Tanta Scientific Nursing Journal

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Volume 10 Number. 1

May , 2016

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Effect of Peer Teaching Versus Traditional Teaching Method on Nursing Students' Performance Regarding Pediatric Cardio pulmonary Resuscitation

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Abstract

Background: Peer teaching has been used in education to address critical thinking, psychomotor skills, cognitive development, and academic gains. It can be an alternative to traditional instruction by a specialist that enables more students to be trained in CPR. As it is widely available, cost-effective, and culturally attuned. **Aim of the current study** is to determine the effectiveness of peer teaching on the performance of nursing students' regarding pediatric cardio pulmonary resuscitation. **A Quasi-experimental research design** was used to conduct the current study at the clinical Pediatric laboratory skills, Faculty of Nursing, Suez canal University. **Subjects:** All 92 nursing students enrolled in the 3rd year, were agreed to participate in the study. These were divided into two groups equally; study and control groups and was selected randomly. **Tools:** Four tools were used for data collection: A Structured Interviewing Questionnaire Schedule, Student's Clinical Evaluation checklist, Clinical Teaching Preference Questionnaire and Peer Teaching Experience Questionnaire. **Results:** The study findings indicate that, the knowledge and performance scores of the nursing students studying by peer teaching method will be significantly better than those studying by traditional teaching methods. The student in this group agreed on many benefits of the peer teaching both as teachers' and student. **Conclusion:** Based on the results of the present study, it was concluded that, our study findings add more support in favor of the peer teaching approach evidence by an obvious improvement in students' knowledge and performance scores. Moreover, The majority of students in this group feeling less anxious, comfortable, more self confident in teaching as well as improving their communication skills **Recommendation**: Adopt peer teaching method in undergraduate nursing curricula for teaching clinical skills to enhance students' acquisition of knowledge with better performance. Similar studies should replicate the current study with a larger sample size at several universities in order to provide stronger evidence for generalized the results.
Key words

Peer teaching, Pediatric cardio pulmonary resuscitation, Nursing student, performance, traditional teaching method.

Introduction:

Cardio pulmonary resuscitation(CPR) is an essential skill for the survival of children after cardiac arrest. It is a one of the important skills in Basic life support and associated with increased chances of survival rate.[1] With more student trained in cardio pulmonary resuscitation, more lives can potentially be saved; however, the high cost in terms of time, money, and opportunity of traditional training programs limits the number of student trained to perform cardio pulmonary resuscitation. Therefore, one effective educational approach to this situation is innovative teaching methods such as peer teaching that may be advantageous. At a time when there is pressure to train more nurses and minimize costs,[2] It can be utilized to pass information to large groups of students with less faculty member involvement. Furthmore, peer training in CPR by pairing of nursing students can provide CPR skills of equally good quality as that provided by professional training [3].

A peer is a student of the same age, group, academic level, or experience level. The term "peer" can also refer to student who have equivalent skills of different experiences [4]. Also, Peer teaching is described as a two-way reciprocal learning activity which includes sharing knowledge, ideas, and experiences in a way that has some benefits for both groups of peer and student [5]. Professional nurses must be able to exercise their multiple roles of care providers, managers, teachers, as well as lifelong learners and researchers [6]. To do so, they should be able to solve clinical problems through analysis, synthesis, critical thinking, and effective communication. Such skills are not expected to be provided through traditional teaching, but need an active learning process with peer teaching opportunities [7].

Peer teaching is based on Bandura's social learning theory, which postulates that individuals learn dramatically from observing the behaviors of the others [8]. In nursing schools, peer teaching is more used in laboratory settings where students alternatively play the roles of peer teachers and peer learners [9]. As peer-teachers, students are asked to design teaching plans that include specific, concrete objectives related to a skill or topic, and identify relevant resources, and then apply this to small groups of

students [10]. This prepares the nursing students for their future roles as educators, builds their self esteem, and enhances their psychomotor skills and their attitudes [11].

Neonatal and pediatric resuscitation are the standard of practice for all neonatal and pediatric nursing practitioners. It consists of artificial respiration, cardiac massage and medication. It decides the life of a neonate or a child who is at risk of survival from dependent to independent life [12]. Cardiac arrest described as a sudden cessation of cardiac activity, unless action is immediately taken. The lack of circulation leads to irreversible damage to the body's vital organs within minutes [13].

Peer teaching process is designed to benefit both the peer learner and peer teacher by reinforcing and increasing their knowledge and practical skills relating to the topic being taught, feeling more comfortable, less anxious, less isolated, and more confident as well as improving their communication skills. Also, Peer teaching has the potential to provide educational opportunities which may be unachievable by staff or might not be effectively utilized by staff given ever increasing constraints, such as larger class sizes and increased administration

duties [14]. In spite of these benefits, evidences indicate that in nursing education, there is less attention given to peer teaching over recent years [15]. Accordingly, this study conducted to assess the effectiveness of peer teaching on the nursing students' performance regarding pediatric cardio pulmonary resuscitation.

During the last 20 years, there have been different approaches to teaching nurse students CPR. Now, more effective student-centric learning methods are being utilized to encourage active student participation and creative thinking instead of traditional teaching method [16,17]. One of these methods is peer teaching that, could utilize resources more effectively with students teaching and supervising more students, thus decreasing the demand on the responsible faculty members [18].

Third year students attend a pediatric nursing course aimed at enabling them to apply pediatric cognitive and motor skills in clinical settings. The course has formal lectures (theory) and clinical sessions (practical). The practical part of pediatric nursing course focuses on learning students how to make cardio pulmonary resuscitation in the skills lab by assistant nursing staff to a group of up to 20

students, a situation that makes guidance and supervision of the practical performance of each student not feasible. To overcome this and at the same time to motivate students' active learning, the researchers started applying peer teaching methods. The situation provides a kind of natural experiment to compare peer teaching with the traditional clinical session method.

Aim of the Study:

To determine the effectiveness of peer teaching on the nursing students' performance regarding pediatric cardio pulmonary resuscitation.

Research Hypothesis:

The performance scores of the nursing students studying by peer teaching method was significantly improve more than those studying by traditional teaching method.

Subjects and Method:

Research Design:

A quasi-experimental design was used in the present study.

Setting:

The study was conducted at the clinical Pediatric laboratory skills for third year students' Faculty of Nursing, Suez canal University.

Sample:

All 92 nursing students enrolled in the 3rd year, were agreed to participate in the study. These were divided equally into two groups randomly. Group I (study group) consisted of 46 pediatric nursing students studying with peer teaching method and Group II (control group) included the other 47 pediatric nursing students studying with traditional teaching method and who were similarly assigned to the 3 skill labs in subgroups of around 15 students each. The students were allocated to either control or study group by using simple randomization method.

Tools of Data collection:

Four tools were used to collect data in this study.

Tool I : A Structured Interviewing Questionnaire Schedule : It was developed by the researchers after reviewing the related literature of **Parajulee and Selvaraj, (2011)** [19] to assess the students' knowledge regarding pediatric cardio pulmonary resuscitation . It comprised two main parts:

Part I: Personal characteristics of the studied students which included age, gender and residence.

Part II: Students' knowledge regarding pediatric cardio pulmonary resuscitation. It consisted of 20 true / false and multiple

choice questions covering the questions related to (definition of CPR, signs and symptoms of cardiac arrest, Component of Advanced cardiac life support, CPR mistakes, complication of CPR, and technique of CPR.............ect).

The scoring system consisted of giving a score of one for the correct answers and zero for the wrong answers. Total scores was range from 0-20.

Tool II : Student's Clinical Evaluation Checklist : It was adopted from **Wolters &Kluwer (2011)** [20] to evaluate the nursing student's performance toward applying steps of cardio pulmonary resuscitation taught in the practical part of the nursing pediatric course, and applied in the clinical setting. The tool consisted of 12 steps and covered the following items (Safe approach and position, Infant's responsiveness, Shout for help, Chin lift /head tilt, Look - listen and feel for up to 10 seconds, Clear the airway, Deliver rescue breath, Check brachial pulse, Continue respiration for one minute, Telephone for the team, Check brachial pulse, Commence chest compressions : Correct hand position - Correct compression rate - Correct ratio).

The score of total performance was 14 (each stage was allocated one point except for stage 12 (commence chest compressions), where three points were allocated due to the complexity of the procedure.). The point grade system of performance in the Faculty of Nursing, Suez canal University, was applied to the total score as follows: Fail (<60%), Pass (60 - <65%), Good (65 - <75%), Very good (75- <85%), and Excellent (>85%).

Tool III: Clinical Teaching Preference Questionnaire (CTPQ): It was adopted from **Iwasiw & Goldenberg, (1993)** [21] to assess nursing student's preference of peer teaching method. It consists of 10 statements (I can communicate more freely with my peers than with my instructor, I am less anxious when performing a nursing skill in the presence of my peers than in the presence of my instructor, and I am more self-confident examples of items) with a five-point Likert scale ranging from "strongly agree" to "strongly disagree." The responses were dichotomized into two categories: "strongly agree/agree" and "strongly disagree/disagree/uncertain".

Tool IV: Peer Teaching Experience Questionnaire (PTEQ): It was adopted from **Iwasiw & Goldenberg,(1993)** [21] to assess nursing student's experience gained from practice of peer teaching method. It consists of 14 statements (I now understand the principles underpinning

teaching and learning, I felt comfortable teaching the other students, Teaching is an important role for nurses, & I would be more confident teaching a clinical skill examples of items) with similar scoring as the Clinical Teaching Preference Questionnaire.

Validity and reliability of study tools:

Before data collection, face and content validity of the tools through rigorous review by a panel of experts in pediatric nursing department. The panel consisted of 5 Faculty members from the Faculties of Nursing at Zagazig and Ain shams universities. Modifications of the tools were done according to the expert's judgment on clarity of sentences, appropriateness of content and sequence of items. The experts' agreed on the content . Internal consistency reliability of all items of the tools were assessed using coefficient alpha. It was 0.79 for a structured interviewing questionnaire schedule, 0.84 for Student's Clinical Evaluation Checklist, 0.86 for Clinical Teaching Preference Questionnaire, and 0.87 for peer teaching experience questionnaire.

A pilot study was carried out with 10.0% of the total sample size (approximately 9 nursing students) over a period of one month (August, 2014). The purpose was to ascertain the feasibility of the study and the clarity and applicability of the tools. It also helped to estimate the time needed for filling out the forms. Based on the results of the pilot, no modifications were needed and pilot study subjects were excluded from the sample of the study.

Ethical Considerations: The researchers obtained the official permissions to conduct the study from the Dean of the Faculty Nursing, Suez canal University. An individual informed consent was obtained from each student after full explanation of the study objectives and procedures. Students were reassured that participation is totally voluntary, that refusals or withdrawals have no consequences, and that the information would be strictly confidential and does not affect the assessment of their academic achievement.

Field Work:

After allocation of the students to the study (peer teaching method) and control(traditional teaching method) groups, initial assessment of students' knowledge regarding pediatric cardio pulmonary resuscitation was carried out for both groups using tool I. Then, the researchers conducted a one-day workshop starting the teaching sessions. The attendants were the assistant teaching

staff assigned to the clinical sessions and the nursing students in the study group. It was for orientation the participants regarding peer teaching benefits, techniques and tutor role.

The researchers select the pediatric cardio pulmonary resuscitation skill that nursing students must learn in the clinical part of the nursing pediatric course. This content was similar in both study and control groups.

The study group (46) students were assigned to (three) skill labs in subgroups of around (15) students each. The subgroup in each lab was further subdivided into three small groups (one peer teacher& four students in each group) for implementation of the peer teaching process.

