the study group II were diagnosed with nasopharyngeal cancer with no significance difference.

Moreover, it illustrates that more than half (68%) of the control group I and near half (40%) of the study group II suffered from pain as chief complaint with very high statistical significance difference at p level=0.047 and slightly more than two third (76%) of the control group I and more than half (68%) of the study group II suffered from difficulty of swallowing as chief complaint and near quarter (20%) of the control group I suffered from mouth mass as chief complaint with very high statistical significance difference at p level=0.025.

Table (2): Quality grade of functional ability (ECOG performance status scale) among the studied head and neck cancer patients undergoing radiotherapy both (control and study groups) before and after one and three months of radiotherapy (n=50).

This table and figure illustrate that before receiving the radiation therapy the minority (4%), (8%) of the control group I and the study group II were fully active, able to carry on all pre-disease performance without restriction with no statistical significance difference and one month after receiving radiotherapy slightly more than half (52%) of the control group I were Capable of only limited self-care; confined to bed or chair more than 50% of waking hours compared to near half (40%) of the study group II were restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work with no statistical significance difference.

Also, three months' post receiving radiation therapy, only quarter (24%) of the control group I while more than half (60%) of the study group II return to be fully active and able to carry on all pre-disease performance without restriction with very high statistical significance difference at p level=0.0001.

Table (3): Mucositis occurrence among the studied head and neck cancer patients undergoing radiotherapy both (control and study groups) immediately, one month and three months after radiation treatment (n=50).

This table illustrates that there was a

reduction of mucositis occurrence in about quarter (20%) of the study group II than control group I immediate after radiotherapy with no statistical significance difference and this reduction raise in approximately equal percentage (32%) of the study group II than control group I one month and three months after radiotherapy with very high statistical significance difference at p level=0.0039, 0.0020 respectively.

Also, it reveals that about two third (76.5%) of the control group I compared to one quarter (25%) of the study group II had sever Mucositis immediate after radiotherapy with very high statistical significance difference at p level=0.025 and slightly more than half (53.8%) of the control group I and less than half (40%) of the study group II had moderate Mucositis one month with very high statistical significance difference at p level=0.006 and more than half (60%) of the control group I and half (50%) of the study group II had moderate mucositis three months after radiotherapy.

Table (4): Self-care practicing in alleviating dermatitis side effect of radiotherapy and its alleviating effect among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module on radiation induced acute side (n=50).

This table reveals that immediately post radiotherapy, by practicing self- care actions following teaching module, dermatitis completely relieved in more than half (66.7%) of the study group II and one-month post radiotherapy dermatitis relieved completely in all patients (100%) of the study group II with no statistical significance.

Table (5): Self-care practices in alleviating dysphagia side effect of radiotherapy and its alleviating effect among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module on radiation induced acute side (n=50).

This table reveal that immediately post radiotherapy, by practicing self- care actions following teaching module, dysphagia partially relieved in more than half (68.7%) of the study group II and one-month post radiotherapy dysphagia relieved completely in about two third (70%) of the study group II while three months' post radiotherapy dysphagia completely relieved in all patients (100%) of the study group II with very high

statistical significance difference at p level=0.033.

Figure (1): - alleviating effect of self-care actions to Mucositis side effect of radiotherapy among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module on radiation induced acute side (n=50).

This table and figure reveals that immediately post radiotherapy, by practicing self- care actions following teaching module, Mucositis partially relieved slightly more than half (58.3%) of the study group II and one-month post radiotherapy Mucositis relieved partially in more than half (60%) of the study group II while three months' post radiotherapy mucositis completely relieved in all patients (100%)

of the study group II with no statistical significance difference.

Figure (2): - Self-care practicing in alleviating dermatitis side effect of radiotherapy and its alleviating effect among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module on radiation induced acute side (n=50).

This figure reveals that immediately post radiotherapy, by practicing self- care actions following teaching module, dermatitis completely relieved in more than half (66.7%) of the study group II and one-month post radiotherapy dermatitis relieved completely in all patients (100%) of the study group II with no statistical significance.

Figure (3) Grades of severity of dysphagia side effect among the studied head and neck cancer patients undergoing radiotherapy both (control and study groups) immediately, one month and three months after radiation treatment (n=50).

This figure reveals that equal percentage (100%) (100%) and the majority (85.7%) of the control group I had high intensity of dysphagia immediate, one and three months after radiotherapy compared to more than half (62.5%), (60%) and no one (0%) of the study group II had high intensity of dysphagia immediate, one and three months after radiotherapy with no statistical significance difference.

Table (1): Current medical history data among the studied head and neck cancer patients undergoing radiotherapy both (control and study groups) (n=50).

Current medical history data	The studied head and neck cancer patients (n=50				χ^2	P
	Control group (n=25)		Study group (n=25)			
	n	%	n	%		
•Current diagnosis:						
Buccal cancer	3	12.0	2	8.0	17.243	0.101
Cancer of the nose & sinuses	0	0	1	4.0		
Glottic cancer	1	4.0	2	8.0		
Hypo pharyngeal cancer	5	20.0	2	8.0		
Laryngeal cancer	6	24.0	5	20.0		
Lip cancer	1	4.0	1	4.0		
Maxilla cancer	0	0	1	4.0		
Nasopharyngeal cancer	0	0	6	24.0		
Recurrent thyroid cancer	0	0	1	4.0		
Salivary glands cancer	6	24.0	0	0		
Thyroid cancer	1	4.0	2	8.0		
Tongue cancer	2	8.0	2	8.0		
•Grade of tumor:						
Grade I	5	20.0	6	24.0	1.220	0.543
Grade II	14	56.0	11	44.0		
Grade III	6	24.0	8	32.0		
•Chief complaint:						
Pain	17	68.0	10	40.0	3.945	0.047*
Sore throat	9	36.0	12	48.0	0.739	0.390
Difficulty of swallowing	19	76.0	17	68.0	0.397	0.529
A lump in the mouth	4	16.0	4	16.0	0.000	1.000
Others:						
-Lips ulcer	1	4.0	0	0	FE	1.000
-Mass in throat	1	4.0	0	0	FE	1.000
-Mouth mass	5	20.0	0	0	FE	0.025*
-Nasal mass	0	0	1	4.0	FE	1.000
-Tongue ulcer	0	0	2	8.0	FE	0.489

***Significant (P<0.05)**

FE=Fisher Exact test

Table (2): Quality grade of functional ability (ECOG performance status scale) among the studied head and neck cancer patients undergoing radiotherapy both (control and study groups) before and after one and three months of radiotherapy (n=50).

Quality grade of functional ability items (ECOG performance status scale)	Functional ability (ECOG scale) among the studied head and neck cancer patients before and one month and three months after radiotherapy (n=50)												χ^2 P (Control vs Study group)		
	Control group (n=25)						Study group (n=25)								
	Before		One month after		3 months after		Before		One month after		3 months after		Before	One month after	3 months after
	n	%	n	%	n	%	n	%	n	%	n	%			
•**Grade 0** (Fully active, able to carry on all pre-disease performance without restriction)	1	4.0	0	0	6	24.0	2	8.0	0	0	15	60.0	1.034 0.905	6.159 0.104	20.165 0.0001*
•**Grade 1** (Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work)	2	8.0	5	20.0	3	12.0	1	4.0	10	40.0	9	36.0			
•**Grade 2** (Ambulatory and capable of all self-care but unable to carry out any work activities; up and about more than 50% of waking hours)	7	28.0	5	20.0	12	48.0	6	24.0	8	32.0	1	4.0			
•**Grade 3** (Capable of only limited self-care; confined to bed or chair more than 50% of waking hours)	9	36.0	13	52.0	3	12.0	11	44.0	7	28.0	0	0			
Grade 4 (Completely disabled; cannot carry on any self-care; totally confined to bed or chair)	6	24.0	2	8.0	1	4.0	5	20.0	0	0	0	0			
χ^2 P	24.254 0.002*						56.245 0.0001*								

***Significant (P<0.05)**

Table (3): Mucositis occurrence among the studied head and neck cancer patients undergoing radiotherapy both (control and study groups) immediately, one month and three months after radiation treatment (n=50)

Mucositis as a side effect after radiation treatment	Mucositis occurrence among the studied head and neck cancer patients immediately, one month and three months afterradiation treatment (n=50)												χ^2 P		
	Control group (n=25)						Study group (n=25)								
	Immediate after		One month after		3 months after		Immediate after		One month after		3 months after		Immediate after	One month after	3 months after
	n	%	n	%	n	%	n	%	n	%	n	%			
Occurrence of mucositis:															
No	8	32.0	12	48.0	15	60.0	13	52.0	20	80.0	23	92.0	1.310	4.250	5.370
Yes	17	68.0	13	52.0	10	40.0	12	48.0	5	20.0	2	8.0	0.251	0.039*	0.020*
χ^2 (P)	3.960 (0.138)						11.140 (0.004*)								
Severity of mucositis:															
Very simple	0	0	0	0	0	0	3	25.0	0	0	0	0	9.332	10.246	5.830
Simple	2	11.8	0	0	0	0	2	16.7	3	60.0	1	50.0	0.025*	0.006*	0.054
Moderate	2	11.8	7	53.8	6	60.0	4	33.3	2	40.0	1	50.0			
Very severe	13	76.5	6	46.2	4	40.0	3	25.0	0	0	0	0			
χ^2 (P)	8.060 (0.020*)						5.900 (0.116)								
Distress from mucositis:															
Very simple	0	0	0	0	0	0	1	8.3	2	40.0	0	0	7.420	7.590	5.700
Simple	2	11.8	3	23.1	0	0	5	41.7	2	40.0	1	50.0	0.059	0.055	0.058
Moderate	7	41.2	8	61.5	7	70.0	5	41.7	1	20.0	1	50.0			
Very severe	8	47.0	2	15.4	3	30.0	1	8.3	0	0	0	0			
χ^2 (P)	3.410 (0.181)						1940 (0.585)								

Table (4): Self-care actions in alleviating dermatitis side effect of radiotherapy and its alleviating effect among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module on radiation induced acute side (n=50).

Self-care actions in alleviating dermatitis	The studied head and neck cancer patients who received self-care teaching module (n=25)					
	Immediate after module		One month after module		Three months after module	
	n	%	n	%	n	%
Self-care actions in alleviating dermatitis:						
•Avoid using irritant soap, deodorant, perfumes and other creams over the treated area with radiotherapy	25	100	25	100	25	100
•Gently washing and drying the treatment area without massage or friction by using soft towel	25	100	25	100	25	100
•Shave the treatment area with electrical razor rather than normal razor and avoid using perfumes after shaving	25	100	25	100	25	100
•Wear loose-fitting cotton clothing over the treated area with radiotherapy	25	100	25	100	25	100
•Using cotton linen for beds	25	100	25	100	25	100
•Expose treated area to air as possible	25	100	25	100	25	100
•Avoid tape and adhesives over the treated area with radiotherapy	25	100	25	100	25	100
•Avoid ice or heating pads over the treated area and use only tape water	25	100	25	100	25	100
•Avoid exposure of treated area to sunlight and avoid using sunscreen	25	100	25	100	25	100
•Occurrence of dermatitis:						
No	19	76.0	24	96.0	25	100
Yes	6	24.0	1	4.0	0	0
χ^2	9.770					
P	0.007*					
Alleviating effect of self-care actions:						
Partially relieved	2	33.3	0	0	0	0
Completely relieved	4	66.7	1	100	0	0
FE (P)	FE (0.428)					

FE=Fisher Exact test *Significant (P <0.05)

Table (5): Self-care actions in alleviating dysphagia side effect of radiotherapy and its alleviating effect among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module about radiation induced acute side (n=50).