Each student was allowed to perform the steps of pediatric cardio pulmonary resuscitation on infant manikin in the Faculty skill lab of pediatric under the supervision of researchers. This was repeated until the student mastered this skill. The student then designed a teaching plan that includes specific objectives, and identified the resources relevant to peer teaching. The researchers prepared a schedule for the trained students to act as peer teachers for their

other colleagues regarding pediatric cardio pulmonary resuscitation.

The control group (46) students were sub grouped and distributed to 3 skill labs. These subgroups were trained by assistant teaching staff in traditional clinical sessions.

The clinical sessions started from 9 AM to 11 AM for the study group and from 11.30 AM to 1.30 PM for control group three day/week for 21days.

The evaluation of the effect of peer teaching was carried out through the use of the first and second tools and comparing its results among students in the study and control groups after the end of the clinical sessions. Additionally, the study group students' preference and experience regarding the peer teaching method was assessed using the third and fourth tools (CTPQ & PTEQ). The collection of data lasted two months starting from September to October 2014.

Data analysis:

The collected data revised, organized, tabulated and analyzed by using SPSS version 20. Numerical data was presented in tables by using Mean, Standard deviation .Qualitative variables were described as frequency and percentage and compared using Chi square test (X^2) as the test of significance. Independent (t)

test was used to compare mean score between two groups. A significant level value was considered when p-value ≤ 0.05 and a highly significant level value was considered when p-value ≤ 0.001, while p-value > 0.05 indicates non-significant results.

Results:

Table (1) shows the percentage distribution of the studied students according to personal characteristics. It was observed that more than two thirds of students (65.2%) in the control group were aged 20 to less than 21years old compared to 50.0% in the study group with a mean age 20.98±2.14 and 20.45±2.07 years in the control and study groups respectively. Regarding gender of students, majority of them were females 78.3% in the study group and 69.6% in the control group. The table also, illustrates that two thirds of students (60.9%) in the study group came from urban areas compared with 32.6% in the control group.

Table (2) shows the mean scores of students' total knowledge regarding cardio pulmonary resuscitation. It was observed that, the mean scores of students' total knowledge regarding cardio pulmonary resuscitation after-teaching were 11.6 ± 0.639 and 9.6 ±

0.814 in the study and control groups respectively with statistically significant difference (p-value <0.001). The table also reveals that, there was no significant difference in the mean scores of students' total knowledge regarding cardio pulmonary resuscitation in the study and control groups before-teaching (p-value >0.05).

Table (3) shows the mean scores of students' total performance regarding cardio pulmonary resuscitation. It was observed that, the mean scores of students' total performance regarding cardio pulmonary resuscitation after-teaching were 11.6 ± 0.639 and 9.6 ± 0.814 in the study and control groups respectively with statistically significant difference (p-value 0.001).

Table (4) Shows percentages of performance grades of nursing students in the study and control groups. It was revealed from the table that there was a statistically significant differences in the total performance grades between the students in the study and in the control groups (p<0.0001). Overall, the highest percentage of the study group (71.7 %) have excellent grade, compared to only 15.2 % of those in the control group

Concerning study group students' feedback regarding their preferences of the peer teaching method, Table **(5)** shows that more than two third 69.5% of them agreed upon the issues related to better acquisition of problem solving skills, increase sense of responsibility, more interactive and collaborative with others students, received honest feedback, more self confidence, less anxious, better communication and helping in general.

As for the study group students' opinion about the experiences gained from their practice of peer-teaching. **Table (6)** illustrates that the highest agreement is upon feeling more comfortable and confident in teaching a clinical skill for students (76.1% & 76.1%) respectively, followed by improving their ability to understand the principles underpinning teaching and learning as well as peer teaching experience was personally rewarding (73.9% & 73.9%) respectively. On the other hand, the majority 69.5% of the students believed that peer teaching experience was time and effort spent. However, only 10.9% & 8.7% of the students agreed that the teaching is an important role for nurses and that they have a professional responsibility to teach students and their peers respectively.

Table (1): Distribution of the Students According to their Personal Characteristics (N=92).

Personal Characteristics	Study group N=46		Control group N=46	
	No	%	No	%
Age in years				
20<	23	50.0	30	65.2
21<	20	43.8	10	21.7
22>	3	6.2	6	13.1
Mean ±SD	20.45±2.07		20.98±2.14	
Gender:				
Male	10	21.7	14	30.4
Female	36	78.3	32	69.6

R Residence				
Urban	28	60.9	15	32.6
Rural	18	39.1	31	67.4

Table (2) Total Mean Scores of Students' knowledge regarding Cardio-Pulmonary Resuscitation (N= 92).

Assessment time	Study group N=46	control group N=46	Independent t test	P value
	Mean ± SD	Mean ± SD		
Before- teaching	5.21±4.28	5.09±3.98	0.398	>0.05
After –teaching	11.6 ± 0.639	9.6 ± 0.814	4.495	<0.001**

Table (3) Total Mean Scores of Students' Performance regarding Cardio-Pulmonary Resuscitation (N= 92).

Assessment time	Study group N=46	control group N =46	Independent t test	P value
	Mean ± SD	Mean ± SD		
After –teaching	11.6 ± 0.639	9.6 ± 0.814	4.495	<0.001**

Table (4) Percentages of Performance Grades of Nursing Students in the Study and Control Groups (N= 92)

Performance grades	Study group (N= 46)		Control group (N= 46)		X2 Test	P-value
	No	%	No	%		
Poor	0	0.0	16	34.8		
Good	5	10.9	14	30.4	54.051	0.0001**
Very good	8	17.4	9	19.6		

Excellent	33	71.7	7	15.2		

Table (5): Agreement upon Peer teaching preferences among nursing students in the study group (No= 46)

Statement	Strongly agree/ agree	
	No	**%**
1-My ability to problem solving improves less from instructor teaching than from my peers	32	69.5
2-Being taught clinical skills by my instructor decreases my sense of responsibility more than being taught by my peers	32	69.5
3-I learn less from my instructor than my peers	31	67.4
4-I do not feel freer to approach my instructor for help than I do my peers	30	65.2
5-Being taught clinical skills by my peers increases my interaction and collaboration with other students more than being taught by my instructor	32	69.5
	32	69.5
6-The feedback I receive from my peers, is from a student's viewpoint, therefore, more honest, reliable, helpful than from my instructor	32	69.5
7-I am more self-confident and able to perform independently because of being taught by my peers, more than by my instructor	32	69.5
8-I am less anxious when performing a nursing skill in the presence of my peers than in the presence of my instructor	32	69.5
9-I can communicate more freely with my peers than with my instructor	28	60.9
10-My peers are more supportive to me when I am performing a nursing skill than my instructor.		

Table (6): Agreement upon the Experience Gained from Peer Teaching among Students in the Study Group (N=46)

Statement	Strongly agree/ agree	
	No	**%**
1- I felt uncomfortable assessing the other students' skills	28	60.9
2- The peer teaching experience was time and effort well spent	32	69.5
3- I now understand the principles underpinning teaching and learning	34	73.9
4- I have developed skills for teaching basic clinical skills	31	67.4
5- I felt comfortable teaching the other students	35	76.1
6- I was initially apprehensive about the peer teaching requirement in the clinical session	32	69.6
7- The peer teaching experience allowed me to reflect on my own previous learning	30	65.2
8- There should be more opportunities or peer teaching in the curriculum	32	69.6
9- I enjoyed working with the other students	31	67.4
10- The peer teaching experience was personally rewarding	34	73.9
11- Nurses have a professional responsibility to teach students and their peers	4	8.7
	7	15.2
12- What I have learnt in this experience will help with my graduate	35	76.1

	5	10.9
nurse role 13- I would be more confident teaching a clinical skill after this experience 14- Teaching is an important role for nurses		

Discussion:

Peer teaching has been used in education to address critical thinking, psychomotor skills, cognitive development, and academic gains [22]. It can be an alternative to traditional instruction by a specialist that enables more students to be trained in CPR . As it is widely available, cost-effective, and culturally attuned. Peer teaching has significant positive effects on educational achievement by offering relationships that provide encouragement and companionship. Thus, it is suitable for students and may enable them to reach a skill level in CPR similar to the level reached by those trained by healthcare providers [23].

The aim of the current research is to determine the effectiveness of peer teaching on performance of nursing students regarding pediatric cardio pulmonary resuscitation. This aim was achieved throughout the study findings and the research hypothesis was accepted.

Regarding personal characteristics data of the studied third year pediatric nursing students in relation to age, the present study revealed that the mean age of both groups were similar. This result is in agreement with the study of **Fujiwara etal., (2011)** [24] who conducted a study to compare peer-led versus professional-led training in basic life support for medical students and revealed that the mean age of the participants were similar between the study and control groups. Furthermore, the majority of students in the study and control groups were females. This might be due to the greater fraction of the nurses in Egypt was female and may also related to the studying of nursing in the Egyptian Universities was exclusive for females only till ten years ago.

The current study figured out that there was a significant increase in students' total knowledge about CPR after studying by peer teaching method. This may be due to the use of peer teaching method that contributed to an increase learning curve and acquisition of knowledge than would have occurred if students were studying with traditional method. The study result is consistent with **Burgess & Nestel, (2014)** [25] who postulated that peer teaching increased theoretical knowledge acquisition for learner. Again, **Stone, (2013)** [26] founded that, there was an

improvement in nursing students' knowledge after studying by peer teaching method. Contradicts with study from **Cho etal., (2015)** [27] who revealed that, there was no significant differences in knowledge about CPR of the two groups of nursing students exposed to peer and traditional teaching methods.

The findings of the current study indicate that there is an obvious improvement in performance scores among peer teaching group. Moreover, majority of nursing students in this group got a total "excellent" grade, compared to few ones in the control group. The findings go in line with a number of previous studies of **Graziano, (2011)** [28] **; Schauseil-Zipf etal., (2010)** [29] who founded that, the performance scores of students studying by peer teaching method were better than those studying by traditional method . On the same line, **Christiansen etal., (2011)** [30] found that, peer teaching was more effective educational tool than traditional methods in enhancing the practical skills of students and supporting each other.

Nevertheless, the success of peer teaching approach in the present study, is related to the process of the application of the intervention and the facilities provided for achieving its goals, , may be the clear explanations provided by the researchers

for students to foster their peer teaching abilities, in addition to training them in mastering the selected practical skill until they became competent before starting the sessions, and teaching them how to prepare for teaching session.

Our findings add more support in favor of the peer teaching approach and may be taken in consideration as an educational tool in pediatric cardio pulmonary resuscitation training for nursing students. This result is in agreement with **Cho etal., (2015)** [27] who showed that, peer teaching may be an effective method for training students to perform CPR . Similarly, **Williams etal., (2014)** [31] who concluded that, peer teaching could be a useful adjunct in clinical skills training. In contrary, previous study by **Hughes etal., (2010)** [32] failed to show the supremacy of peers teaching in CPR training compared with traditional approaches.

The findings of the present study indicates that, peer teaching enhanced social interaction and collaboration between peer and student. This may be because the peer teaching provide an opportunity to the student to explore ideas without fear of embarrassing themselves in front of their lecturer. This result came in line with **Williams etal., (2014)** [31] who revealed that, social interaction and collaboration

was increased in peer teaching group more than traditional teaching group. At the same line, **Cho etal., (2015)** [27] reported that, all student in peer teaching group were became social interactive with other students, more friendly, and learned collaboratively.

The most convincing finding from this study was that the students studying by peer teaching expressed their better acquisition of problem solving skills, sense of responsibility, better learning and helping in general. This may be because the student in peer teaching group gives a sense of autonomy when they accepted responsibility for their own education. These results are in congruence with the previously study by **Daley etal., (2008)** [33] who reported positive effects of peer teaching on students' abilities of problem solving.

Our findings indicate that the majority of nursing students who studying by peer teaching, were less anxious when performing lab skill, more communicative & and received honest feedback. This may be because the peer teaching help to create cooperative, relaxed learning environment and the student were more confident asking questions, openness to the ideas of others and voicing their opinions than they were previously. These results are in

accordance with the previously reported in other studies of **Harmer etal., (2011)** [34] ; **Mckenna & French,(2011)** [15]; **Rush etal., (2012)** [35] found that the majority of students studying by peer teaching expressed their less anxiety, improved communication skills and received honest feedback.

On the other hand, this finding disagreement with the previously study by **Brannagan etal., (2012)** [36] who reported that, students receiving peer tutoring were statistically more anxious about performing lab skills and some students found instructors' feedback more helpful than their peers.

The present findings demonstrated that, most of the students found the experience of peer teaching were comfortable and more self confident in teaching clinical skills, as well as understanding the principles underpinning teaching and learning. These result are in agreement with the previously studies of **Bensfield etal., (2008)** [37] ; **Weyrich etal., (2009)** [14] ; **Christiansen & Bell, (2010)** [38] reported that, nursing students in peer teaching group were more comfortable and confidence in teaching, as well as improving their ability to understand the principles of teaching and learning.

Nonetheless, majority of the peer teaching students expressed that peer teaching experience was time and effort spent. Subsequently, only a few of the students believe that the teaching is an important role for nurses and that they have a professional responsibility to teach students and their peers . This might be explained as this was the first time for students to act as teachers, and they might have had the feeling of having a responsibility that was beyond their capabilities. Added to this the student felt unprepared or unwilling to undertake this role. These result are contradicted with the previously study by **William etal., (2014)** [31] who significantly revealed that, majority of students in peer teaching group got a high mean score regarding teaching is an important role for nurses and recommended the importance of imbedding peer teaching into the curricula for recognizes and formalizes of teaching.

Conclusion:

Based on the results of the present study, it was concluded that, our study findings add more support in favor of the peer teaching approach evidence by an obvious improvement in students' knowledge and performance scores. Moreover, The majority of students in this group feeling less anxious, comfortable,

more self confident in teaching as well as improving their communication skills.

Recommendations:

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

1. Adopt peer teaching method in undergraduate nursing curricula for teaching clinical skills to enhance students' acquisition of knowledge with better performance.

3. Encourage assistant teaching staff to Consider peer teaching as useful adjunct in pediatric cardio pulmonary resuscitation training for nursing students that help in reducing their time, and effort.

4. Similar studies should replicate the current study with a larger sample size at several universities in order to provide stronger evidence.

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Evidence Based Nurses' Practice for Children Undergoing Abdominal Stoma Outcome

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Abstract Aim: This study aimed to evaluate evidence based nurses' practice for children undergoing abdominal stoma outcome. **Materials and Method**: A quasi-experimental design was utilized in this study, that was conducted in Pediatric Surgical Department of Tanta University Hospital. All available nurses (40 nurses) working in previously mentioned setting and a purposive sample of 40 children divided into two equal groups and admitted to pediatric surgical unit undergoing abdominal stoma operation were taken from the above mentioned setting**.** Structured questionnaire schedule to assess socio demographic data of nurses and children , Nurses' knowledge regarding to stoma care 2) Nurses performance checklist regarding stoma care , peristomal skin observation checklist to observe the quality of nursing care provided for children undergoing stoma operation and detect the extent and severity of stoma and peristomal skin complications**. Results** : most of the nurses had poor levels of knowledge and performance related to stoma operation before application of evidence based practice and their knowledge and performance improved immediately and post three months of evidence based practice Moreover ,conditions of stomas and peristomal skin improved after nurses practiced evidence based practice**. Conclusion :** On the light of the current study results, it can be concluded that educational and training program was effective regarding improvement of nurses' knowledge and performance**. Recommendations:** continuing periodically in-service training programs should be introduced to the nurses on regular basis by different methods and materials of teaching .
Keywords : evidence based practice , abdominal stomas , outcomes

Introduction

Stoma is surgically created opening that connects a portion of a body cavity to the external environment. Parts of the gastrointestinal tract (GIT) which could be involved in the creation of a stoma are the esophagus, stomach, duodenum, small bowel and colon. The visible portion of the ostomy is called a stoma. [1] The most common indications for stoma surgery are inflammatory bowel diseases (ulcerative colitis or Crohn's disease) and cancer that interfere with gastrointestinal or genitourinary tract infection . Children with congenital disorders such as hirschsprung's disease and spina bifida , imperforate anus, meconium ileus, necrotizing enterocolitis, and pseudo-membranous enterocolitis. In some cases , stoma bypasses trauma site to allow necessary time to heal. Stoma can be permanent, but in the majority , almost two thirds , of children who require a stoma do so on temporary basis . There are two peaks for formation of stoma in the neonatal period and the teenage years [2] .There are several types of stomas performed in the abdominal wall , some are temporary and the others are permanent . Stomas from the colon are named by the part of the colon in which stomas are constructed such as sigmoid ,

descending , and transverse , colon stomas are called colostomies . Stomas from small intestine are called jejunostoma , or ileostoma . Stoma performed to drainage of urine called urostomies , stoma performed to feed the patient through the stomach called gastrostomy [3] .In Egypt during a 5 year period from October 2000 through September 2005 , 38 infant admitted to pediatric surgical unit at Tanta university hospital with intermediate anorectal malformation to undergo colostomy operation [4] .Each type of stoma has its own list of possible complications based upon its specific location and function [5] . Complications specific to stoma surgery stoma necrosis , retraction , stenosis , prolapse , mucocutaneous separation , peritonitis , skin complications [6] . the most commonly used definition for evidence based practice is, "the conscientious, explicit, and judicious use of the current best evidence in making decisions about the care of individual patients" [7]. The most important reasons for consistently implementing evidence based nursing practice (EBNP) are that :it leads to the highest quality of care and the best patient outcomes . Implementing evidence based nursing practice (EBNP) is potentially

beneficial for patients and healthcare systems, and for nurses . It can help nurses by facilitating informed and evidence-based clinical decision-making, helping them to keep updated with technologies, and enabling greater efficiency . In addition , it reduces healthcare costs and geographic variation in the delivery of care . Findings from studies also indicate that clinicians report feeling more empowered and satisfied in their roles when they engage in evidence based practice EBP " [8] . Stoma nurse is a nurse who is practising in the field of stomal therapy but is uncertificated. Ostomy nurse coordinate or provide care and support to move the patient toward independent ostomy management .Ostomy nurse are in ideal position to initial assessments ,early interventions , patient \ caregiver education , staff education , policy and procedure development , case management of complex cases ,cases quality improvement [9] . Evidence based practice for stoma care focus on three areas of care: pre-operative, post-operative, and follow-up. All children with ostomies, across the continuum of care, including the needs of the family and caregiver [10] .

Aim of the study

The aim of the study was to evaluate evidence based nurses' practice for children undergoing abdominal stoma outcome

Research hypothesis

The quality of nursing care delivered to children undergoing abdominal stoma expected to be improved after implementation of evidence based practice.

Materials and method

Research design

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

Setting

The study was conducted at Pediatric Surgical Department Tanta University Hospital.

Subjects

All available nurses (40 nurses) who working at previously mentioned setting and providing direct care for children undergoing abdominal stoma operation.

A purposive sample of 40 children admitted to Pediatric Surgical Unit undergoing abdominal stoma operation and divided into two equal groups.

Inclusion criteria of pediatric age group

Age from 12 to 18 year, both sexes ,Don't have any chronic diseases as diabetes mellitus , hypertension as it interfere with the wound stoma healing.

Tools of data collection

Two tools were developed in order to obtain the necessary data for the study. Tool (I):A structured Questionnaire Schedule : it was developed by the researcher after reviewing the related literature to assess socio demographic data of nurses and children , nurses knowledge about the stoma care. **it included two parts :**

Part (I): a- Socio demographic data of the nurses which include

Age, educational level, residence , years of experience, and attendance to any conference or previously training related to stoma operation.

b-socio demographic data of the child such as age , sex , diagnosis and child's presenting problem , history of child's problem , surgical plan including type of ostomy (gastrostomy , ileostomy, urostomy, colostomy, jujnostmy); and expected duration(temporary, permanent).location of stoma .

Part (II): Nurses' knowledge regarding to stoma care . It was developed by the researcher after reviewing of literature to assess the nurses' knowledge about stoma care such as :Definition of stoma, types , indication of stoma operation for children Pre-operative care , Immediate Post-operative care , Stoma and peristomal skin care , Complication associated to stoma , Health education to parents about stoma care at home.

Scoring system

Two was given for correct and complete answer , one was given for correct and incomplete answer ,zero for Incorrect or don't know answer. Number of questions was 51 question and total score was 102 . The Total score of knowledge items was calculated and score of more than 70% considered good level of knowledge , 60-70% fair level of knowledge & less than 60% considered poor level of knowledge .

 Tool (II): Nurses performance regarding stoma care and stoma , peristoma skin observation checklist : This tool was developed to observe nurses' performance related to stoma care in children and condition of stoma and peristomal skin. It included two parts :

Part (I) : Nurses performance observation checklist :This tool was developed by researcher to observe the quality of nursing care provided for children undergoing stoma operation. The researcher observed the nurses while demonstrating stoma care. It included Pre-operative procedures , Immediate post operative care , Routine care of :fecal and urinary diversions procedures as pouch care and care of gastrostomy , and

jejunostomy procedures , enteral feeding procedures. Peristoomal skin care procedures . Hygiene (bathing /clothing) , exercises.

Scoring system

Two was given for done correctly and complete step , one for correct but incomplete step and for done incorrect or not done step zero score was given. Total steps of all procedures were 123 step with total score 246. Total score of nurses' performance items calculated and score of more than 70% considered good level of performance , 60-70% fair level of performance & less than 60% will considered poor level of performance.

Part (II): Ostomy Skin Tool assessment

Scoring system It is a standardized assessment tool developed by global group of experts in collaboration with an ostomy product company (2010).To evaluate and monitor the condition of stoma and peristomal skin reliably and accurately. Stoma assessment based on clinical observation of three domains color , appearance , protrusion . - Peristomal skin assessment based on clinical observation of three domains: discoloration , erosion/ulceration, and tissue overgrowth.

Scoring system

it is a likert type scale ranged from 0–3 where 0 represented normal stoma and peristoma skin and 3 represented the worst combination of severity and extent. the total score was 9 . whereas (< 4) represented mild complication, and (< 7) represented moderate complication ,while (8and more) represented severe complication .

Statistical Design

The collected data were organized, categorized tabulated and analyzed using the Statistical Package for Social Sciences (SPSS). Data were presented in tables and charts using numbers, percentages, means, standard deviations and t – test. Level of significance was threshold at 0.05.

Method

Content validity and reliability : Tools of the study were tested for content validity by experts in the field of pediatrics , modifications were carried out accordingly.

Ethical consideration : Nurses' consent to participate in the study was obtained after explanation the aim of the study . Nurses were informed about the confidentiality of information obtained from them and the nature of the study . Data collected was confidential and used only for the purpose of the study. the study subjects were informed that they could with draw from the study at any time.

Pilot study : It was conducted on 10 % of nurses and children to test the tools for the clarity , visibility , and applicability of the study tools Then the necessary modification was done . The pilot study was excluded from the study sample

Phases of the study

The study was executed on three phases

Assessment phase

Interview with nurses was done at morning shifts .The nurses' knowledge and performance and children were assessed before and immediately and three month later from implementation of evidence based practice for Children Undergoing Abdominal Stoma.

Implementation phase

A purposive sample of children divided into two equal groups each group included 20 child by using tool II (part II). First group of children (control group) assessed before nurses' training, the second group (study group) assessed immediately after nurses' training and three months later, to assess the effect of evidence based practice on the quality of care delivered to children on the condition of stoma and peristomal skin condition.