Self-care actions in alleviating dysphagia	The studied head and neck cancer patients who received self-care teaching module (n=25)					
	Immediate after module		One month after module		Three months after module	
	N	%	n	%	n	%
Self-care actions in alleviating dysphagia:						
•Chew sugar free gum to stimulate flow of saliva	25	100	25	100	25	100
•Moisten your lips continuously by using lip moistening	25	100	25	100	25	100
•Eat smooth foods such as yogurt and blend food with milk	25	100	25	100	25	100
•Drink acidic juice only in absence of mucositis such as orange and lemon juice	25	100	25	100	25	100
•Carry a water bottle and have regular sips throughout the day	25	100	25	100	25	100
•Cook the food very well and eat small frequent meals and snacks easier than three large meals	25	100	25	100	25	100
•Avoid sharp or crunchy foods such as potato chips, dry bread and nuts	25	100	25	100	25	100
•Occurrence of dermatitis:						
No	9	36.0	15	60.0	22	88.0
Yes	16	64.0	10	40.0	3	12.0
χ^2	14.280					
P	0.0008*					
Alleviating effect of self-care actions of dysphagia:						
Partially relieved	11	68.7	3	30.0	0	0
Completely relieved	5	31.3	7	70.0	3	100
χ^2	6.820					
P	0.033*					

***Significant (P<0.05)**

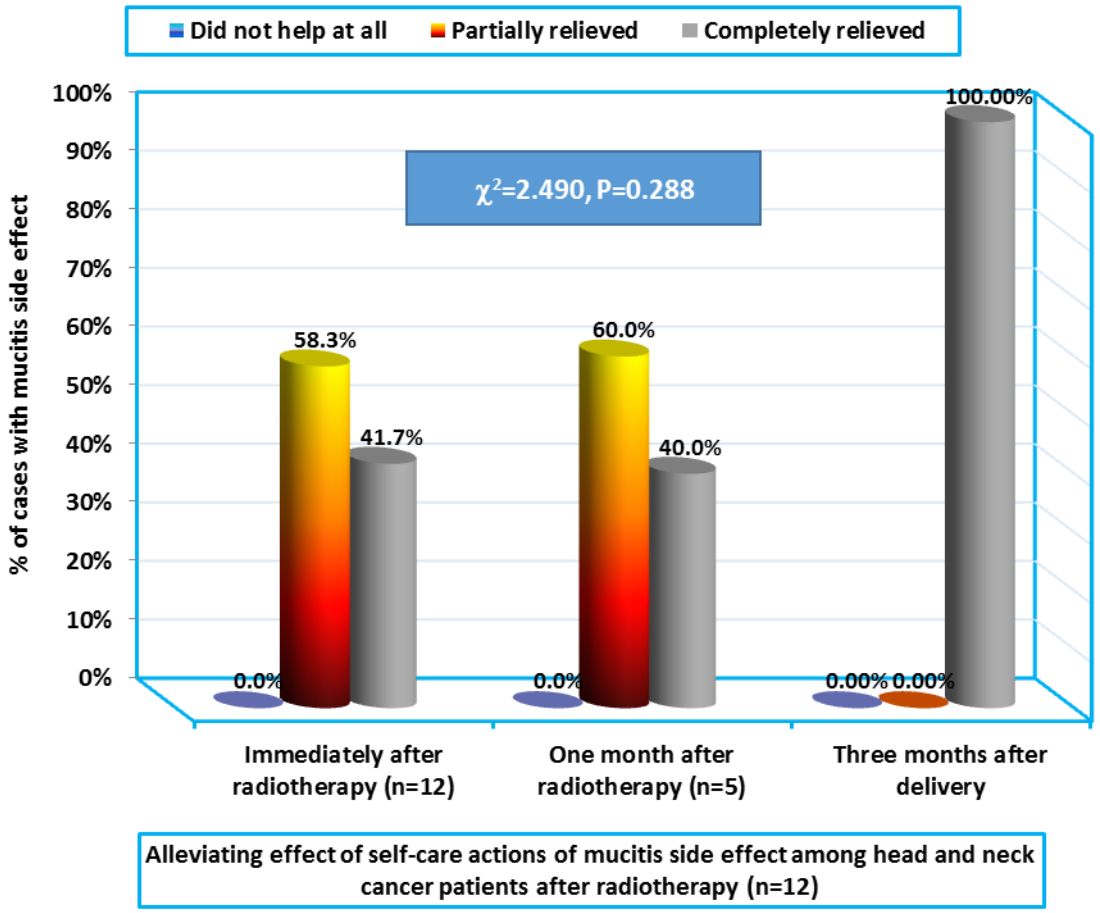

Figure (1): Alleviating effect of self-care actions to Mucositis side effect of radiotherapy among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module on radiation induced acute side (n=50).

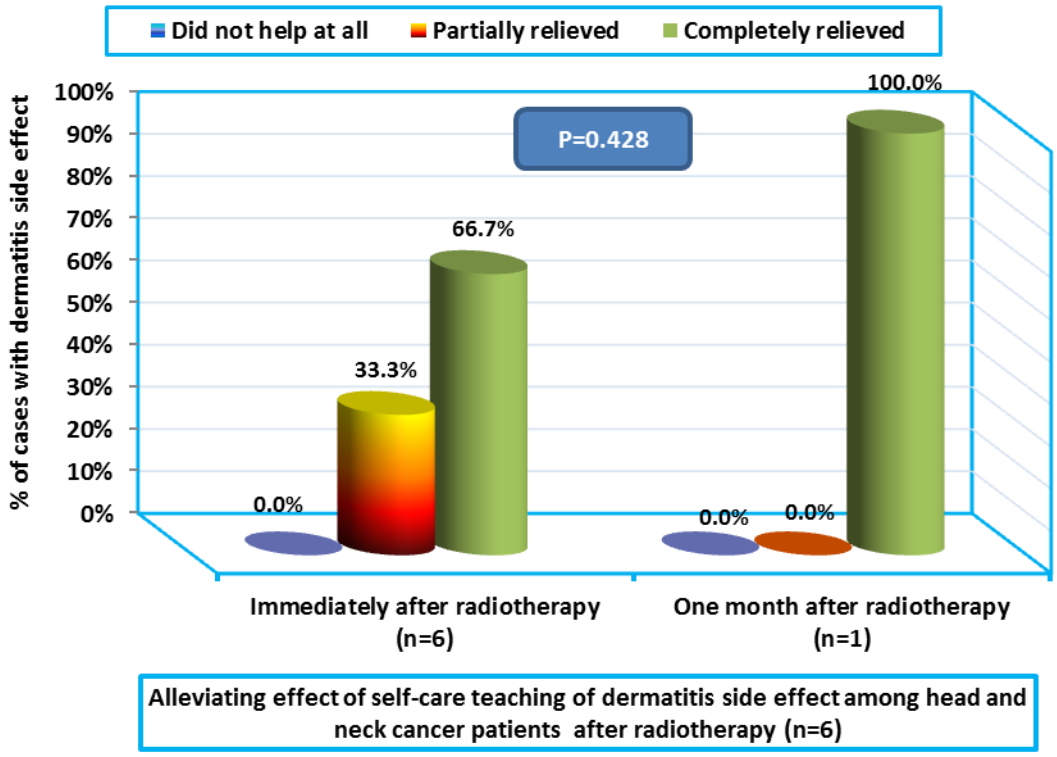

Figure (2): Alleviating effect of self-care actions to dermatitis side effect of radiotherapy among the study group of head and neck cancer patients undergoing radiotherapy (post receiving self-care teaching module on radiation induced acute side (n=50).

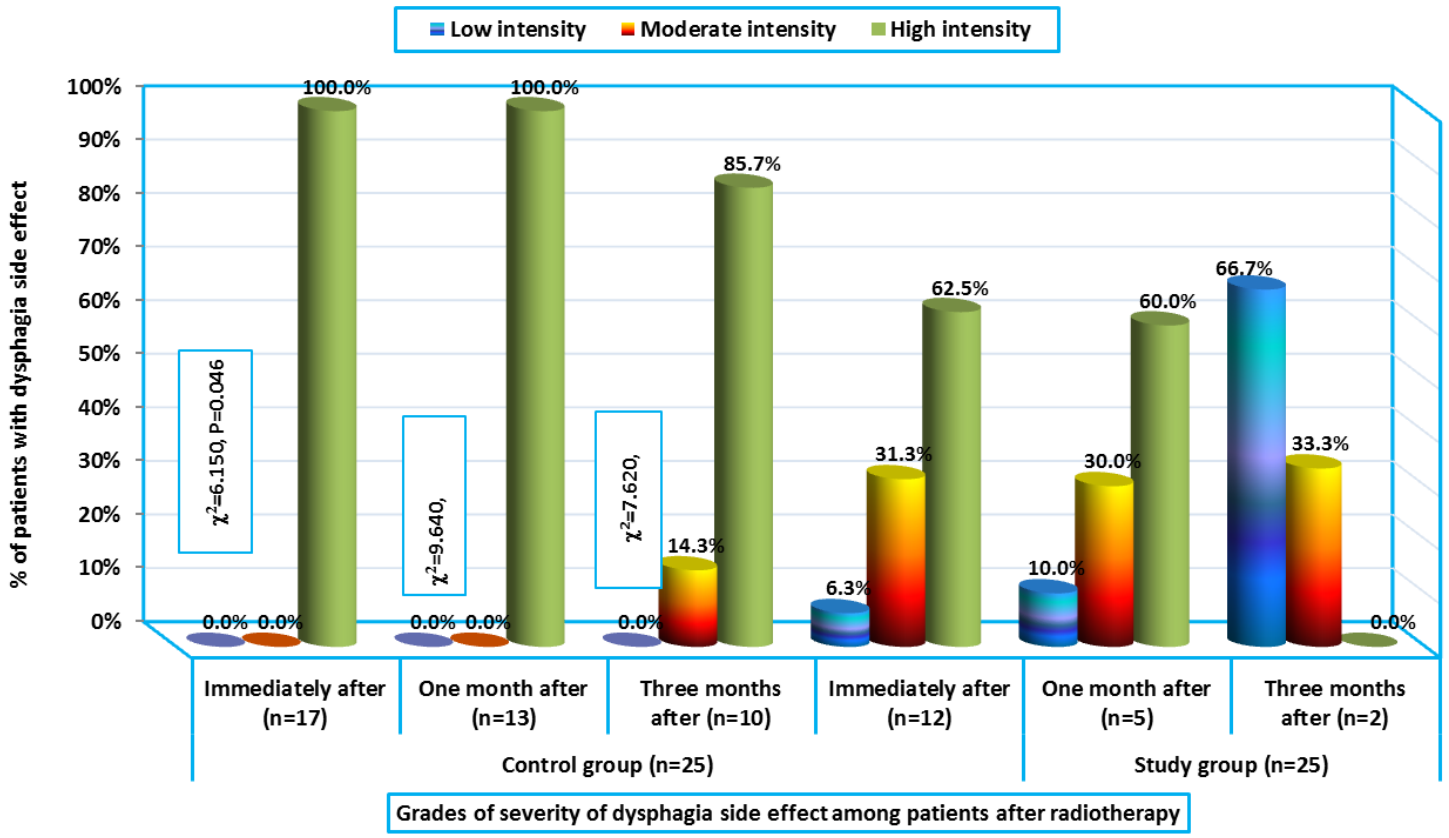

Figure (3): Grades of severity of dysphagia side effect among the studied head and neck cancer patients undergoing radiotherapy both (control and study groups) immediately, one month and three months after radiation treatment (n=50). *NB Comparison of the control and study group (immediately after, one month and 3 months after radiotherapy)*

Discussion

Patient education by using teaching module is the process by which health professionals and others impart information to patients and their caregivers that will alter their health behaviors or improve their health. Every effort must be made to ensure that learning takes place in incremental steps and that patients are not overwhelmed with too much information at onetime. (25)

The current study reveals that, the highest incidence of HNC patients of the control group I were among the mean age group of thirty-one to less than or equal forty-one years old while the highest incidence of study group II among the mean age group of fifty-one to less than or equal fifty-five years old. This is the same line with **De Melo et.al; (2013)** (26)results indicated that patients diagnosed with head and neck cancer aged under sixty years old. In the other aspect **Mouw et.al; (2008)** (27), mentioned that the patients aged ranged only from fifty- one to seventy years old.

In relation to sex of the control and study groups, the findings of the current study indicate that the majority of the study were male. Many research study results (28-30,4) had proven that a higher incidence of head and neck tumors in males and relatively rare in females.However, in recent years there has been significant increase in the incidence of head and neck tumors in females probably due to changes in female behavior toward smoking and alcohol drinking habits. (31)

In relation to current medical history data among control and study groups, the findings from the current study indicate that more than half of control group I and less than half of the study group II reported pain while near quarter of the control group I and no one of the study group II had mouth mass so there was significant difference among the control and study groups regarding pain and mouth mass as chief complaint of HNC. This finding is similar to result findings of study was done by **Wan et.al; (2011)**(32), who pointed out that a large number of HNC patients experienced symptoms as pain and mouth mass as a chief complaint by using EORTC QLQ-C30 and QLQ-H&N35 Questionnaires.

Concerning type of head and neck cancer, the result of current study

reveals that the high incidence was laryngeal cancer followed by hypo-pharyngeal cancer among the control and study groups while the lowest incidence was cancer of the nose, sinus followed by maxilla and finally recurrent thyroid cancer at equal four percentages among the control and study groups. This finding is in disagreement with **Dobrossy (2005)** [(33)]**,** who stated that most frequent tumor site was the oral cavity. Also, this finding is incongruent with **Hassanein (2005)** [(34)], who concluded that the most commonly affected site was the floor of the mouth followed by the gingiva, the maxilla and the tongue.

As regards to grade of head and neck cancer, biopsy pathological study of HNC patients proven that most of the current studied patients had diagnosed as grade II HNC while the minority of them had grade I HNC diagnosis. This finding is contradict with the study result done by **Rosenthalet.al; (2015)** [(35)]**,** who recorded that the majority of the patients were diagnosed as stage III of head and neck cancer and also this finding is in disagreement with **Stewart (2003)** [(36)], who concluded that a high frequency of head and neck cancer cases were diagnosed at an advanced stage III and low frequency of HNC cases were diagnosed at early stage I, II according to world health organization.

Comparing HNC quality grade of functional ability before, one and three months after receiving radiotherapy, the current study findings records that before receiving radiotherapy the minority of the study were scored zero that means they were fully active and able to carry on all pre disease performance without restriction. This finding is in the same line with **Conill et.al; (2000)**[(37)], who pointed out that the minority of the patients were fully active before receiving the radiotherapy.

However, post three months from receiving radiotherapy near quarter of the control group I compared to more than half of the study group II still fully active. The present finding support research hypothesis that adult patients with HNC undergoing RT who received self-care teaching module beside hospital routine care have higher mean score clinical outcome than control group I. This finding is consistent with **Conill et.al; (2000)**[(37)], who study finding pointed out that the majority of the patients still fully active or restricted in

physically strenuous activity but ambulated after three months from receiving radiotherapy.

Mucositis is the most common acute side effect experienced by patients undergoing head and neck radiotherapy. In almost all cases, the patients

Experience confluent mucositis by approximately the third week of treatment. Mucosal damage occurs because of decreased cell renewal in the epithelium, which causes mucosal atrophy and ulceration. This is accompanied by pain, burning and discomfort, which are greatly aggravated by contact with highly spicy foods. Clinically mucositis is characterized by inflammation, erythema, mucosal atrophy and ulceration of the oral mucosa. [38-40]

In relation mucositis occurrence, the result of the current study reveals that approximately one third of the control group I and slightly more than half of the study group II had no mucositis occurrence immediate after radiotherapy. This finding is inconsistent with **Trotti et.al; (2003)** [41]**,** in a study to assess mucositis incidence, severity and associated outcomes in patients with head and neck cancer receiving radiotherapy with or without chemotherapy who reported that virtually all patients who receive radiation therapy for HNC develop some degree of mucositis immediate after radiotherapy.

Also, one and three months' post radiotherapy the result of the current study indicates that more than half and less than half of the control group I had mucositis compared to less than quarter and the minority of the study group II had mucositis respectively. This finding is consistent with **Elting et.al; (2007)** [42]**,** who reported that mucositis is a quite common complication in head and neck cancer patients treated with radiotherapy.

As regard severity of mucositis, the findings of the current study indicates that one quarter of the study group II had severe mucositis immediate after radiotherapy compared to less than half of them had moderate mucositis one month after receiving radiotherapy while half of the them had simple mucositis three months after radiotherapy. It may be due to application of self-care actions by the patients which help them to decrease severity of the mucositis. This finding is in congruent with a study result done by **Elting et.al; (2007)**[42], mentioned that more than half of patients

had severe mucositis immediately after radiotherapy.

Moreover, the result of the current study reports thatthe minority the study group II had severe distress from mucositis immediate after radiotherapy compared to near quarter of them had moderate distress one month after radiotherapy and half of them had simple distress three months' post radiotherapy which means that the severity of mucositis decrease by practicing self-care actions by the patients. This finding is congruent a study result was conducted by **Epstein and Stewart; (2003)** [(43)]**,** who pointed out that oral pain from mucositis is reported to decrease in distress through the course of radiation.

In relation to Routine care and self-care actions in alleviating dermatitis side effect of radiotherapy, the result of current study finds that immediately post radiotherapy by practicing routine and self- care actions, dermatitis completely relieved in more than half of the study group II compared to no one in the control group I and one-month post radiotherapy dermatitis relieved completely in all patients of both groups. This means that either practicing routine care only or in addition with self-care actins provided in booklet by the researcher they help to relieved dermatitis in both groups one month later.

This finding is accordance a study result was done by **Abbas (2012)** [(44)]**,** reported that current care for patients with dermatitis is essentially palliative and includes hygiene orientation site, reduction of exposure and friction of the irradiated

area, use of appropriate clothing, preferably cotton, avoid sun exposure and contact with extreme temperatures as compresses, avoid itching the irradiated area, avoid using products that have strong agents in their composition as some types of soaps.

As regardsself-care actions in alleviating dysphagia, it is found that immediately post radiotherapy by practicing self- care actions following teaching module, dysphagia partially relieved in more than half of the study group II and one-month post radiotherapy dysphagia relieved completely in about two third of the study group II while three months' post radiotherapy dysphagia completely relieved in all patients of the study group II. The present finding support research

hypothesis that by practicing specific actions which include eat soft, smooth foods, use a straw to drink liquids and soft foods, eat warm or room-temperature foods to reduce pain, Take small bites, and chew slowly and thoroughly.Eat small frequent meals and snacks, avoid spicy foods, foods that are acidic such as tomatoes and citrus, and sharp or crunchy foods such as potato chips, avoid Smoking and alcohol. (45,46,47)

This finding is in the same line with a study result was conducted by **Duarte et.al; (2013)**(48), mentioned that recommendations given to HNC patients for dietary modifications such as decrease size and consistency of foods is essential to alleviate dysphagia.

Finally, the current study shows that self-care actions either practiced by patients or their families for radiation induced acute side effects which include mucositis, dermatitis and dysphagia had positive effect on preventing or minimizing these acute side effects and patient distress from them and this leading to improving functional ability of the head and cancer patients. Consequently, the hypothesis of the current study was approved so we can confirm that adult patients with head and neck cancer undergoing radiation therapy who were received self-care teaching module have higher mean scores clinical outcomes than control group and the study accepted the hypothesis.

Conclusion and recommendations

Conclusion

Based on the findings from the present study, it can be concluded that the functional ability measured by ECOG scale and the severity of radiation mucositis, dermatitis and dysphagia measured by Dodd self-care questionnaire were improved in study group II than control group I with very high statistical significance difference. So self-care teaching module for patient with HNC treated by radiation which induced acute side effect had an effect on decreasing the occurrence, the severity and distress of acute side effects in head and neck cancer patients undergoing radiotherapy

Recommendations

Based on the findings of the current study, the following recommendations are geared toward the following:

1- Recommendation for patients:

- Head and neck cancer patients should be practice self-care pre radiotherapy

procedure to relieve fear and enhance daily living activities .

- All head and neck cancer patients must perform self-care actions to prevent manage acute side effect of radiotherapy and improve their clinical outcomes.

2- Recommendation for nurses:

- In-service training for the nurses about self-care for patient undergoing radiotherapy

3- For further research studies:

- Assessment of quality of life (physical, psychological, social, spiritual) related to radiation induced acute side effects in early stage in head and neck cancer patients undergoing radiotherapy.

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Effect of Implementing Meaningful Recognition Program on Head Nurses ' Knowledge and Practice and Nurses' Satisfaction

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Abstract

Background: Staff nurses are in need for praise and recognition because of its impact on their performance and their job satisfaction. **Aim**:evaluate effect of implementing meaningful recognition program on head nurses' knowledge and practice and nurses' satisfaction. **Method:** Quasi- experimental design was used to conduct the study at Tanta International Teaching Hospital. The subjects of the study consisted of all (35) head nurses and 250 staff nurses were working in the above mentioned setting. Three tools were utilized: Tool I: Head Nurses' Meaningful Recognition Process Observation Checklist. Tool II Head Nurses' Meaningful Recognition Process Knowledge Questionnaires. Tool III: Staff Nurses' Satisfaction of Head Nurses 'Practice of Meaningful Recognition Process questionnaire. **Results**: 91.4% of head nurses had unsatisfactory level regarding overall practice of meaningful recognition process at pre educational program, decreased to 14.3% post educational program and reached 42.9% at 3 months post educational program. 77.1% of head nurses had poor level of meaningful recognition knowledge at pre educational program, improved to be 88.6% good level at post and 82.9% post 3 month of the meaningful recognition educational program. Statistical significant positive correlation was found between head nurses' overall knowledge of meaningful recognition process, its subscales and their overall practice of meaningful recognition process and its subscales with their staff nurses' overall satisfaction of head nurses' practice of meaningful recognition process and its overall subscale at $p \leq 0.05$.**Conclusion**:Head nurses at Tanta International Teaching Hospital knowledge and practice positively improved post educational program of meaningful recognition , thus staff nurses had high level of satisfaction post program than pre program . **So,** nurse managers should pay more attention to the vital role of meaningful recognition as a valuable strategy for upgrading nurses' job satisfaction, and develop policies and practices that foster meaningful recognition among head nurses.