Preparation of suitable media for teaching the nurses as : lectures, PowerPoint , video , notes book were done.

Demonstration of procedures demonstrated

by using real supplies of falnges , different types of pouches ,tube , cotton , scissors and gloves

Nurses were divided into 4 groups, ten nurses in each group .

Evaluation phase

The nurses and children were evaluated to determine the effectiveness program practice pre evidence based practice , immediately post and after three months later .

Results

Table 1 :

Frequency distribution of socio demographic characteristics of nurses showed that more than two thirds of nurses (67.5%) their age more than 40 years and Mean± SD (41.125±8.979). All of the nurses 100.00 % were married , more than three quarter of nurses (77.5 %) had diploma degree. more than two thirds (67.5 %) of nurses have experience more than 20 year . unfortunately , the majority of nurses (97.5 %) didn't take any training courses about stoma .

Table (2)

Frequency distribution of socio demographic characteristics of children showed that (45%) aged sixteen to less than eighteen years, compared to (35%) of studied group after EBP at the same age , meanwhile ,the majority of two groups

studied before and after EBP (80.0% , 90.0% respectively) were males . the main cause of stoma is pathological as it presented by (80 .0% , 70.0% respectively) . all of children studied after EBP (100.00 %) have temporary stomas .

Table (3)

Percentage distribution of nurses' levels of knowledge pre , immediate , and three months post evidence based knowledge . Regarding to information of nurses about stomas and care of child before operation , the percentages of nurses (72.5 % , 60.0 % respectively) had poor level of knowledge before evidence based knowledge compared to , good level presented by (100.0 % , 92.0 % respectively) immediately post guidelines. In relation to daily care of stoma and peristomal skin , the majority of nurses (87.5%) had poor level before evidence based knowledge , while most of them (95.0% , 72.5% respectively) good level immediately post and after three months of EBK. Meanwhile , information of nurses about stomas complication and health education for child and parents before discharge , poor level of knowledge presented by (37.0% , 27.0 % respectively) before evidence based knowledge , while good level presented by the majority of them (95.0 % , 92.5

respectively) immediately post and after three months .

Table 4

Illustrates percent distribution of total nurses' knowledge score pre , immediate , and three months post evidence based knowledge ,it was observed that the majority of nurses (97.5%) had poor total knowledge score pre evidence based knowledge .while all of them (100.0%) had total good scores immediately post evidence based knowledge . the same table showed that total nurses' knowledge scores decreased 3 months after evidence based knowledge (90.0 %) .

Table 5

Shows the percentage distribution of nurses' levels of performance pre , immediate , and three months post evidence based practice . it was found that stoma site marking procedure presented by (0.00% , 90.0 %, 70.0 % respectively) at good level pre , immediately post and after three month evidence based practice while , care of jujnostomy or gastrostomy tube , it was found that , all nurses (100.0%) at poor level at all procedures , in contrary to , gastrostomy or jejunpstomy tube removal , gastrostomy tube insertion , intermittent or bolus enteral feeding presented by (100.0 %) at

good level immediately post evidence based practice.

Table 6

Shows the percentage distribution of nurses' total performance score pre , immediate , and three months post evidence based practice ,this table show that all nurses (100.0%) had poor total performance score pre evidence based knowledge .while less than three quarter of them (72.5%) had good total knowledge scores immediately post evidence based knowledge .and the percentage of total nurses' performance scores decreased 3 months after evidence based knowledge as good level presented by (60.0%).

Table (7)

Illustrates correlation between the total practice and knowledge total score pre , immediately post ,and after three months of evidence based practice , it is noticed that , there was significant correlation between total knowledge score with total practice score pre evidence based practice with p value = <0.001* , and immediately post EBP with p value =<0.029* , and after three months with p value =<0.046* . this means whenever total knowledge score increases , total practice score increased . The same table show, there is significant correlation between total practice score and total knowledge score with p value = <0.001* .

Table (8)

Shows the correlation between severity of condition of stoma and peristomal skin pre , and post evidence based practice. It was found that , statistical significant difference between condition of stomas and peristomal skin pre and post evidence based practice with p value = 0.001* this means that , condition of stomas and peristomal skin improved after nurses practiced evidence based practice

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

Socio demographic Characteristics	(N= 40)	
	No	%
Age		
- 20 - > 30	8	20.0
- 30- > 40	5	12.5
- > 40 and more	27	67.5
Mean± SD = 41.125±8.979		
Levels of education		
-Diploma degree	31	77.5
- Nursing technician Institute degree	8	20.0
- Baccalaureate degree	1	2.5
Marital status		
-Married	40	100.00
Years of experience		
- 5- < 10	8	20.00
- 10 -< 20	5	12.5
- > 20	27	67.5
Mean± SD = 21.475± 8.964		
Attendance to any training courses about stoma	1	2.5
Yes	39	97.5
No		

Table 2 : Percentage distribution of studied children according to their socio demographic characteristics

Socio Demographic Characteristics	Control group N= 20		Study group N= 20		Chi-Square	
	N	%	N	%	X^2	P-value
Age						
12-<14 y	5	25.00	6	30.00		
14-<16 y	6	30.00	7	35.00	0.418	0.811
16-<18 y	9	45.00	7	35.00		
Sex						
Male	16	80.00	18	90.00	0.784	0.376
Female	4	20.00	2	10.00		
Causes						
Traumatic	16	80.00	14	70.00		
Pathological	4	20.00	6	30.00	0.533	0.465
Site						
Colostomy	16	80.00	15	75.00		
Ileostomy	3	15.00	5	25.00	1.532	0.465
Urostomy	1	5.00	0	0.00		
Gastrostomy	0	0.00	0	0.00		
Jujnostomy	0	0.00	0	0.00		
Type						
Permanent	2	10.00	0	0.00	2.105	0.147
Temporary	18	90.00	20	100.00		
Location						
Right	14	70.00	17	85.00	1.290	0.256
Left	6	30.00	3	15.00		

Table 3 : Percentage distribution of nurses' levels of knowledge pre , immediate , and three months post evidence based knowledge.

Nurses levels of knowledge	Before		Immediate after		After 3 months		Chi-Square	
	N	%	N	%	N	%	X^2	P-value
Information of nurses about stomas :- Good level Fair level Poor **level**	6 10 24	15.00 25.00 60.00	40 0 0	100.00 0.00 0.00	39 1 9	97.50 2.50 0.00	90.969	<0.001*
Care of child before the operation:- Good level Fair level Poor **level**	3 8 29	7.50 20.00 72.50	40 0 0	100.00 0.00 0.00	31 7 2	77.50 17.50 2.50	85.519	<0.001*
Care of child immediately after the operation:- Good level Fair level Poor **level**	5 12 23	12.50 30.00 57.50	37 3 0	92.50 7.50 0.00	30 9 1	75.00 22.50 2.50	71.083	<0.001*
Daily care of stoma and peristomal skin :- Good level Fair level Poor **level**	0 5 35	0.00 12.50 87.50	38 2 0	95.00 5.00 0.00	29 7 4	72.50 17.50 10.00	104.124	<0.001*
Care of colostomy and ileostomy and urostomy bag Good level Fair level Poor **level**	3 6 31	7.50 15.00 77.50	40 0 0	100.00 0.00 0.00	39 0 1	97.50 0.00 2.50	102.700	<0.001*
Care of gastrostomy or jujnostomy tube :- Good level Fair level Poor **level**	1 2 37	2.50 5.00 92.50	35 4 1	87.50 10.00 2.50	31 6 3	77.50 15.00 7.50	92.828	<0.001*
Information of nurses about stomas complication :- Good level Fair level Poor **level**	12 13 15	30.00 32.50 37.50	38 2 0	95.00 5.00 0.00	31 4 5	77.50 10.00 12.50	33.594	<0.001*

Information of nurses about health education for child and parents before discharge							Chi-Square	
Good level	8	20.00	37	92.50	34	85.00	57.954	<0.001*
Fair level	21	52.50	3	7.50	5	12.50		
Poor level	11	27.50	0	0.00	1	2.50		

Table 4 : Percentage distribution of nurses' total score of knowledge pre , immediately after , and three months post evidence based knowledge .

Total knowledge score	Before		Immediate after		After 3 months		Chi-Square	
	No	%	No	%	No	%	X^2	P-value
Good level	0	0.00	40	100.00	36	90.00	110.901	<0.001*
Fair level	1	2.50	0	0.00	2	5.00		
Poor level	39	97.50	0	0.00	2	5.00		

Table 5 : Percentage distribution of nurses' levels of performance pre , immediate , and three months post evidence based practice .

Nurses' levels of performance	Before		Immediate after		After 3 months		Chi-Square	
	N	%	N	%	N	%	X^2	P-value
Pre operative care								
Patient consent								
Good level	0	0.00	24	60.00	19	47.50	49.178	<0.001*
Fair level	18	45.00	13	32.50	18	45.00		
Poor level	22	55.00	3	7.50	3	7.50		
Stoma site marking								
Good level	0	0.00	36	90.00	28	70.00	99.796	<0.001*
Fair level	0	0.00	4	10.00	6	15.00		
Poor level	40	100.00	0	0.00	6	15.00		
Lab values								
Good level	40	100.00	40	100.00	40	100.00	….	….
Fair level	0	0.00	0	0.00	0	0.00		
Poor level	0	0.00	0	0.00	0	0.00		
Day before surgery								
Good level	1	2.50	38	95.00	31	77.50	80.200	<0.001*
Fair level	26	65.00	2	5.00	7	17.50		
Poor level	13	32.50	0	0.00	2	5.00		
Immediate before surgery								
Good level	40	100.00	40	100.00	40	100.00	…..	…..
Fair level	0	0.00	0	0.00	0	0.00		

Poor level								
Immediate post operative care Good level Fair level Poor level	8 17 15	20.00 42.50 37.50	40 0 0	100.00 0.00 0.00	34 5 1	85.00 12.50 2.50	68.364	<0.001*
Routine care of colostomy , ileostomy , urostomy **child assessment** Good level Fair level Poor level	5 5 30	12.50 12.50 75.00	28 9 3	70.00 22.50 7.50	24 11 5	60.00 27.50 12.50	53.872	<0.001*
Prepare the pouch for application Good level Fair level Poor level	0 1 39	0.00 2.50 97.50	30 5 5	75.00 12.50 12.50	21 11 8	52.50 27.50 20.00	77.708	<0.001*
Application of the pouch Good level Fair level Poor level	24 0 16	60.00 0.00 40.00	40 0 0	100.00 0.00 0.00	39 1 0	97.50 2.50 0.00	33.033	<0.001*
Emptying clean pouch Good level Fair level Poor level	6 22 12	15.00 55.00 30.00	40 0 0	100.00 0.00 0.00	40 0 0	100.00 0.00 0.00	73.043	<0.001*
Care jujnostomy or gastrostomy tube **Child assessment and preparation** Good level Fair level Poor level	0 0 40	0.00 0.00 100.00	36 3 1	90.00 7.50 2.50	28 4 8	70.00 10.00 20.00	90.153	<0.001*
Skin care with dressing change of jujnostomy or gastrostomy tube Good level Fair level Poor level	0 0 40	0.00 0.00 100.00	39 0 1	97.50 0.00 2.50	32 8 0	80.00 20.00 0.00	128.682	<0.001*
Gastrostomy or jejunpstomy tube removal Good level Fair level Poor level	0 0 40	0.00 0.00 100.00	40 0 0	100.00 0.00 0.00	33 5 2	82.50 12.50 5.00	120.078	<0.001*
Gastrostomy tube insertion Good level Fair level Poor level	0 0 40	0.00 0.00 100.00	40 0 0	100.00 0.00 0.00	38 2 0	95.00 5.00 0.00	123.077	<0.001*
Intermittent or bolus enteral feeding Good level Fair level Poor level	0 0 40	0.00 0.00 100.00	40 0 0	100.00 0.00 0.00	38 2 0	95.00 5.00 0.00	123.077	<0.001*

Table 6 : percentage distribution of Total score of nurses' performance pre , immediate , and three months post evidence based practice .