Key words: Head nurses, Meaningful recognition, Staff nurses, Satisfaction**.**

Introduction

Meaningful recognition has been delineated by the American Association of Critical Care Nurses (2005) [(1)] as one of the keys for establishing and maintaining healthy work environment for nurses. Head nurses play a critical role in improving nurses work place, by advocating for the inclusion of staff nurses' recognition into daily operations. The head nurses' recognition behaviors strongly influence the job satisfaction of nurses. [(2)] The general acknowledgement or confirmation of a given occurrence or performance is referred to as recognition. [(3)] Appropriate recognition behavior by the head nurses is an extremely important practices for increasing the nurses' motivation and the prevention of burnout and the promotion of retention. [(4)]

According to Cherian (2017)[(5)] meaningful recognition is the process of acknowledging one's behaviors and the impact these actions have on others, ensuring the feedback is relevant to the recognized situation and is equal to the person's contributions. Recognition is only meaningful when it is relevant to the person being recognized and genuine appreciation. [(6)] Meaningful recognition according to Froman (2010) [(7)] has been associated with elevating one's self- esteem which can in turn impact staff nurses' job satisfaction. Staff nurses consistently rate recognition from patients, families, and other nurses including head nurses as the most meaningful. It reaffirms staff nurses' positive contributions, emphasizing the impact of nursing care and increasing awareness of staff nurses' unique contributions to health care. [(8)]

Moreover, meaningful recognition according to American Association of Critical Care Nurses (2005)[(1)] and Psychological Associates and Daisy Foundation (2009)[(9)] contributes directly to staff nurses' job satisfaction to which in turn results into reduced medical errors, conflict, stress them and effective delivery of patient care. [(10)] Meaningful recognition that is conditional foundation, timely, informal and, or formal acknowledgement of a nurse's behavior or effort is a powerful reign forcer to improve performance and the behavior will be repeated in thefuture. [(11)]

Head nurses can have an impact on nurses' satisfaction through the practices of meaningful recognition of positive nurses'

efforts and accomplishments. [12] These practices are private verbal feedback, public acknowledgment, written acknowledgment, opportunities for growth and participation, and compensation. Private verbal feedback is a face to face discussion occurs between the head nurses and staff nurse whereby the head nurse provides positive feedback for day to day operation such as handling situations well, or giving outstanding patient care. Public acknowledgment, the head nurse provides positive feedback in public in front of others nurses, peers, senor administration, physician, and other health care professionals regarding the good work done by the nurse. [13]

Written acknowledgement, the head nurse gives feedback in a written form to staff nurses regarding achievement and performance. For example, outstanding care is acknowledged by a litter given to staff nurse and a copy placed in the file. Opportunities for growth and participation, the head nurse push nurses by providing opportunities for participation and decision making e.g. head nurse ask nurses to participate in planning for unit and consults with them on important patient care. Regarding compensation, exceptional performers can be compensated by given a day off with pay to attend conference. [14]

Significance of study:

Recognition is an important aspect of keeping staff nurses. Unfortunately, although it is a simple and cost-effective strategy, it is often overlooked as a viable solution to retention problems. So, head nurses require much more training and educational resources to become more effective recognition givers [15].

Result of Eldemerdash (2006) [16] indicates that head nurses need for education program to teach them importance of offering sincere positive recognition for their staff nurses team. Little research has been done that focuses on content or process of providing recognition to nurses. Nurses who are not recognized feel invisible, undervalued, unmotivated and disrespected. Lack and absent of recognition has been ranked as one of the primary cases of discontent in nursing and it can potentially affect everyone, especially those people most depend on nurses' performance, their patients. So, Head nurses must be knowledgeable about these practices of meaningful recognition and must be sensitive to staff nurses' needs to incorporate these practices in their management role, as recommended by Good and Bligen (1993) [13] ; Eldemerdash and Ghadery (2014) [17] .

Aim of the study

The aim of the study is to:

Evaluate effect of implementing meaningful recognition program on head nurses' knowledge and practice and nurses' satisfaction.

Research Hypothesis

Head nurses' knowledge and practice is expected to be improved after implementation of the program about meaningful recognition, and staff nurses' satisfaction will be improved.

Subjects and methods

Study Design

Quasi experimental design was used to achieve the aim of the present study. pre-posttest utilized to evaluate the impact of educational intervention on the study subject.

Setting

The study was conducted at Tanta International Teaching Hospital. It is 279 bed capacity, including the following units Surgical and Medical, Intensive Care Units ICUs, Operating Rooms (OR), Dialysis, Incubators, Neurological, Medical, Urological, Oncology, Emergency, Orthopedic, Pediatric, Obstetrics and Gynecology, Endoscopy, Obesity &Thinness and Bone Marrow Transplantation units. In addition to Outpatient Clinics, Sterilization, Blood Bank, Laboratory, Physiotherapy, Mammography, Electrography, Magnetic Resonance Imaging (MRI), Cat Scan CT, and X- ray.

Subjects

The study subjects consisted of all (35) head nurses and all (250) staff nurses (76 from ICUs and 174 from general units) were working in all units of Tanta International Teaching Hospital and available at the time of data collection.

Tools of data collection

To achieve the aim of this study three tools were used:

Tool I: Head Nurses' Meaningful Recognition Process Observation Checklist. This tool was developed by researcher guided by EL-demerdash and Ghadery (2014) [17] and Willingham (2014) [18] and recent related literatures [5, 13,15]. It was used to test the head nurses' knowledge about meaningful recognition it consisted of two parts:**Part (1)**: Head nurses' personal characteristics including age, marital status, years of experience, education qualification and department.

Part two: Head Nurses' Meaningful Recognition Process Observation Checklist to collect data from head nurses about their meaningful recognition process

at Tanta International Teaching Hospital. This part included 84 items categorized in five subscales:private verbal feedback, public acknowledgement, written acknowledgement, opportunities for growth and participation, and compensation.Head nurse's responses were measured on two points ranging from (2) done to (1) not done. The total scores were converted into levels to display head nurses' recognition practice and classified into:Satisfactory meaningful recognition practice ≥60%, and Unsatisfactory meaningful recognition practice < 60% [17].

Tool(II): Head Nurses' Meaningful Recognition Process Knowledge Questionnaires. This tool was developed by the researcher based on recent related literature [24, 28, 39, 40, 42,148] to collect data about meaningful recognition process knowledge among head nurses. It consisted of two parts**: Part one: subjects' characteristics** included age, marital status, years of experiences, educational level, and department. **Part two: Head nurses' Meaningful Recognition Process Knowledge Questionnaire**. This part covered, definition, important, criteria, type, principles of meaningful recognition process, forms of meaningful recognition process and head nurses' practice for meaningful recognition process. It included 99 questions divided into 19 items questions in the form of multiple choices, 52 items true and false, and 28 items in the form of Multiple Choice Questions. These questions cover the five dimensions of recognition process. Each item was allotted a score of (1) for correct answer, and (0) for wrong answer. The total scores were converted into percent scores to determine the levels of head nurses' knowledge as follows: good knowledge level > 75%, faire knowledge level 60–75%, and poor knowledge level < 60%.

Tool (III): Staff Nurses' Satisfaction regarding Meaningful Recognition Process. This tool was developed by the researcher guided by El-demerdash and Ghadery (2014) [17], Willingham (2014) [18] and other related recent literature [5,13,15]. It was used to identify nurses' satisfaction about meaningful recognition that received from their head nurses. It included the same items in tool one. This tool consisted of two parts, Part one: Nurses' characteristics included, age, gender, marital status, educational level, years of experience and department. **Part two**: Nurses' satisfaction of meaningful recognition process questionnaire: It was

used to collect data from nurses about meaningful recognition that they receiving from their head nurses. It was included the same items in the tool one. Nurses' satisfaction of meaningful recognition process questionnaire was measured on 5-points Likert Scale (1-5) ranging from strongly agree to strongly disagree, strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The total scores were classified into levels to assess nurses' levels of satisfaction as follows: high level of satisfaction > 75%, moderate level of satisfaction 60% - 75% and, low level of satisfaction <60% [17,18].

Method

Data collection

The data was collected from Tanta International Teaching Hospital by the researcher After obtaining official permission from responsible authorities. Tool I and III were presented to a jury of 9 experts in the area of specialty to check content validity, it was 98.4% for tool (I) and 95.4% for tool (III). A pilot study was carried out on a sample of (10%) 4 head nurses, and 25 staff nurses, they excluded from the main study sample during the actual collection of data. The reliability of tools was tested by using Cronbach Alpha Coefficient test, it 95.4 % for tool (I) and (III).

Head nurses' meaningful recognition process observation checklist was done by the researcher pre, post and three-month post implementation of the program. The researcher observed each head nurse at a time during the day shift. Head nurses' knowledge about meaningful recognition was assessed by tool (II) pre, post and three-month post implementation of the program. The researcher met staff nurses individually during their work shifts to distribute tool (III) pre, post implementation of meaningful recognition program. The staff nurses recorded their answers in the presence of the researcher.

Duration of data collection lasted 11 months beginning from march 2018 until January 2019. The assessment phase (pretest) initiated from march 2018 and followed by period of preparation of the program. Implementation of the program and posttest beginning from October 2018 and finished in the end of the same month. Follow up phase within 3months beginning from November 2018 till the first week of February 2019

Construction of educational program

The main objective of the program was to improve head nurses' knowledge and

practice regarding meaningful recognition. After determining objectives of program, the content was specially designed, methods of teaching and evaluation were identified. The content designed to provide knowledge and skills related to meaningful recognition. The program contents were divided into six sessions encompass**;** overview on meaningful recognition process, privet verbal feedback, public acknowledgement, written acknowledgement, opportunity for growth and development, and compensation.

Teaching-learning strategies and aids

Selection of teaching methods were governed by the subjects themselves and content of the program. The methods used were lecture, group discussion, case study, example from life and work situations. The teaching aids used in the program were data show, flow sheet, handouts, pen and papers

Implementation of program

The study was carried on (35) head nurses. Head nurses were divided into 6 groups. The program time was 12 hours for each group. One session every day for 6 days, every session was 2 hours. They preferred to start the session after finishing necessary work. The program theoretical sessions were held in the conference room and head nurses room at Tanta International Teaching Hospital.

Evaluation of the educational program:

Evaluation of head nurses preprogram was done in the form of pretest administered to them. At the end of the program, a post test was carried out for only 35 head nurses. Evaluation of head nurses after three-months post program was done using tools (I, II) used in pre and posttest in order to determine the knowledge retention and practice of head nurses from educational program.

Ethical consideration

The aim of the study was explained to head nurses to gain their cooperation, verbal consent for their participation in the study was obtained and they had the right to withdraw. They were informed about the confidentiality of their information.

Results

Table (1): Represents the distribution of the head nurses according to their characteristics. It was observed that, more than forty (45.7%) of head nurses aged 40 years with mean 42.31 ± 6.21, high percent (62.9%) of them have years of experience ranged from 15 to 25 years of experience with mean 20.31 ± 6.21. The majority (80.0%) of them were married. In relation

to, department, more than forty (45.3%) of head nurses working in general units, less than forty (37.1%) of them working in special units, while few percent (8.6%) of them working in other department. Regarding level of education more than seventy

Figure (1) describes the overall levels of head nurses' practice of meaningful recognition process pre , post and 3 months post educational program. It was observed that, the overall levels of head nurses' practice of meaningful recognition process were improved significantly at P ≤0.05 post educational program and at 3 month post educational program than pre educational program. Majority (91.4%) of head nurses had unsatisfactory practice level regarding meaningful recognition process at pre educational program decreased to low percent (14.3%) post educational program and reached 42.9% at 3 months post educational program.

Table (2): Represents difference of the head nurses' practice level of meaningful recognition process at pre, post, and at 3 months post educational program. It was observed that levels of head nurses' practice of private verbal feedback, public acknowledgment, written acknowledgment, opportunity for growth and participation, and compensation subscales of meaningful recognition process were improved significantly post and at 3 month post educational program than pre educational program at $p \leq 0.001$. Regarding private verbal feedback subscale of meaningful recognition process. At pre educational program the majority (94.3%, 91.4%, 88.6%, and 77.1%) of head nurses had unsatisfactory level of practice of written acknowledgment, opportunity for growth and participation, public acknowledgment and compensation subscales of meaningful recognition process respectively, which decreased to 20%, 25.7%, 20%, and 8.6% post educational program and reached to 31.4%, 34.3%, 25.7%, and 28.6% at 3 months post educational program , at pre educational program more than sixty (65.7%) of head nurses had unsatisfactory level in the practice, decreased to 11.4% post educational program and reached to 37.1% at 3 month post educational program.

Figure (3): Shows mean percent of head nurses' meaningful recognition process knowledge pre, post and 3 month post educational program. As evidence in the figure, at pre educational program opportunities for growth and participation

subscales of head nurses 'meaningful recognition process knowledge had the lowest mean percent (42.86 %) followed by over view of meaningful recognition process (34.63 %), compensation (34.69%)public acknowledgement (33.71%), then private verbal feedback (30.42 %) and written acknowledgement had the lowest mean percent (23.57 %) respectively.

While, post educational program, opportunities for growth and participation and compensation subscales of head nurses 'meaningful recognition process knowledge had the highest mean percent (91.90 % and 91.02%) followed by over view of meaningful recognition process and private verbal feedback (86.90%) and 88.07), then public acknowledgement (85.43%) and written acknowledgement had the last mean percent (84.52%) respectively. At 3 months post educational program,opportunities for growth and participation subscales of head nurses 'meaningful recognition process knowledge had the highest mean percent (87.14%) followed by compensation (85.71%) private verbal feedback (82.69 %), over view of meaningful recognition process (81.95%), then public acknowledgement (80.86%) and written acknowledgement had the lowest mean percent the lowest mean percent (78.33%) respectively.

Table (3): Demonstrates the distribution of staff nurses' according to their demographic characteristics. It was observed that the majority (78.0%) of staff nurses were female and married have 25 – 30 years old, working at general department, have 5- 10 years of experience and most of them 42.0% /have Institute of Technical level of education.

Figure (4): Shows distribution of staff nurses according to their overall satisfaction level of head nurses' practice of meaningful recognition process at pre and post educational program. It was observed that at pre educational program, the majority (98.4%) of staff nurses had low level of satisfaction of head nurses' practice of meaningful recognition process, but decreased to few (7.2%) post educational program, with significant difference at $p \leq 0.05$

Table (4): Shows distribution of staff nurses according to their satisfaction level of head nurses' practice of meaningful recognition process at pre and post educational program. It was observed that at pre educational program, the majority ranged from 96.0% to 98.4%had low level

of satisfaction in overall and all subscales of head nurses' practice of meaningful recognition process, but decreased to few percent ranged from 5.6% to 19.2% post educational program, with significant difference between pre and post educational program at P = < 0.001.

Figure (5): Describes mean percent levels of staff nurses ' satisfaction regarding head nurses' practice for meaningful recognition process pre and post educational program. At pre educational program the low mean percent of staff nurses ' satisfaction regarding head nurses' practice for meaningful recognition process ranged from19.63% to 27.22% in all forms of meaningful recognition process with overall percent 23.45%. But post educational program low mean percent of staff nurses ' satisfaction regarding head nurses' practice for meaningful recognition process improved to be ranged from 62.43% to 56.57% in all forms of meaningful recognition process with overall percent 60.29%

Figure (6): Shows mean scores and mean percent of head nurses' practice of meaningful recognition process pre, post and 3 month post educational program. As shown in the table, there were significant improvements in overall mean score and mean percent of head nurses' practice of meaningful recognition process and its subscales at P≤ 0.05 post educational program and at 3 month post educational program than pre educational program.

As evidence in the table at pre educational program the lowest mean percent (42.45%) of head nurses' practice of meaningful recognition process was given to compensation subscale, followed by private verbal feedback subscale (41.80%), public acknowledgement subscale (30.77%), and opportunities for growth and participation subscale 27.36% respectively. While the lowest mean percent (18.10%) of head nurses' practice of meaningful recognition process was given to written acknowledgement subscale.

While at post educational program the first mean percent (79.05%) of head nurses practice of meaningful recognition process was given to written acknowledgement subscale, followed by private verbal feedback subscale, (74.14%), compensation subscale (73.67%), and then public acknowledgement subscale (67.47%), and but the last mean percent (67.14%) of head nurses practice of meaningful recognition process was given

to opportunities for growth and participation subscale, respectively.

But at 3 months post educational program the highest mean percent (62.86%) of head nurses' practice of meaningful recognition process was given to compensation subscale, followed by written acknowledgement subscale (59.76 %),opportunities for growth and participation subscale (57. 47 %), and public acknowledgement subscale (57.14%), respectively. At the lowest mean percent (56.69%) of head nurses' practice of meaningful recognition process was given to private verbal feedback subscale.

Figure (7): Represents the difference of head nurses' total level, mean score and mean percent of meaningful recognition process knowledge pre, post, and 3 months post educational program. It was observed that high percent (77.1%) of head nurses had poor level of meaningful recognition knowledge at pre educational program, while at post educational program majority (88.6%) of them had good level of meaningful recognition knowledge and 3 months post educational program. majority (82.9%) of head nurses had good level of knowledge with significant difference between pre, post and 3 months post educational program at p= <0.001.

Table (6): Demonstrates correlation between head nurse ' knowledge &practice of meaningful recognition process at post educational program. Statistical significant positive correlation was found between head nurses' overall knowledge of meaningful recognition process, its items and their overall practice of meaningful recognition process and its subscales at P < 0.05

Table (7): Represents correlation between head nurses' practice of meaningful recognition process and staff nurses' satisfaction of meaningful recognition process at post educational program. It was found that, there were significant correlation between head nurses' overall practice of meaningful recognition process and its overall subscale with their staff nurses' overall satisfaction of head nurses' practice of meaningful recognition process and its overall subscale at p≤ 0.05. Private verbal feedback and compensation subscale of head nurses' practice of meaningful recognition process had significant positive correlation with all subscale of staff nurses' satisfaction of head nurses practice of meaningful recognition process at p ≤ 0.05.

Table (8): Demonstrates correlation between head nurses' knowledge of

meaningful recognition process and staff nurses' satisfaction of head nurses' knowledge of meaningful recognition process at post educational program. Overall knowledge of head nurses' meaningful recognition process and its items had significant correlation with overall staff nurses' satisfaction and its items of meaningful recognition process except overall written acknowledgment of head nurses showed no significant correlation and also with all subscales of staff nurses satisfaction at $p \leq 0.05$.

Table (1): Distribution of head nurses according to their characteristics (n=35)

Head nurses' characteristics	No.	%
Age (years)		
<40	16	45.7
40- 50	13	37.1
≥ 50	6	17.1
Min. – Max.	35.0 – 55.0	
Mean ± SD.	42.31 ± 6.21	
Marital status		
Single	2	5.7
Married	28	80.0
Divorced	1	2.9
Widow	4	11.4
Years of experience (years)		
<15	6	17.1
15-25	22	62.9
≥ 25	7	20.0
Min. – Max.	13.0 – 33.0	
Mean ± SD.	20.31 ± 6.21	
Educational level		
Baccalaureate degree in nursing	26	74.3
Master degree in nursing	2	5.7
Doctorial degree in nursing	1	2.9
Diploma in nursing	6	17.1
Department		
Special unit	13	37.1
General unit	19	45.3
Others	3	8.6

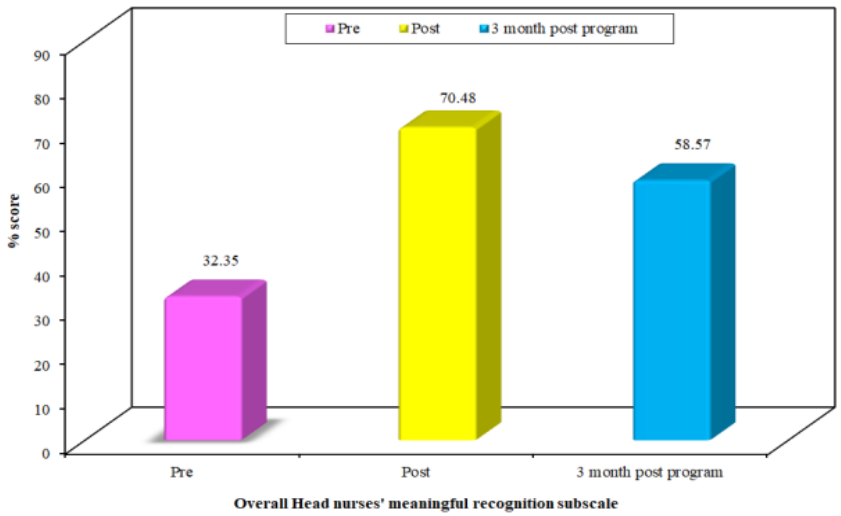

Fig. (2): Overall head nurses' practice of meaningful recognition subscale.

Table (2): Difference of head nurses' practice levels of meaningful recognition process at pre, post, and at 3 months post educational program(n = 35)

Meaningful recognition subscale	Pre				Post				3 month post				Post Hoc Test (Dunn's)		
	Satisfactory		Un satisfactory		Satisfactory		Un satisfactory		Satisfactory		Un satisfactory				
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	p_1	p_2	p_3
Private verbal feedback	12	34.3	23	65.7	31	88.6	4	11.4	22	62.9	13	37.1	0.001*	0.073	0.107
Public acknowledgement	4	11.4	31	88.6	28	80.0	7	20.0	26	74.3	9	25.7	<0.001*	<0.001*	0.720
Written acknowledgement	2	5.7	33	94.3	28	80.0	7	20.0	24	68.6	11	31.4	<0.001*	<0.001*	0.473
Opportunities for growth and participation	3	8.6	32	91.4	26	74.3	9	25.7	23	65.7	12	34.3	<0.001*	<0.001*	0.591
Compensation	8	22.9	27	77.1	32	91.4	3	8.6	25	71.4	10	28.6	<0.001*	0.002*	0.209

*: Statistically significant at $p \leq 0.001$

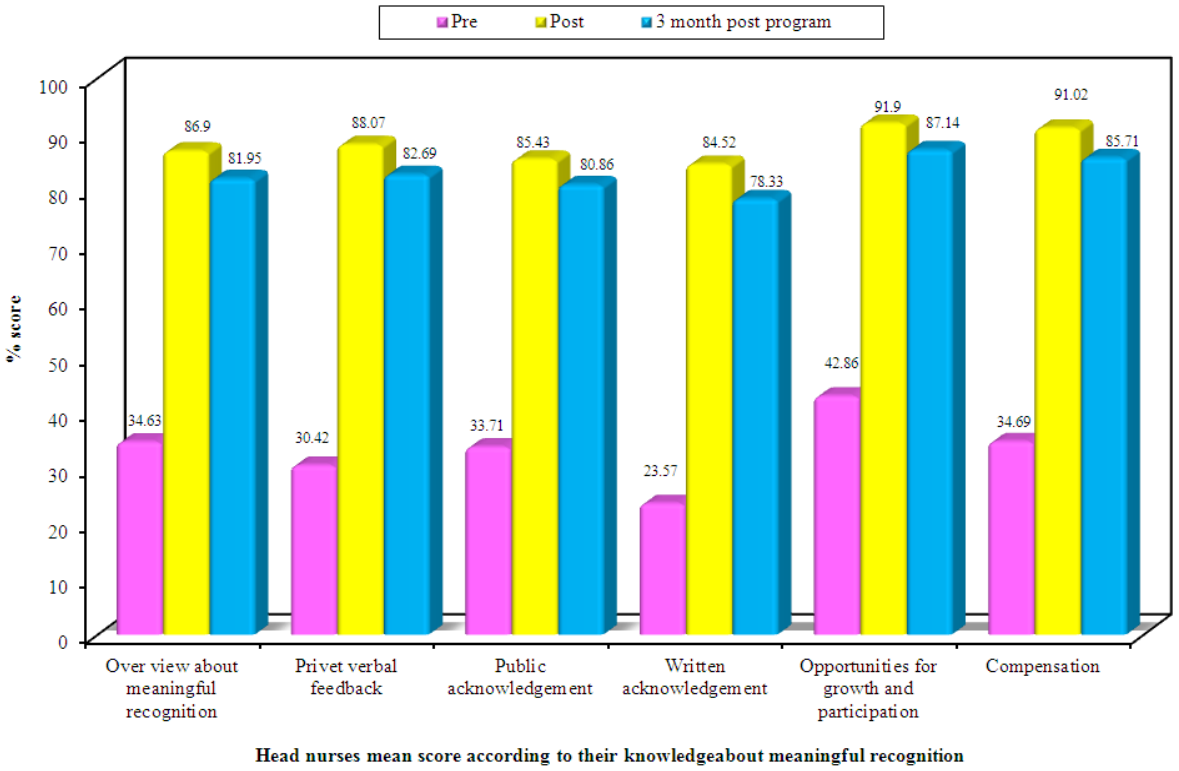

Figure (3):Mean percent of head nurses' meaningful recognition process knowledge pre, post and 3 month post educational program (n = 35)