Total score of nurses' Performance	Before EBP		Immediate after EBP		After 3 months EBP		Chi-Square	
	N	%	N	%	N	%	X^2	P-value
Good level	0	0.00	29	72.50	24	60.00	98.005	<0.001*
Fair level	0	0.00	8	20.00	10	25.00		
Poor level	40	100.00	3	7.50	6	15.00		

Table 7 : Correlation between the total practice and knowledge total score pre , immediately post ,and after three months of evidence based practice .

Total practice and knowledge total score	Total knowledge score %	
	R	P-value
Before EBP	0.132	<0.001*
Immediately after EBP	0.027	<0.029*
After 3 months EBP	-0.098	<0.046*
Total practice score %	0.893	<0.001*

Table 8 : Correlation between severity of condition of stoma and peristomal skin pre , and post evidence based practice.

Stoma and peristomal skin	Pre EBP		Post EBP		Chi-Square	
	N=20	%	N=20	%	X^2	P-value
Mild degree	3	15.00	14	70.00		
Moderate degree	12	60.00	6	30.00	14.118	0.001*
Severe degree	5	25.00	0	0.00		
Total	20	100.00	20	100.00		

Discussion

Formation of a stoma can result in physiological, psychological and emotional problems for the child, young person and their family (**Hurber 2001**)[11] .The current study aimed to evaluate evidence based nurses' practice for children undergoing abdominal stoma outcome.in the present study , Concerning nurses' years of experience and educational level , this study showed that, nurses with more 20 years represented by more than two thirds and more than three quarter of nurses had diploma degree . This result was in agreement with **Abd El Salam (2006)** [12] who conducted study to assist The effect of nurses' training on the care of abdominal stoma patients and found that nurses with more than 10 years of experience represented by less than one third and diploma of nurses represented by less than two thirds. In relation to previous training courses , it was found that all nurses except one nurses hadn't attend any previous training courses about stoma care . this result was in contrary to **Abd El Salam (2006)** [12] who found that , slightly less than half of nurses had previous training. On the same context noticeable findings of the study was that more than half of the patients were male.

This is supported by **Baldwin (2009)** [13] who reported that, More than half patients undergoing colostomy were males . Considering nurses' knowledge about stomas , the results of this study showed that , there was improvement in nurses knowledge immediately post and after three months .this result is supported by **Bhzeh (2013)** [14] who revealed that all of nurses had knowledge about the standards regarding colostomy at an unsatisfactory level. In relation to total performance score of nurses . this study revealed that all nurses at poor level pre evidence based practice . this result in congruent with **Bhzeh (2013)** [14] who showed that total practice level regarding the nursing care standards of colostomy was at unsatisfactory level. Meanwhile the study clarify that the improvement of performance levels less than improvement of knowledge levels immediately post and after three months of evidence based practice . it can be attributed to shortage of nursing staff , lack of organization support . this result in congruent with **Caroline (2009)** [15]Organizational barriers (lack of time and lack of nursing autonomy) were the top perceived barriers for application of evidence based practice and

Facilitators were learning opportunities, culture building, and availability and simplicity of resources. Concerning occurrence of the stomal and peristomal complication , present study revealed that the highest percentages of complications were for discoloration of peristomal skin and lacerated stomas in control group. these result were in agreement with **Herlufsen (2006)** [16] reported a cross sectional study of 202 persons with permanent ileostomies,colostomies and urostomies , that more than half of patients had mild complications , one third of patients had moderate complications , and severe complications presented by only one tenth . Types of skin damage included erosion, maceration, erythema and irritant dermatitis. Collectively, these accounted for more than three quarters of all complications. Peristomal skin disorders persisted for more than three months in three quarters of patients. This study revealed that statistical significant difference between condition of stomas and peristomal skin pre and post evidence based practice ..this result in agreement **Rafii, F, Naseh L (2013)** [2] mentioned that, In stoma care self-efficacy subscale, the highest obtained mean score were: preventing stoma bleeding and damage ,follow the stoma therapist's instructions

for handling the stoma and found that the findings of this study can be useful to enhance nurses' knowledge to improve training and supportive interventions for stoma patients and their families

Conclusion

It can be concluded that, the educational guidelines and training program were effective regarding improvement of nurses' knowledge and performance regarding stomas conditions .

Recommendations

Continuing periodically in-service training programs should be introduced to the nurses on regular basis by different methods and materials of teaching.

Written booklets and pictures should be provided to illustrate the stoma care for both nurses and patients.

Researches are needed about guidelines to increase competences of children and their parents of stoma care.

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Effect of Educational Program on Nurses' Performance Regarding Neonatal Palliative Care

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Abstract:

 Palliative care is a philosophy of care that provides a combination of disease modifying and supportive, compassionate therapies intended to alleviate pain and other symptoms while addressing the emotional, social, cultural, and spiritual needs of neonates and families who are experiencing life threatening progressive illness. **The aim of th**e current study was to evaluate the effect of educational program on nurses' performance regarding neonatal palliative care. **A Quasi-experimental research design** was used to conduct the current study at neonatal intensive care units in Benha University Hospital, Teaching Hospital and Specialized pediatric Hospital during the period from December, ٢٠١4 to June, 2015. **Subjects**: A convenient sample of 142 nurses was recruited in this study. **Tools**: Three tools were utilized for data collection: A Structure Interviewing Questionnaire Sheet, Nurses' Practice Observation Checklist, and Attitude Likert Scale. **Results:** There were statistically significant differences in nurses' knowledge, practice and attitude regarding neonatal palliative care before and after program implementation. **Conclusion**: Based on the results of the present study, it can be concluded that, the research hypothesis is accepted while it was found that, the educational program are an effective method to improve the nurses' knowledge, practice, and attitude regarding neonatal palliative care. **Recommendation**: Continuous refreshing training program should be provided in order to update the nurses' knowledge, improve their level of practice, and develop a positive attitude towards neonatal palliative care. Availability and accessibility of written guidelines in hospitals and units related to neonatal palliative care.

Key Words: Educational program, neonatal palliative care, nurses performance,

Introduction:

Neonatal palliative care includes the provision of physical, psychological, social, emotional, and spiritual care for both the neonate and the family. It can be provided for neonates from the diagnosis of their life-threatening illness. It is not an alternative method of care, but instead, a method of care that can coexist with curative treatments to provide neonates and families with the best possible treatment. Effective palliative care requires a broad multidisciplinary approach that includes the family and makes use of available community resources; it can be successfully implemented and provided in any care setting [1]. It is provided through a team usually made up of nurses, medical doctors, pharmacists, social workers, spiritual leaders, and psychologists who work together to help neonates live as actively as possible until death[2,3].

The aim of palliative care nursing is an effective management of pain and discomfort for neonates who cannot benefit from intensive care and to provide culturally sensitive support for the family [4]. Furthermore, the principle of pediatric palliative care should center on a neonate's and family's quality of life. It is important to encourage families to focus on the quality of the neonate's life and not the quantity of days lived [5]. Quality of life may be defined differently for each neonate, but by managing distressing symptoms, providers may be able to not only improve the neonate's quality of life, but positively impact the course of the neonate's illness [6].

Principles of neonatal palliative care are emphasis on improved communication and decision making. Communication is central to palliative care, and speaking with the family about their wishes and desires, as well as their definitions of what quality of life means is important [7]. Moreover, delivery of effective and caring communication by nurses is essential to provide families with accurate, consistent information about the neonate's diagnosis, and treatment to empower them to make informed decisions about care for their neonate [8]. Additionally, when communication is delivered in a clear, honest, and sensitive manner to families can enhance the nurses' satisfaction with the care they provide and also, the parents' satisfaction with the care they receive [9]. Open communication can also foster trust between the nurse and the family and facilitate a peaceful death for the neonate [10].

Globally, the World Health Organization[4] estimated that,1.2 million children worldwide are in need of palliative care at the end of life. The most frequent causes of death by disease groups are congenital anomalies (25.06%), followed by neonatal conditions (64.0%) . Moreover, more than 29,000 infants under 1 year of age die each year in the United States, and 66.0% of these deaths occur during the neonatal period mainly in the neonatal intensive care unit [11] . Every year, more than 500,000 children live with a life-limiting illness and in need of appropriate palliative care. These life-limiting conditions, including severe prematurity and its accompanying complications, birth-related trauma, genetic abnormalities, or complex congenital anomalies, whether the condition will result in death during the infant's first few hours of life or after several years [12,13] . In Egypt, the infant mortality rate was 25 deaths per 1000 births, and the neonatal mortality rate was 16 deaths per 1000 births. This indicates that about 87.0% of early childhood deaths in Egypt are taking place before a child's first birthday, with more than half (58.0%) occurring during the first month of life[14].

One barrier to timely initiation of palliative care for neonate is the discomfort that some physicians and nurses have with candid discussions about end-of-life care with families. Early consultation with a palliative care team can facilitate this discussion. Another barrier is the uncertain short-term prognosis of many neonates who admitted to the intensive care unit. Nurses also may lack education in palliative care, so they do not understand care options for these neonates. They may try to avoid dying neonates because they lack coping mechanisms[15]. By lacking a set protocol with clear criteria for neonates requiring palliative care and lacking education regarding palliative care, nurses are at risk of developing moral distress. However, some of these barriers can be overcome using approaches that enhanced communication, continuity of care, advance care planning, staff training and systematic changes in clinical care practice[16].

Nurses by the nature of their jobs play a major role in the neonatal palliative care team as they are usually in constant touch with neonates and their relatives. They work with other professional groups to advance the body of knowledge about palliative care, initiating and conducting research and incorporating research findings where appropriate[17,18,19] . Moreover, The International Council of

Nurses[20] views the nurse's role as fundamental to a palliative approach that aims to reduce suffering and improve the quality of life for dying neonates and their families through early assessment, identification, and management of physical, social, psychological, spiritual, and cultural needs. Educating nurses about communicating palliative needs to families is an important step in establishing achievable goals of care[21].

Significance of the Study:

There is a clear need for a comprehensive neonatal care strategy to support dying neonates and their families at the earliest possible time frame [22]. Palliative care is a model that is consistent with basic nursing values, which include caring for neonates and their families, regardless of their age, culture, socioeconomic status, or diagnoses, and engaging in caring relationships that transcend time, location, and circumstances [23]. According to an Institute of Medicine [24] report on the future of nursing, nurses working in intensive care settings are in an optimal position to provide palliative care and meet the growing needs of neonate in intensive care facilities. Furthermore, previous studies founded that, nurses have lacked knowledge and skills in providing palliative care. Also, neonatal nurses have few opportunities for continuing education. The deficit in knowledge, skills, and opportunities for continuing education underscore the need to promote knowledge about evidence-based palliative care practice [25, 26, 27, 28]. Hence, the researchers found urgent to conduct an educational program for nurses about the neonatal palliative care to enhance their knowledge, practices, and attitude that could help neonates receive quality comfort care and families receive support through a difficult time.

Aim of the study:

The aim of this study was to evaluate the effect of educational program on nurses' performance regarding neonatal palliative care through:

• Assessing nurses' knowledge, practice, and attitude related to neonatal palliative care.

• Designing and implementing educational program based on nurses' actual needs about neonatal palliative care

• Evaluating the effect of educational program on nurses' knowledge, practice, and attitude toward neonatal palliative care.

Research Hypotheses:

– The level of nurses' knowledge about neonatal palliative care will increase significantly after implementation of educational program.

- The level of nurses' practice about neonatal palliative care was improved significantly after implementation of educational program.
- The level of nurses' attitude towards neonatal palliative care was changed significantly after implementation of educational program.
- There are a significant relationship between nurses' knowledge, practice, and attitude related to neonatal palliative care and their personal characteristics.

Subjects and Method:

Research Design:

A quasi experimental design was used to conduct this study.

Settings:

The study was carried out at neonatal intensive care units in Benha University Hospital, Teaching Hospital, and Specialized Pediatric Hospital in Benha City.

Sample:

Convenient sample of 142 nurses who are working at the previously mentioned settings were taken according to inclusion criteria that included the following:-

- Responsible for direct neonatal care.
- Both male and female.
- Years of experience not less than one years.

Tools of Data Collection:

Tool (I): A **Structured Interviewing Questionnaire Sheet**:

It was developed by the researcher based on the scientific literature of **Kassa etal., (2014) ; South Central Palliative Care Group, (2012)** [29,30]. It was translated to Arabic language to assess the nurses' knowledge regarding neonatal palliative care. It comprised two main parts which are:

Part I : Personal characteristic of the studied nurses as; age, gender , qualifications, years of experience, number of dying neonate had you cared for, and previous attendance of training programs about neonatal palliative care.

Part II : Nurses' knowledge about palliative care . It consisted of 13 true / false and multiple choice questions covering the questions related to (definition, benefits, principles, philosophy of palliative care, palliative care is appropriate only in deterioration condition, the extent of disease determines the method of pain treatment, Provision of palliative care require emotional detachment, and role of palliative care nurse.

The scoring system consisted of giving a score of one for the correct answers and zero for the wrong answers. Score of

80.0% and more was considered good level of knowledge, 60.0% to less than 80.0% was considered moderate knowledge, while a score below 60.0% was considered poor knowledge.

Tool (II): Attitude Likert Scale which adopted from **Frommelt, (2003)**[31] and modified by the researchers to suit the current study : It contains 20 items tool using a three-point likert scale to indicate nurses' attitudes toward neonatal palliative care. The scale consists of an equal number of positively and negatively worded statements with response options of strongly disagree, uncertain, and agree. Positive items are scored one (strongly disagree) to three (agree). Scores are reversed for negative items. Total scores was range from 20-60. The researchers were considered attitude scores less than 60.0% negative attitude, while 60.0% and more, positive attitude.

Tool (III) : Nurses' Practice Observation Checklist: It was adopted from **Mancini etal., (2014)**[13] and modified by the researchers to suit the Egyptian culture. It was designed to assess nurses' practices regarding neonatal palliative care . It included 37 procedures grouped under 8 main domain named discussion with parents about palliative care (5 items), pain relief (6 items),

comfort care measures (5 items), symptoms control (3 items), physiological monitoring (5 items), nutrition (5 items), ventilation & oxygen therapy (4 items), and family support(4 items).

The scoring system consisted of two points: give a score of one for done and a score of zero for not had done. Scores of less than 80.0% were considered incompetent practice, while a score greater than or equal to 80.0% were considered competent practices.

Validity and Reliability of the Tool:

Data collection tools were submitted to five experts of Pediatric Nursing field from the Faculty of Nursing, Ain Shams, El-Menofia, and Zagazig Universities, to test the content validity. Modifications of the tools were done according to the expert's judgment on clarity of sentences, appropriateness of content and sequence of items. The experts' agreed on the content, but recommended minor language changes that would make the information clearer and more precise. The suggested changes were made. Internal consistency reliability of all items of the tools was assessed using coefficient alpha. It was 0.83 for Structured Interviewed Questionnaires Sheet, 0.86 for Nurses Practices Observation Checklist, and 0.79 for the Attitude Likert Scale.

Educational Program:

The educational program was developed by the researchers based on assessment phase and after reviewing the related literature.

Preparatory Phase:

A review of the past and current available literature in various aspects of the problem using books, articles, periodicals, and magazines was done to be acquainted with all aspects of the study problem and also in order to develop relevant tools for data collection and the content of the program.

Pilot Study:

The pilot study was carried out on 10.0% of the study subject (14 nurses) over a period of one month (November, 2014). The purpose was to ascertain the feasibility of the study and the clarity and applicability of the tools. It also helped to estimate the time needed for filling out the forms. Based on the results of the pilot, no modifications were needed and pilot study subjects were excluded from the sample of the study.

Ethical Considerations:

The present study was conducted under the approval of the Faculty of Nursing Ethical Committee, Benha University. Then approval was obtained from the hospital manager and head of intensive care units in the previously mentioned study settings

through submission of an official letters issued from the dean of Faculty of Nursing, Benha University. Participants were given explanation about the purpose of the study, and they were also informed that they could withdraw from the study at any time without giving any reason. An informed signed consent was obtained from each nurse in the study. Confidentiality of participants' information was assured and the data were accessed only by the researchers involved in the study.

Field Work:

a) Assessment Phase

The actual field work was carried out from the beginning of December, ٢٠١4 to the end of June, 2015. A permission to conduct the study was obtained from the directors of previous mentioned settings and acceptance from nurses to participate in the study. In the beginning, the researchers introduced themselves to the nurses and give them a brief idea about the study and its purpose. Then, each nurse was interviewed for about 10 to 20 minutes to fill out the knowledge questionnaire sheet about neonatal palliative care (Tool 1) and attitude likert scale (Tool 2) by rotation five days per week at morning and afternoon shifts. Also, each nurse was observed during

demonstrating neonatal palliative care on two different shifts using observation checklist (Tool 3). The time required for each observation was ranged 10 to15 minutes.

b) Program Construction:

The educational program for nurses was designed by the researchers according to the nurses' needs regarding neonatal palliative care. It was constructed, revised, and modified from the related literature to improve the nurses' knowledge, practices, and attitude regarding neonatal palliative care. The contents were prepared in simple Arabic language to be easy understood for the nurses.

c) Statement of Objectives:

The general objective of the program was to improve nurses' knowledge, practice, and attitude regarding neonatal palliative care.

d) Program Implementation:

The program was carried out at the study settings through 13sessions (5 sessions for theory and 8 sessions for practice). A time schedule suitable for nurses was developed to conduct the program that included; date, place, topic, time, and duration of each session. The training program consisted of two parts, the theoretical part cover (definition of palliative care, benefits, , principles, reasons, philosophy, and role of

nurse regarding palliative care......ect) and the practical parts cover the nursing role related to control of pain, comfort measures, symptom management, ventilation therapy, oxygen therapy, nutrition, and support of family). These sessions have lasted for 21 hours. It was difficult to take all nurses at the same time. Thus, they were divided into 28 groups of about 5 nurses in every session and a copy of the education/training program contents was given to each nurse. Nurses participated in the educational program activities for one hours of theoretical and 2 hours of practical, the program started from 9 to 10 AM for theory sessions & 10.30 AM to 12.30 PM for practical sessions five days/week. The researchers started each session with a summary for the previous one. Methods of teaching were lectures, brain storming, group discussion, demonstration and re-demonstration. Proper audio-visual materials such as data show were used in order to help proper understanding of contents by nurses.

e) Evaluation:

After the completion of the program contents, the post test similar to the pre-test and practical demonstration were done to the nurses for measuring their

knowledge, practice, and attitude regarding neonatal palliative care.

Statistical Analysis:

Data analysis was performed using IBM SPSS statistical software version 20. The data were explored. Descriptive statistics with mean and standard deviation (SD) for continuous variables and frequency for categorical variables were analyzed. Qualitative variables were compared using Chi square test (X^2) as the test of significance was used to evaluate changes in the pre- intervention and post-intervention program implementation. Pearson correlation coefficient was used to compare between variables and personal characteristics date. The p-value is the degree of significant. A significant level value was considered when p-value ≤ 0.05 and a highly significant level value was considered when p-value ≤ 0.001, while p-value > 0.05 indicates non-significant results.

Limitation of the Study:

1- Some of the nurses were too overloaded with work. So, they preferred discontinuation in the study.

2- The use of a convenience sample restricts the generalizability beyond the population from which the data were drawn.

Results:

Table (1) : clarifies that, the mean age of the studied nurses was (24.97 ± 4.807) years. The majority of them were female and working at specialized pediatric hospital (91.5%, & 69.7%) respectively. In relation to nurses' education, 77.10% of them had diploma in nursing, while 10.5% of them had Bachelor degree in nursing and the remaining (5.20%) of nurses graduated from Technical Institute of Nursing. Also, it was noticed that, two thirds of nurses (62%) had years of experiences ranged from 5 to less than 10 years, and 49.3% of them cared more than 10 children who have died, while 73.9% of them not attendance of previous training regarding neonatal palliative care.

Table(2): shows nurses' knowledge regarding neonatal palliative care throughout the program phases. It was found that, high percentage of them (97.1% ,96.5%, 96.5%, 95.8% & 94.4%) respectively had correct answers after the program implementation compared with their scores before program in the items related to definition of palliative care, benefits of palliative care that provides relief from pain and offers a support system to help the family cope during the neonates' illness, principles of palliative

care, and role of neonatal palliative care nurse. There was a highly statistically significant difference (p= <0.001).

Table (3): shows nurses' attitude regarding neonatal palliative care throughout the program phases. It was illustrated that, before implementation of the program, the majority 72.5% of the studied nurses agreed with statement related to palliative care is given only for dying patient while after implementation of the program 93.0% of them disagreed. Moreover, the highest percentage of nurses (92.3%, 91.5% , 90.8% & 90.8%) respectively agreed with statements related to family should involved in the physical care of dying babies, nursing care for family should continue throughout grief and bereavement, it is possible for nurse to help neonate prepare for death and families should be in charge of decision making after program implementation. There was a highly statistical significant improvement in all items of nurses attitude after program implementation (p= <0.001).

Table (4): Shows nurses' practices about discussion with parent, pain relief and comfort measures throughout the program phases. It was noticed that, only 6.3% the studied nurses who provide the parents with information about their neonate diagnosis and prognosis pre program

implementation compared to 63.4% post-program implementation. In relation to pain control, 14.1% of the studied nurses continue to provide analgesic to control pain and distress and none of them make assessment to identify neonate pain and distress pre program compared to 95.8% & 94.4% post- program implementation respectively. Meanwhile, it is clear from this table that, before program implementation only 16.9% of nurses ensuring the nappy is clean, dry, and 12.0% of them cuddling and holding the neonate compared to post program implementation (100.0%, & 100.0%) respectively. These difference were statistically significant whereas (P <0.05, P <0.05, & P <0.001) respectively.

Table 5: presents nurses' practices about symptoms control, physiological monitoring and nutrition throughout the program phases. In relation to symptoms control, it was noticed that, 7.0% & 3.5% of the studied nurses who gave anticonvulsants drug to control seizures and performed gentle suctioning to decrease respiratory and salivary secretion pre program implementation compared to post- program implementation (97.2 & 95.1%) respectively . In relation to physiological monitoring, only 2.8% and 4.2% of the studied nurses who discontinue invasive technique as blood

pressure measuring and monitor the physical signs that suggest discomfort such as crying, tachycardia and excessive secretion pre program compared to post program implementation (97.2% & 90.1%) respectively. Meanwhile, it is clear from this table that, before program implementation only 4.2% of nurses' continuous provision of hydration and nutrition and none of them were reduce volume of enteral feeds in case of vomiting compared to post- program implementation (95.8%, & 95.1%) respectively. These differences were statistically significant (P <0.001).