Table (3): Distribution of staff nurses' according to their demographic characteristic (n=250)

Staff nurses characteristics	No.	%
Age (years)		
<25	**102**	**40.8**
25 – 30	**121**	**48.4**
≥ 35	**27**	**10.8**
Min. – Max.	**23.0 – 39.0**	
Mean ± SD.	**26.42 ± 4.09**	
Gender		
Male	**55**	**22.0**
Female	**195**	**78.0**
Marital status		
Single	**54**	**21.6**
Married	**196**	**78.4**
Years of experience (years)		
<5	**107**	**42.8**
5 – 10	**117**	**46.8**
≥ 10	**26**	**10.4**
Min. – Max.	**2.0 – 18.0**	
Mean ± SD.	**5.39 ± 3.21**	
Educational level		
Baccalaureate Degree in Nursing	**58**	**23.2**
Institute of technical in nursing	**105**	**42.0**
Associate Degree in Nursing	**87**	**34.8**
Department		
General department	**76**	**30.4**
Special department	**174**	**69.6**

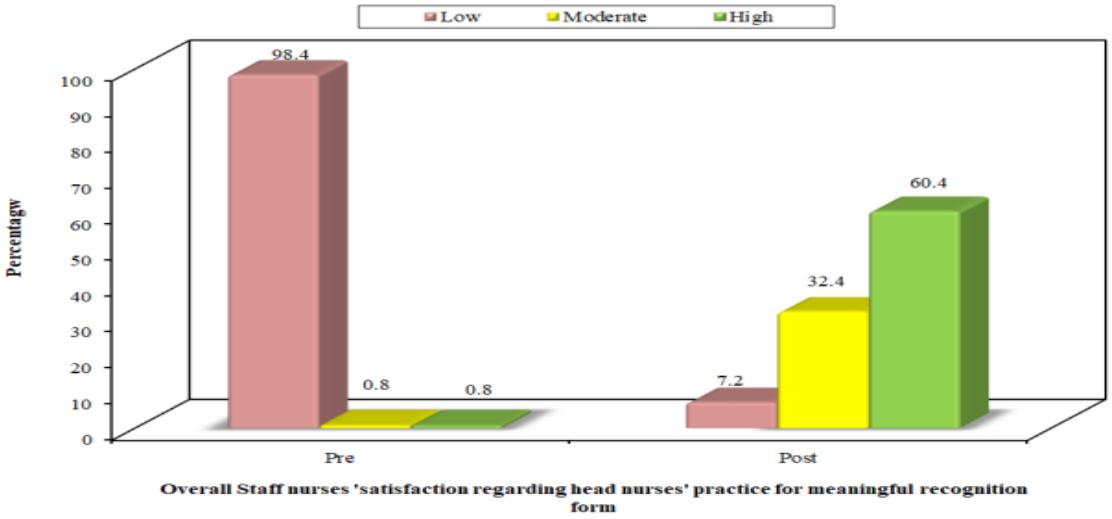

Figure (4): Distribution of staff nurses according to their overall satisfaction level of head nurses' practice of meaningful recognition process at pre and post educational intervention

Table (4): Distribution of staff nurses according to their satisfaction level of head nurses' practice of meaningful recognition process at pre and post educational intervention(n=250)

Head nurses' practice of meaningful recognition process	Pre						Post						p
	Low		Moderate		High		Low		Moderate		High		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Private verbal feedback	244	97.6	4	1.6	2	0.8	20	8.0	58	23.2	172	68.8	<0.001*
Public acknowledgement	240	96.0	8	3.2	2	0.8	22	8.8	68	27.2	160	64.0	<0.001*
Written acknowledgement	244	97.6	4	1.6	2	0.8	37	14.8	60	24.0	153	61.2	<0.001*
Opportunities for growth and participation	246	98.4	2	0.8	2	0.8	14	5.6	88	35.2	148	59.2	<0.001*
Compensation	242	96.8	4	1.6	4	1.6	48	19.2	78	31.2	124	49.6	<0.001*

*: Statistically significant at $p \leq 0.05$

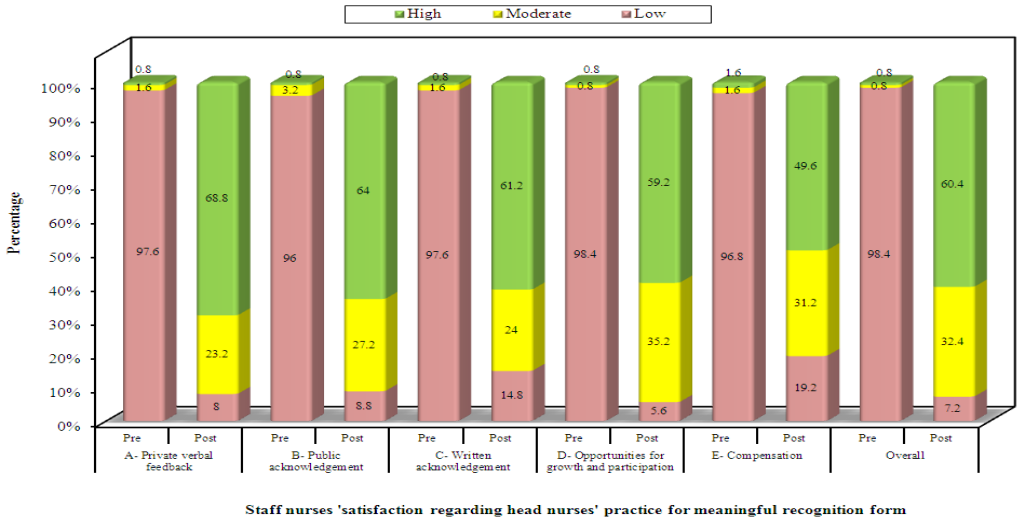

Figure (5): Mean percent levels of staff nurses ' satisfaction regarding head nurses' practice for meaningful recognition process pre and post educational program (n=250).

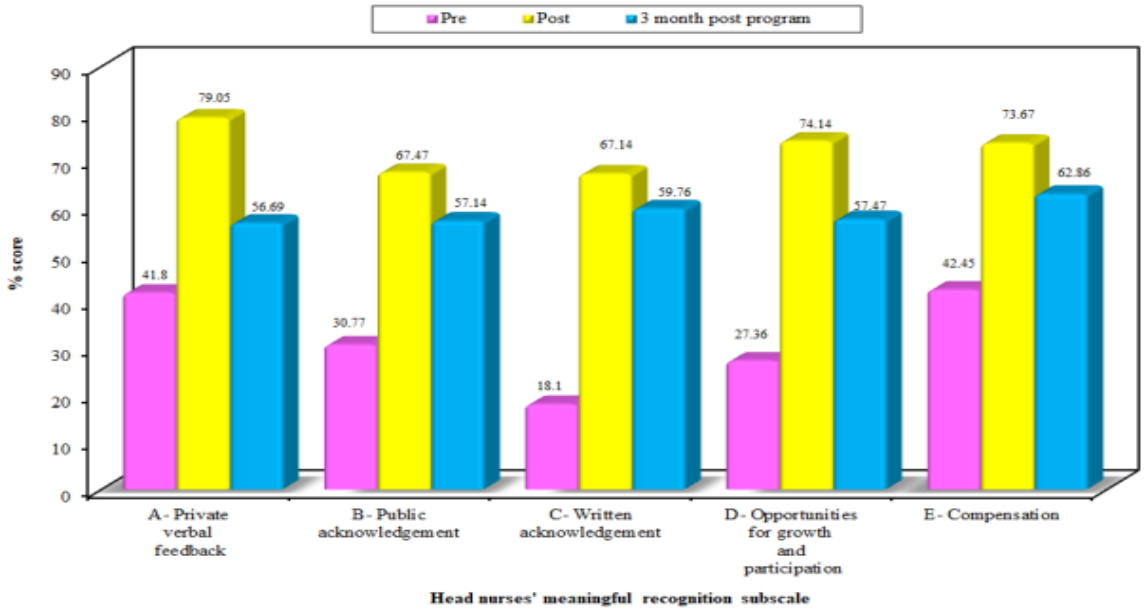

Figure (6): Mean percent of head nurses' practice of meaningful recognition process pre, post and 3 month post educational program (n = 35)

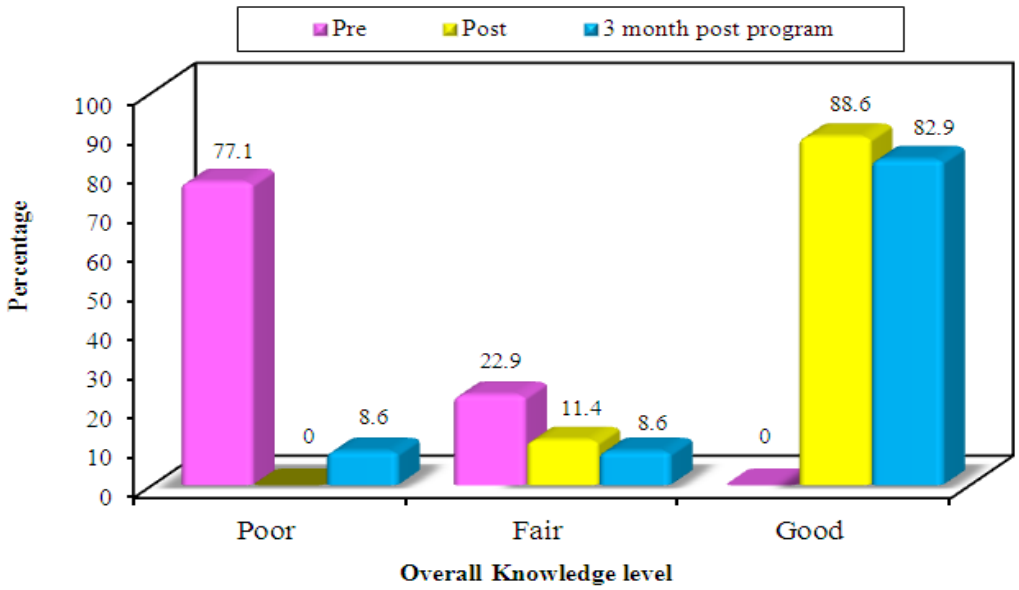

Figure (7): displays the difference of head nurses total level about meaningful recognition process knowledge pre, post, and 3 months post educational program.