Table 6: shows nurses' practices about ventilation & oxygen therapy and family support throughout the program phases. It was noticed that, ٦.٣%, & ٧.٠% of the studied nurses turn off the alarms of the ventilator prior to disconnecting and continuous provision of supplemental oxygen to provide comfort to neonates pre program implementation compared to post program implementation (93.0% & 93.7%) respectively . In relation to family support, only 16.6% & 12.7% of the studied nurses who provides reassurance to parents and support to overcome their grief and encourage parents to spend more time with their neonate pre program compared to post program implementation (87.3% & 83.1%) respectively. These

difference were statistically significant (P <0.001).

Table (7): Shows the total knowledge and practices scores of nurses regarding neonatal palliative care throughout the program phases. It is clear from this table that, before implementation of the program, the majority (88%, 95.8%, & 97.2%) of nurses have poor knowledge, incompetent practice and negative attitude regarding neonatal palliative care respectively. After implementation of the program, the highest percentage of nurses (98.6%, 92.3%, & 97.9%) have good knowledge, competent practice and positive attitude respectively.

Table (8): Presents correlation between nurses' knowledge, practices, and attitude related to neonatal palliative care and their personal characteristics after program implementation. This table demonstrates positive statistically significant correlation between knowledge and practice scores of the staff nurses (r= 0.657, p=.001). Further analysis revealed that, there is a positive correlation between knowledge and attitude with years of experience (r= 0.689, p=.001 and r= 0.266, p= .001 respectively). The table also demonstrates a statistically significant correlation between nurses' knowledge and attitude scores (r= 0.518, p=.001).

Table(1): Personal characteristic of the Studied Nurses (no= 142)

Nurses characteristics	No	%
Age in year		
20-	81	57.0
25-	38	26.8
30-	12	8.5
≥35	11	7.7
Mean ±SD	24.97±4.807	
Gender Male Female	12 130	8.5 91.5
Working setting - Benha university hospital	20	14.1
- Benha teaching hospital	23	16.2
- Benha specialized pediatric hospital	99	69.7
Educational qualification -Bachelor degree in nursing -Technical Institute of Nursing -Diploma degree in nursing	16 8 118	10.5 5. 20 77.10
Years of work experience < 5 years 5- 10+	38 88 16	26.8 62.0 11.2
Mean ±SD	5.01±4.089	
In the past year, how many died neonates have you cared for? -None -1-3 child - 4- 6 child - 7-10 child -> 10	0 16 22 34 70	0.0 11.3 15.5 23.9 49.3
Previous attendance courses regarding neonatal palliative care Yes	37	26.1
No	105	73.9

Table (2): Distribution of Nurses Knowledge Regarding Neonatal Palliative Care Throughout the Program Phases(no=142)

	Pre program implementation				Post program implementation				Chi square test	P value
	Incorrect		Correct		Incorrect		Correct			
	No	%	No	%	No	%	No	%		
1- Definition of neonatal palliative care	109	76.8	33	23.2	0	.0	138	97.1	178.94	<0.001**
2- Palliative care provides relief from pain & other distressing symptoms	134	94.4	8	5.6	6	4.2	137	96.5	227.18	<0.001**
3- Palliative care offers a support system to help the family cope during the neonates' illness	105	73.9	37	26.1	0	.0	137	96.5	145.02	<0.001**
4- Provision of palliative care require emotional detachment	126	88.7	16	11.3	11	7.7	131	92.3	186.49	<0.001**
5- The philosophy of palliative care is compatible with that of aggressive treatment.	113	79.6	28	19.7	30	21.1	112	78.9	113.12	<0.001**
6- Principles of palliative care based on symptom management, improved communication ,and decision making	107	75.4	35	24.6	0	.0	136	95.8	153.38	<0.001**
7-Palliative care is appropriate only in deterioration condition	103	72.5	39	27.5	12	8.5	130	91.5	90.95	<0.001**
8- Palliative care is a human right.	142	100.0	0	.0	10	7.0	132	93.0	264.68	<0.001**
9- Palliative care should in no way become a substitute for appropriate curative care	111	78.2	31	21.8	29	20.4	113	93.7	78.89	<0.001**
10- palliative care should be delivered on the basis of need, not diagnosis or prognosis	113	79.6	28	19.7	30	21.1	112	78.9	113.12	<0.001**
11- The extent of disease determines the method of pain treatment	108	76.1	34	23.9	9	6.3	133	93.7	142.45	<0.001**
12- palliative care should be provided even when curative care is unavailable	136	95.8	6	4.2	30	21.1	112	78.9	227.27	<0.001**
13- Role of neonatal Palliative care nurse	135	95.1	7	4.9	7	5.0	134	94.4	220.16	<0.001**

Table (3): Distribution of Nurses Attitude Regarding Neonatal Palliative Care throughout the Program Phases(no=142)

	Pre program implementation						Post program implementation						Chi square test	P value
	Disagree		Uncertain		Agree		Disagree		Uncertain		Agree			
	No	%	No	%	No	%	No	%	No	%	No	%		
1- palliative care is given only for dying patient	13	9.2	26	18.3	103	72.5	132	93.0	1	0.7	9	6.3	111.59	<0.001**
2-Nursing care for the family should continue throughout the period of grief and bereavement.	140	98.6	0	.0	2	1.4	5	3.5	7	4.9	130	91.5	213.37	<0.001**
3- I would not want to care for a dying neonate .	42	29.6	50	35.2	50	35.2	116	81.7	8	5.6	18	12.7	109.54	<0.001**
4- Length of time required to give nursing care to a dying neonate would frustrate me.	4	2.8	20	14.1	118	83.1	79	55.6	17	12.0	46	32.4	146.00	<0.001**
5- It is difficult to form a close relationship with dying neonate .	20	14.1	8	5.6	114	80.3	111	78.2	16	11.3	15	10.6	145.85	<0.001**
6-- Families should maintain as normal an environment as possible for their dying neonate	70	49.3	43	30.3	29	20.4	11	7.7	7	4.9	124	87.3	127.88	<0.001**
7- The family should be involved in the physical care of the dying neonate	95	52.8	45	31.7	2	1.4	9	6.3	2	1.4	131	92.3	146.25	<0.001**
8-I am afraid to become friends with a dying neonate.	12	8.5	0	.0	130	91.5	123	86.6	18	12.7	1	.7	177.02	<0.001**
9- I would feel like running away when the neonate actually died.	29	20.4	.0	.0	113	79.6	112	78.9	19	13.4	11	7.7	184.92	<0.001**
10- Families need emotional support to accept behavior changes of dying neonate.	97	68.3	24	16.9	21	14.8	21	14.8	10	7.0	111	78.2	116.07	<0.001**
11-As a patient nears death, the nurse should withdraw from his/her involvement with the patient.	11	7.7	51	35.9	80	56.3	109	76.8	8	5.6	25	17.6	89.20	<0.001**
12- Families should be concerned about helping their dying neonate make the best of his remaining life.	111	78.2	0	.0	31	21.	20	14.1	9	6.3	113	79.6	118.90	<0.001**
13- The families should not be allowed to make decisions about his neonate physical care.	29	20.4	1	.7	112	78.9	113	79.6	13	9.2	16	11.3	131.97	<0.001**
14. It is possible for nurse to help neonate prepare for death	113	79.6	8	5.6	21	14.8	4	2.8	9	6.3	129	90.8	174.15	<0.001**
15-Addiction to pain relieving medication should be a concern when dealing with a dying neonate.	11	7.7	103	72.5	28	19.7	7	4.9	11	7.7	124	87.3	122.35	<0.001**
16- When a family ask nurse "Am" my neonate dying? I think it is best to change the subject to a something cheerful.	88	62.0	27	19.0	27	19.0	55	38.7	11	7.7	76	53.5	102.25	<0.001**
17-Families should be in charge of decision making.	14	9.9	97	68.3	31	21.8	1	0.7	12	8.5	129	90.8	113.52	<0.001**
18- Families should be given honest answers about their neonate condition.	128	90.1	5	3.5	9	6.3	8	5.6	27	19.0	107	75.4	203.80	<0.001**
19-Educating families about death and dying is not a non-family care-givers responsibility.	59	41.5	20	14.1	63	44.4	99	69.7	34	23.9	9	6.3	90.44	<0.001**
20-Family members who stay close to a dying neonate often interfere with the professionals 'job with the patient.	4	2.8	20	14.1	118	83.1	111	78.2	17	12.0	14	9.9	146.00	<0.001**

Table 4: Distribution of Nurses' Practices about Discussion with Parent, Pain Relief and Comfort Measures throughout the Program Phases (n=142)

Nurses practices	Correct practices (n=142)				X^2 P-value	P value
	Pre		Post			
	No	%	No	%		
A- Discussions with parents about neonate's palliative care:						
1-- Give information in simple language about what is wrong with their baby.	4	2.8	70	49.3	189.66	<0.001**
2 - To be told about the diagnosis and prognosis of the neonate condition.	9	6.3	90	63.4	9.29	<0.05*
3 - To be part of the decision making process	8	5.6	65	45.8	156.08	<0.001**
4 - Arrange with the family the time and location for life sustaining treatment	0	.0	50	35.2	210.67	<0.001**
5- Provide written information	0	.0	80	56.3	1.06	>0.05
B -Pain relief: 1- Make frequent assessments to identify infant pain, distress	0	.0	134	94.4	8,23	<0.05*
2- Discontinue of painful assessments as heel sticks	0	.0	130	91.5	12.52	<0.001**
3- Leave intravenous access in place	0	.0	133	93.7	250.14	<0.001**
4- Continue provision of analgesics to relief pain and distress	20	14.1	13٦	95.8	121.30	<0.001**
5- Positioning with arms and legs flexed close to the trunk using blanket or rolls	12	8.5	111	78.2	12.52	<0.001**
6- Use non pharmacological intervention like massage & distraction technique to alleviate pain	0	.0	96	67.6	284.00	<0.001**
C- comfort measures: 1. Provide calm environment with minimal noise and light	4	٢.8	138	97.2	83.43	<0.001**
2- Keeping the baby swaddled and warm	9	6.3	140	98.6	90.44	<0.001**
3- Ensuring the nappy is clean and dry	24	16.9	142	100.0	216.79	<0.001**
4- Cuddling and holding the baby	17	12.0	142	100.0	158.67	<0.001**
5- Kangaroo care	25	17.6	117	82.4	157.91	<0.001**

Table 5: Distribution of Nurses' Practices about Symptoms Control, Physiological Monitoring and Nutrition throughout the Program Phases (n=142)

Nurses practices	Correct practices (n=142)				X^2 P-value	P value
	Pre		Post			
	No	%	No	%		
D-symptoms control:						
a. seizures 1 -give anticonvulsants drug to control seizures as midazolam or phenobarbitone	10	7.0	138	97.2	174.15	<0.001 **
b.Reducation of secretion 1 -Perform gentle suctioning and give medications such as hyocine or glycopyorrlate to decrease respiratory and salivary secretion	5	3.5	135	95.1	286.43	<0.001 **
2 - Moist swabs or petroleum jelly may be used for dry mouth lips	4	2.8	116	81.7	286.43	<0.001 **
E. physiologically monitoring: 1 - invasive blood pressure monitoring should be discontinue	4	2.8	138	97.2	286.43	<0.001 **
2 -Cardiac monitoring should be turned off prior to disconnecting of mechanical ventilation	9	6.3	113	79.6	233.02	<0.001 **
3 -Stop measuring blood tests and blood gas	18	12.7	124	87.3	122.35	<0.001 **
4 - Monitor of physical signs that suggest discomfort such as crying, tachycardia and excessive secretion	6	4.2	128	90.1	116.07	<0.001 **
5- Perform intermittent physical examination with auscultations of the heart rate should be continue after withdrawal life sustaining support	35	24.6	107	75.4	203.80	<0.001 **
F-Fluid and nutrition: 1-Continue intravenous hydration and nutrition as doctor order	6	4.2	136	95.8	245.45	<0.001 **
2 - Reduce volume of enteral feeds in case of vomiting	0	.0	135	95.1	63.77	<0.001 **
3 -Stop oral nutrition if it lead to discomfort or pain	8	5.6	134	94.4	12.07	<0.001 **
4 - Allow neonate to suck if able to do and tolerate breast feeding	9	6.3	133	93.7	260.97	<0.001 **
5 -Stop I .V fluid if it could cause distress	10	7.0	١٣2	93.0	149.78	<0.001 **