Table (5): Distribution of head nurses according to their level of meaningful recognition process knowledge at pre, post, and at 3 months post educational program (n = 35)

Head nurses' meaningful recognition process knowledge.	Pre						Post						3 months post program						$p_{1,2}$ && p_3
	Poor		Fair		Good		Poor		Fair		Good		Poor		Fair		Good		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
over view about meaningful recognition	27	77.1	7	20.0	1	2.9	0	0.0	5	14.3	30	85.7	3	8.6	6	17.1	26	74.3	<0.001* 0.310
Privet verbal feedback	29	82.9	6	17.1	0	0.0	0	0.0	2	5.7	33	94.3	3	8.6	5	14.3	27	77.1	<0.001* 0.310
Public acknowledgement	32	91.4	3	8.6	0	0.0	0	0.0	7	20.0	28	80.0	4	11.4	6	17.1	25	71.4	<0.001* 0.339
Written acknowledgement	33	94.3	2	5.7	0	0.0	3	8.6	7	20.0	25	71.4	5	14.3	4	11.4	26	74.3	<0.001* 0.811
opportunities for growth and participation	24	68.6	11	31.4	0	0.0	0	0.0	1	2.9	34	97.1	3	8.6	1	2.9	31	88.6	<0.001* 0.591
Compensation	23	65.7	9	25.7	3	8.6	0	0.0	6	17.1	29	82.9	4	11.4	5	14.3	26	74.3	<0.001* 0.209

*: Statistically significant at $p \leq 0.05$

Table (6): Correlation between head nurse ' knowledge &practice of meaningful recognition process at post program (n = 35)

Head nurses' knowledge of meaningful recognition process		Head nurses' practice of meaningful recognition process					
		Private verbal feedback	Public acknowledgement	Written acknowledgement	Opportunities for growth and participation	Compensation	Overall
Over view about meaningful recognition	r	0.760*	0.687*	0.461*	0.675*	0.821*	0.772*
	p	<0.001*	<0.001*	0.005*	<0.001*	<0.001*	<0.001*
Privet verbal feedback	r	0.650*	0.504*	0.259	0.489*	0.689*	0.596*
	p	<0.001*	0.002*	0.133	0.003*	<0.001*	<0.001*
Public acknowledgement	r	0.368*	0.390*	0.257	0.406*	0.331	0.403*
	p	0.029*	0.021*	0.136	0.015*	0.052	0.016*
Written acknowledgement	r	0.835*	0.699*	0.489*	0.691*	0.859*	0.812*
	p	<0.001*	<0.001*	0.003*	<0.001*	<0.001*	<0.001*
opportunities for growth and participation	r	0.603*	0.527*	0.265	0.480*	0.587*	0.566*
	p	<0.001*	0.001*	0.123	0.003*	<0.001*	<0.001*
Compensation	r	0.749*	0.588*	0.363*	0.613*	0.691*	0.695*
	p	<0.001*	<0.001*	0.032*	<0.001*	<0.001*	<0.001*
Overall	r	0.790*	0.682*	0.428*	0.670*	0.816*	0.773*
	p	<0.001*	<0.001*	0.010*	<0.001*	<0.001*	<0.001*

*: Statistically significant at $p \leq 0.05$

Table (7): Correlation between head nurses' practice of meaningful recognition process and staff nurses' satisfaction of meaningful recognition process at post educational program.

Head nurses' practice of meaningful recognition		Staff nurses' satisfaction of meaningful recognition process					
		Private verbal feedback	Public acknowledgement	Written acknowledgement	Opportunities for growth and participation	Compensation	Overall
Private verbal feedback	r	0.206*	0.238*	0.132*	0.174*	0.343*	0.147*
	p	0.001*	<0.001*	0.036*	0.006*	0.044*	0.020*
Public acknowledgement	r	0.114	0.151*	0.028	0.091	-0.074	0.207*
	p	0.073	0.017*	0.663	0.151	0.244	0.001*
Written acknowledgement	r	-0.211*	-0.265*	-0.133*	-0.108	-0.065	-0.139*
	p	0.001*	<0.001*	0.036*	0.090	0.305	0.028*
Opportunities for growth and participation	r	0.079	0.132*	0.097	0.086	0.282*	-0.139*
	p	0.215	0.038*	0.125	0.174	<0.001*	0.028*
Compensation	r	0.207*	0.298*	0.268*	0.205*	0.198*	0.257*
	p	0.001*	<0.001*	<0.001*	0.001*	0.002*	<0.001*
Overall	r	0.231*	0.129*	0.163*	0.146*	0.164*	0.185*
	p	<0.001*	0.041*	0.010*	0.021*	0.009*	0.003*

*: Statistically significant at $p \leq 0.05$

Table (8): Correlation between head nurse's knowledge of meaningful recognition process and staff nurses' satisfaction of head nurse's knowledge of meaningful recognition process at post educational program.

Head nurses' knowledge meaningful recognition process		Staff nurses' satisfaction regarding meaningful recognition process					
		Private verbal feedback	Public acknowledgement	Written acknowledgement	Opportunities for growth and participation	Compensation	Overall
over view of meaningful recognition	r	0.369*	0.368*	0.445*	0.298	0.424*	0.416*
	p	0.029*	0.030*	0.007*	0.082	0.011*	0.013*
Privet verbal feedback	r	0.406*	0.358*	0.313	0.478*	0.267	0.343*
	p	0.015*	0.035*	0.067	0.004*	0.121	0.044*
Public acknowledgement	r	0.318	0.395*	0.438*	0.381*	0.265	0.318
	p	0.063	0.019*	0.009*	0.024*	0.125	0.063
Written acknowledgement	r	0.185	0.252	0.320	0.256	0.246	0.265
	p	0.288	0.144	0.061	0.137	0.154	0.124
opportunities for growth and participation	r	-0.101	-0.078	0.182	0.154	0.155	0.421*
	p	0.563	0.657	0.294	0.377	0.374	0.012*
Compensation	r	0.379*	0.373*	0.376*	0.267	0.188	0.398*
	p	0.025*	0.027*	0.026*	0.120	0.278	0.018*
Overall	r	0.385*	0.406*	0.488*	0.409*	0.398*	0.435*
	p	0.022*	0.015*	0.003*	0.015*	0.018*	0.009*

*: Statistically significant at $p \leq 0.05$

Discussion

At pre educational intervention, the results of the present study showed that the majority of head nurses had total unsatisfactory level of meaningful recognition practice with low mean percent. This is due to the majority of them had poor level of total knowledge about meaningful recognition and overview item with low mean percent. In addition, this result may be attributed to head nurses not believed in giving recognition to staff nurses as a result of fear of losing control, resistance apply democratic relationships, lack of time, and lack of knowledge and skill regarding implementation of meaningful recognition Brun & Dugas (2002). [19] So, the majority of staff nurses had low total satisfaction level regarding head nurses' meaningful recognition practice.

In this regard, Cherian (2016) [20] reported that a lack of awareness about the concept of meaningful recognition and unavailability of best practices to provide meaningful recognition were the major reasons cited by staff nurses and nurse leaders for not providing meaningful recognition. In addition, limited resources, institutional policies and the size and diversity of the nursing workforce were also barriers to providing meaningful recognition.

This result reflects that head nurses are in need for education program to increase knowledge and skills for implementing meaningful recognition. El-demerdash (2006) [16] mentioned that nurse managers have to be sensitive to staff nurses' recognition needs she also, revealed that over fifty percent of staff nurses perceived their nursing managers' poor in offering sincere positive recognition for staff nurses. Saunderson (2004) [21] emphasized that leaders and managers require much more training and educational resources to become more effective recognition givers.

In this respect, Zakzouk (2019)[22] showed that high percent of staff nurses had low level of satisfaction about contingent rewards including appreciation, recognition and rewards for good work done. Elsayad (2016) [23]revealed that high percent of staff nurses experienced low level of satisfaction about contingent rewards including appreciation, recognition, and rewards for good work achieved. Also, Asegid et al (2014) [24]found that more than two fifths of study participants were dissatisfied with the level of recognition given to their work.

Abo-Gad& Elkazeh (2013) [25] found that the majority of emergency hospital nurse and high percent of community health nurse were dissatisfied of the contingent

rewards. Rouse and AL-maqbali (2014) [26]results revealed that many participants felt there was little to no appreciation for tasks that were well done. Psychological associates and DAISY Foundation (2009)reported that over seventy percent of nurses reported that they had received no recognition for the work they had done.[9]

On the other hand, Lizhang et al., (2019) [27] stated that high percent of nurses were satisfied with contingent praise/ recognition Elsaied (2019) [28] revealed that more than two thirds of head nurses compared to, high percent of nurses were reported moderate level of perception of recognition pattern as total. Degracia et al (2015) [29] revealed that most of the respondents are satisfied with contingent rewards (appreciation, recognition, and rewards for good work done). El-demerdash and Ghadery (2014) [17]as totally showed that more than seventy percent of nursing managers and more than fifty of their staff nurses had high perception of recognition patterns.

According to Psychological Associates and DAISY Foundation (2009)[9] head nurse use private verbal feedback, public acknowledgement, written acknowledgement, opportunities for growth and participation recognition and compensation pattern of meaningful recognition. Registered nurses preferred to be rewarded for performance through private verbal feedback, written recognition of performance, assistance toward professional goals and participation in unit planning and management activities El-demerdash and Ghadery (2014) [17]

The results of the present study at pre educational program; indicated that the majority of head nurses had unsatisfactory level of written acknowledgement. Because of high percent of them not practice all items of written acknowledgement. Also, high percent of head nurses had poor level of written acknowledgement knowledge.Because of high percent of head nurses giving wrong answer for all items of written acknowledgement subscale. This lead to majority of staff nurses had low level of satisfaction regarding head nurses' meaningful recognition practice of written acknowledgement.

This results means that head nurses not believed that quick handwritten note gives meaning to nurses' work, written acknowledgement by posting thank you letters from patients, families and others, sending thank you grams, and personal notes on birth day card are important sources for staff nurses to obtain recognition for their achievement.

In this regard, Larson & Hewitt (2012)[30] found that high percent of staff nurses did not receive written thanks from their supervisors. Nelson & Economy, (2003)[31] mentioned that almost eighty percent of staff nurses did not received written thanks from their supervisors. Maryanne and Coughlin (2000)[32] reported that written acknowledgement is the valued by nursing managers as others patterns. Cronin& Becherer (1999)[33] result indicates that nursing managers need to be aware about the importance of offering sincere positive recognition for their staff nurses team.

Ndetei et.al (2016) [34] mentioned that in their study where necessary non – verbal expression such as a smile and active listening will leave a more permanent mark on the feelings and emotions of the staff nursing being appreciated.

Pre educational program, the results of the present study displayed that the majority of head nurses had unsatisfactory level of opportunity for growth and participation practice of meaningful recognition. This may be due to high percent of them not practice all items of opportunity for growth and participation practice, the majority of head nurses had poor level of knowledge about opportunity for growth and participation practice of meaningful recognition, due to high percent of them giving wrong answer for all items of opportunities for growth and participation subscale of meaningful recognition process. As a result, head nurses do not provide staff nurses with opportunities for personal and professional growth. They did not assign staff nurses' new roles beyond their responsibilities, not encourages feeling of achievement or increases motivation to further expand staff nurses' skill mixes. In addition, this result may be related to that head nurses did not believe that their responsibility to provide opportunities to participate on committees, task forces, and interdepartmental work groups and they value opportunities for growth staff nurses and advancement in their positions. Those head nurses do not provide education or training opportunities that expand staff nurses' knowledge and skills.

As well as they did not offer staff nurses chance for participation in committees within or outside their work unit that develop and increase their sense of growth. Accordingly, majority of staff nurses had low level satisfaction regarding head nurses' practice of opportunity for growth and participation meaningful recognition with low mean percent.

According to Fuhrmann (2016)[35]who showed that nurses identify recognition and acknowledgement as fundamental to nurses'

week, opportunities for growth were considered the most meaningful types of recognition. Kurzen (2001) [36] mentioned that head nurses must have knowledge and skills needed to meet needs of staff nurses. Pre educational intervention results reflected that head nurses are in need for meaningful recognition educational intervention, to improve their related basic knowledge about it. Roberts (2005)[37] revealed that nurses clearly value educational opportunities; more than sixty percent of nurses consider unit based education and 2-hour education opportunities of high value.

Cherry & Jocob (2002) [38]emphasize that nursing managers must provide opportunities for growth and development, and provide multiple rewards for expertise and opportunities for clinical advancement. Rowland & Rowland (1997) [39] reported that registered nurses preferred to be appreciated for performance through assistance toward professional goals and participation in unit planning and management tasks

Pre educational program, the results of the present study displayed that the majority of head nurses had unsatisfactory level of public acknowledgment practice of meaningful recognition with low mean percent. Because of high percent of them not practice all items of Because of high percent of them not practice all items of public acknowledgment participation. This is due to majority of head nurses had poor level of public acknowledgment knowledge with low mean percent. Because of high percent of them giving wrong answer for all items of public acknowledgmentof meaningful recognition process. This means that head nurses unaware of public recognition is an important part of the reward as the performance of the individual affects more than just one staff nurses. So, the majority of staff nurses had low level satisfaction regarding head nurses' practice of public acknowledgmentof meaningful recognition process.

In this regard, Winters& Brooks (2010) [40] revealed that staff nurses value positive public acknowledgement over trinkets, food or certificates. El-demerdash (2006) [16] mentioned that staff nurses responded positively to public recognition, peer reinforcement and senior management appreciation. Cherry & Jocob (2002) [38] stressed that nursing managers coach counsel, correct subordinates in private and praise them in public. Knox and Gregg (1994) [41] noted that nursing managers who provide public acknowledgement and encouraging a climate of positive

reinforcement among members create supportive environment.

Pre educational program, the results of the present study displayed that the high percent of head nurses had unsatisfactory level of practice of compensation subscale of meaningful recognition process with low mean percent. Because of high percent of them not practice all items of compensation practice of meaningful recognition. This is due to majority of head nurses had poor level of compensation knowledge with low mean percent, due to high percent of them giving wrong answer for all items of compensation knowledge. This result indicates that head nurses not believed in their responsibility to provide staff nurses special compassionate leave and time, or flexible roster for a particular living needs or family events.

So, El-demerdash and Ghadery (2014) [17] mentioned that nurse manager must be vigilant and persistent when implementing and maintaining appropriate compensation, recognition and reward program. Mamikhani (2014) [42] reported that nursing managers gave less importance while clinical nurse gave more importance to compensation. In this respect, Mwangi (2014) [43]found that many of the respondents were not very aware with the methods used to determine employee compensation at Chloride Exide and they lacked some of the key information of compensation determination. Nyakundi et al (2012) [44] mentioned that relevant studies indicate that the most common problem in most organizations currently is the lack of inclusion of recognition as a component of compensation.

Pre educational program, the results of the present study displayed that more than sixty of head nurses had unsatisfactory level of private verbal feedback practice of meaningful recognition process with low mean percent. Because of high percent of them not practice all items of private verbal feedback. This is due to majority of head nurses had poor level of private verbal feedback knowledge with low mean percent. Because of high percent of them giving wrong answers of all items of private verbal feedback. This means that head nurses not believed in their responsibility to open a feedback channel to staff nurses as private verbal feedback pattern is important source for staff nurses to obtain recognition for their performance. Thus, majority of staff nurses had low level satisfaction regarding head nurses' meaningful recognition practice of private verbal feedback.

This result reflects that head nurses many times do not conscientiously look for good work and not praise it at the time of

achievement. Most probably they also do not seek opportunities to recognize staff nurses team. Those head nurses need to learn how to create ways to thank or praise in social occasions. Nelson & Economy, (2003) [45] mentioned that almost sixty of employees had not received verbal thanks from their supervisors.

Similarly, Ibrahim (2019) [46]showed that the majority of the nurses perceived their leaders as low level of the leader organizing feedback dimension and majority of nurses sees their leaders as rarely give the feedback in the proper time. Wagner et al (2015) [47] found that poor personal feedback between nurse managers (operational managers) and professional nurses.

Larson & Hewitt (2012) [48] found that almost sixty of employees had not received verbal thanks from their supervisors. Radwan (2019)[49] revealed that more than half of nursing staff agree that they are given feedback about changes put into place based on event reported . Roberts(2005) [37]reported that forty to fifty percent of staff nurses said that private verbal feedback is the most common pattern of recognition they received and valued by nursing managers. Also Cherry & Jocob (2002) [38] stressed that nursing managers coach ,counsel ,correct subordinates in private and praise them in public.

Post educational program present study results revealed that significant improvement in head nurses' meaningful recognition practice and knowledge in written acknowledgment, opportunity for growth and participation, public acknowledgment and compensation and private verbal feedback and as totally. This is due to effect of well designed of meaningful recognition program attracted head nurses attention to recognize the importance of meaningful recognition patterns to their staff nurses and evoked their sense of responsibility toward building effective meaningful recognition daily in their units.

According to Suhariyanto et al (2017) [50] training, could help head nurses to upgrade their knowledge and abilities in meaningful recognition in accordance with nursing organizational needs . Furthermore, training could raise head nurses' awareness and change their knowledge from the state of not knowing to the state of knowing . Also, the training focuses on knowledge enhancement instead of balancing the focus on both improving the knowledge and improving psychomotor abilities. Training with active learning methods could effectively

improve both the knowledge and psychomotor abilities of head nurses in interpersonal relationships and meaningful recognition.

Price-Whelan et al., (2018) [51], Robbins (2006) [52] and Zakria (2001) [53] concluded that education program help head nurses in keeping up to date with new concepts, increasing knowledge and competence, modifying their attitudes and developing their abilities to deal with problems and work with others. So, staff nurses' satisfaction level of head nurses' meaningful recognition practice in total and in all subscales improved at post educational program.

Really the meaningful recognition process educational intervention maximized head nurses' meaningful recognition practice and knowledge in written acknowledgment, opportunity for growth and participation, public acknowledgment and compensation and private verbal feedback and as totally.This was because the educational intervention was planned and implemented according to their pre assessed needs. Additionally, Zakaria (2018) [54] mentioned that program provides head nurses with an opportunity to review their practices, get an objective insight into it and adjust their practices accordingly in the light of peers' opinions in an environment that may be is more comfortable than real life settings.

Furthermore, simplification of well presented information by suitable educational aids increased their interest and desire to acquire recognition knowledge and practice it. The availability of using combined method of teaching helped nursing managers to reach to adequate level of caring knowledge. Dorgham (2005) [55] indicated that using combined teaching methods will provide opportunities for all participants to learn according to their own style.

Concerning relation and correlation

So, result of present study revealed there was significant correlation between head nurses' practice and knowledge of meaningful recognition post educational intervention, with significant correlation of staff nurses' satisfaction regarding head nurses' practice and knowledge of meaningful recognition. This means that the improvement in level of knowledge leads to the improvement in level of practice of meaningful recognition post program as well as staff nurses' satisfaction.

This result was supported by El-demerdash et al., (2018) [56]whose found there were statistical significant correlations between head nurses' total knowledge on political

leadership and their political leadership skills pre than post program all political leadership skills subscales pre than post program. In this line Mohamed (2019) [57] demonstrates that head nurses' perception toward recognition pattern had no statistically significant correlation with nurses' perception toward recognition pattern used by their head nurses in all domains of recognition pattern. El-demerdash and Ghadery (2014) [17] demonstrated that, head nurses' perception toward recognition pattern had no statistically significant correlation with nurses' perception toward recognition pattern used by their head nurses in all domains of recognition pattern.

The result of present study revealed there was statistical significant positive relation between head nurses' characteristics and their levels of practice of meaningful recognition process pre ,post and 3 months post educational intervention .But, the result of Mohamed(2019) [57] found that head nurses characteristic had no statistical significant relation with overall and all domains of recognition pattern

The result of present study revealed that there was no statistical significant relation between levels of head nurses' knowledge for meaningful recognition process and their characteristics pre ,post and 3 months post educational intervention , except their age and educational level had significant relation with their levels of knowledge post and 3 months post , and pre educational intervention . This could be that the older head nurses were acquired sufficient experiences to offer sincere positive recognition for staff nurses and team, and praising and giving thanks for a job well done.

The results of the present study demonstrated that statistical significant positive relation was found between staff nurses' level of satisfaction regarding head nurses' practice for meaningful recognition and their characteristic pre and post educational intervention except their age had no relation at post educational intervention. This result is consistent with result of El-demerdash and Ghadery (2014) [17] who found that there was significant relationship between levels of staff nurses' recognition patterns and their characteristics. Cherian (2017) [20] found that females with 1-5 years of experience with specialty certification and intent to stay are most likely to have high perceived meaningful recognition. On the other side, the result of Mohamed (2019) [57] found highly statistical significant positive relation was found between staff nurses

age, years of experience and over all perception toward recognition pattern.

3months post educational intervention , the result of present study revealed that head nurses' practice and knowledge in written acknowledgment, opportunity for growth and participation, public acknowledgment and compensation and private verbal feedback and as total meaningful recognition slightly decreased than post program .This may related to time factor, the point that some theoretical knowledge that not utilized in regular practice is expected to be decreased, diminished or even lost with passage of time. This indicated the importance of continuous follow up and guidance after program implementation. Planning and implementing training program for head nurses and staff nurses to increase their knowledge and practice is very important as recommended by Shokier (2012) [58],and Ramadan (2015) [59]

Conclusion and Recommendations

Conclusion

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

Pre - educational program, the majority of head nurses at Tanta International Teaching Hospital had low level of knowledge about meaningful recognition process and its subscales. They also, had unsatisfactory level of practice in overall meaningful recognition process and its subscales. As a result, the majority of staff nurses low level of satisfaction in overall and in all subscales of head nurses' practice of meaningful recognition process. Immediately after educational program about meaningful recognition, a significant improvement in all head nurses' knowledge and practice of meaningful recognition process was observed. Consequently, staff nurses had high level of satisfaction in total and in all subscales of head nurses' practice of meaningful recognition process. But after three months, head nurses' knowledge and practice were slightly declined.

Recommendations

On light of the finding obtained from the present study the following were recommended

Top nursing management

1- Need to pay more attention to the vital role of meaningful recognition process as a valuable strategy for upgrading nurses' job satisfaction.
2- Need to develop policies and practices that foster meaningful recognition process among head nurses.
3- Create a suitable working environment for head nurses to exercise meaningful recognition process and its subscales

which will lead to many positive outcomes nurses' satisfaction

4- Conduct periodic formal and informal evaluation of head nurses' performance to identify areas of their strengths and weakness to be able to help them in updating their knowledge and skills of meaningful recognition process.

5- Prim importance head nurses' need to attend in-service education programs on meaningful recognition process pre promotion for head nurses position.

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