Table 6: Distribution of Nurses' Practices about Ventilation & Oxygen Therapy and Family Support throughout the Program Phases (n=142)

Nurses practices	Correct practices (n=142)				X^2 P-value	P value
	Pre		Post			
	No	%	No	%		
G- ventilation and oxygen therapy 1-Nurse Turns off the alarms of the ventilator prior to disconnecting	9	6.3	132	93.0	246.63	<0.0 01**
2- Nurse performs Suction the endotracheal tube before removal	٧	4.9	125	90.1	246.63	<0.0 01**
3- Nurse allows for continuous provision of supplemental oxygen to provide comfort	10	7.0	133	93.7	47.39	<0.0 01**
4- Nurse administers morphine if a neonate exhibits signs of shortness (nasal flaring, air hunger, colour changes or gasping)	13	9.2	129	90.8	213.60	<0.0 01**
I-Family support 1- Nurse encourages parents to spend more time with their baby.	18	12.7	118	83.1	88.89	<0.0 01**
2-Nurse allows to Parents and siblings opportunities to hold, bath, clothe and feed their baby	35	24.6	107	75.4	203.80	<0.0 01**
3 -Nurse provides reassurance to parents and support to overcome their grief.	24	16.6	124	87.3	132.15	<0.0 01**
4 -Nurse help parents to Obtain mementos such as lock of hair, hand or footprints on a card and photos of the family together	20	14.1	100	70.4	216.79	<0.0 01**

2 Table (7) Total knowledge , practice and Attitude Scores of Nurses Regarding Neonatal Palliative Care throughout the Program Phases (no=142)

Topic	Pre program implementation		Post program implementation		Chi square Test	P value
	No	%	No	%		
Total knowledge score					276.84	<0.001**
Poor	125	88..0	0	0.0		
Fair	0	0.0	2	1.4		
Good	17	12.0	140	98.6		
Total practice score					220.34	<0.001**
Incompetent	136	95.8	11	7.7		
Competent	6	4.2	131	92.3		
Total attitude score					256.73	<0.001**
Negative	138	97.2	3	2.1		
Positive	4	2.8	139	97.9		

Table 8: Correlation between Nurses' Knowledge, Practices and Attitude related to Neonatal Palliative Care and their Personal Characteristics after Program Implementation.

	Pearson correlation coefficient mothers (n = 142)					
	Knowledge score		practices score		Attitude score	
	Pearson	Sig	Pearson	Sig	Pearson	Sig
Knowledge score	1		0.657(**)	<0.001**	0.518	<0.001**
practices score	0.657(**)	<0.001**	1		.128	>0.05
Attitude score	0.518	<0.001**	.128	>0.05	1	
Age (Years)	-.095	>0.05	-.073	>0.05	.081	>0.05
Years of experience	0.689	<0.001**	-.061	>0.05	0.266	0.001*

** significant at the 0.01 level (-tailed).

Discussion:

Neonatal palliative care is a holistic, multi-disciplinary care to improve the quality of life of neonates who have a serious or life-threatening disease [32]. In pediatrics, advances in health care mean that many neonates are living longer with these conditions and could benefit from services that focus on quality of life and symptom management. Nurses represent the largest sector of the health care workforce who provides most of the formal palliative care. They provide physical, mental, spiritual care to neonates, symptom management and communicate with the family to satisfy their needs, and help the neonates to achieve a good death [33].

The aim of the current study was to evaluate the effect of educational program

on nurses' performance regarding neonatal palliative care. This aim was achieved throughout the study findings and the research hypothesis was accepted.

As yielded by the current study findings, the mean age of nurses was (24.97±4.807) years; this young age could explain the lack of nurses' knowledge in providing palliative care to neonate. Furthermore, the majority of them were dealt with more than 10 children during the period of dying, and nearly three quarters of them didn't take any previous educational programs about neonatal palliative care. These findings are in agreement with a study carried out in Egypt by **Moawed (2013)**[34] who founded that, the majority of them was dealt with more than 10 children during the period of dying; More than two third of them didn't take any previous educational programs about death, dying or about how to take care of dying children.

On assessing nurses knowledge about neonatal palliative care, the findings of the current study reveals that, the highest percentage of nurses had poor knowledge regarding neonatal palliative care before the implementation of the program. The poor level of nurses knowledge in this study could be associated with the lack of specific palliative care units in Egypt, the

fact that palliative care education was not incorporated into either diploma or degree curricula, nurses are overworked because of the nursing shortage in the nursing staff. Therefore, they have limited time to enhance their knowledge about palliative care.

This result is consistent with the studies carried out in Canada, Palestine and Guwahati city by **Brazil etal.,(2012)** [28]; **Ayed etal., (2015)** [35] ; **Sorifa and Mosphea, (2015)** [36] found that, the majority of nurses had inadequate knowledge regarding palliative care. After implementation of the program, there was a significant improvement with the number of nurses who achieve a good score in the post period. This finding is matched with the hypothesis number one. The improvement scores indicated that, the program was a successful strategy to increase knowledge and provide information help them to increase their confidence in dealing with the ethical and legal issues they experience.

This study was supported by the study carried out in Seoul, Korea by **young-ran, min, and Kyoung-soon (2015)**[37] who stated that, the knowledge of nurses in the experimental group was higher than control group after educational program implementation about palliative care. In

the same line, **Joy, (2015)**[38]; **Kim et al. (2011)**[39] who conducted a study in United States and Korea, they found that, nurses in the intervention group demonstrated a significant increase of palliative care knowledge.

Findings of the present study reflected that, there was a significant difference in all items of nurses' knowledge pre - post intervention regarding neonatal palliative care. After implementation of the program, all nurses had correct answer regarding definition, benefits and principles of palliative care. This finding supported by the study carried out in Nigeria by **Fadare etal., (2014)**[40] who founded that, the majority of nurses have good knowledge about the definition of palliative care and recognized the potential benefit of palliative care.

This is proved with the statement from **Kennedy (2010)**[41] who stated that, nurses should have a positive recognition of palliative care to be able to play the crucial role of a palliative care service provider, especially as a coordinator of hospice care team members in addition to their primary duty of directly taking care of neonates. Also, increasing the recognition of palliative care is important because palliative care is not just about care in the last months or days of a person life but about ensuring quality of life for both neonates and families at every stage of the disease process.

On investigating nurses' practices about palliative care to neonate, the finding of the present study showed that, the majority of nurses had incompetent practices in most areas of neonatal palliative care before program implementation. This finding could be explained by only a few nurses have been trained on palliative care, nurses felt that palliative care is the responsibility of doctors not the nurses, nurses do not feel competent enough to deliver palliative care to the neonate, and lack of hospital policies and human resources. After implementation of the program there was significant improvement with the number of participants who a achieve competent score. These findings match with the hypothesis number two. This is most likely due to the effect of the educational program.

The findings of the current study are supported by the study carried out in Iran by **Abaszadeh et al. (2012)**[42] who showed that, continuing education programs resulted in an increase in nurses practice. In this respect, **American Academy of Nursing (2010)**[43] recommended training and education to

enhance the knowledge and skills that nurses bring to the bedside of neonates with life-limiting conditions. Additionally, **Adriaansen and van Achterberg, (2008)**[44] mentioned that, interactive and integrated programs are known to have a positive impact on professional practice as when these programs are offered over a period of weeks, it allows nurses to practice what they are learning and then reflect on their experience.

The present study illustrated that, most of the studied sample believed that, it is not important to discuss with the family about the diagnosis and prognosis of their neonate condition before program implementation. The reason for this might be related with fear of nurses to confront the dying neonates, and probably because they might feel that they are not be competent enough since majority of them didn't take palliative care training and they don't know how to handle the condition. According to **Windsor etal., (2008)**[45] ; **Tavakol etal., (2008)**[46], family have a right to have all information regarding their neonate condition, but this is not so in practice because of the influence of many factors such as culture, religion and patient's peculiarities. After program implementation the present study findings revealed that, the highest percentage of the

nurses discussed with the family about their baby diagnosis, prognosis, and treatment.

These findings are corroborated by the study carried out in Nigeria by **Fadare etal., (2014)**[40] who founded that, the highest percentage of nurses thought that, the family should be informed of their neonate diagnosis and prognosis. In contrary, study done in Addis Ababa, Ethiopia by **Kassa etal., (2014)**[29] who founded that, high percentage of nurses hiding the truth about the family and addressed psychological issues.

The Present study illustrated that, the majority of nurses increased confidence in practices skills especially management of pain after program implementation. Similarly, the study carried out in sub-Saharan Africa by **Hansen etal., (2009)**[47], who reported that, nurses confidence in pain management improved after intervention program. This is proved with the statement by **Harding etal., (2010)**[48] who revealed that, education about pain control for health workers is required in order to provide appropriate neonates care. Also, **Goldsmith etal., (2008)**[49] added that, education about pain control is important because unrelieved pain has a serious effect on the quality of life, interfering with sleep, daily activity,

enjoyment of life and social interaction . Regarding to nurses attitude after program implementation, it was observed that, the highest percentage of nurses had positive attitude towards neonatal palliative care. These findings match with the hypothesis number three. This could be explained by the education may be the ideal venue to create incremental gains once a high positive attitude is demonstrated. The finding of the current study was similar to a result of a study carried in London by **Twamley, etal., (2013)**[50] who founded that, nurses had high level of comfort, confidence, and expressed a more positive attitude to the role of palliative care for neonate. Similarly, **Zargham etal., (2011)**[51] who carried a study in Iran to examine the effect of palliative education on nurses' attitude and the result showed significant increase in nurses' positive attitude compared to the time before training.

Concerning the responsibility of nurses about drug addiction, Finding of the present study revealed that, the majority of the nurses believed that, drug addiction should be a concern of a nurse when dealing with dying neonates and nearly half of nurses believed to change the subject to something cheerful when a family asks a nurse, "Am my baby dying?"

after program implementation. The findings of the current study are in the same line with a study conducted in Addis Ababa, Ethiopia by **Kassa etal., (2014)**[29] who revealed that, nearly two thirds of the studied nurses believed that, drug addiction should be a concern of a nurse when dealing with dying patients and nearly half of the respondents in the present study believed to change the subject to something cheerful when a patient asks a nurse, "Am I dying?" .

The present study revealed that, there is a statistically significant positive correlation between the nurses' knowledge and practice scores. This finding matches with the hypothesis number four. This may be due to the educational program increasing understanding of the palliative care practices and improving links with local services that could make a difference in practice and the utilization of palliative care services. Additionally, more hours of palliative care education help the nurses feel comfortable in providing care to dying neonates and their families. The findings are consistent with findings of **Sorifa and Mosphea, (2015)**[36] who indicated that, there is a positive correlation between knowledge and practice scores of palliative care by staff nurses.

Findings of the present study showed that, there is a statistically significant positive correlation between the nurses' knowledge and attitude scores regarding neonatal palliative care. This could be due to the educational program content, form, and its structures are effective for increasing the nurses knowledge regarding neonatal palliative care that makes positive change in nurses' attitude. This result was disagreed with the finding carried out in Indian by **Sujakarkada etal., (2011)**[52] who revealed that, there is a negative correlation existed between nurses knowledge and attitude scores toward palliative care.

As shown by the present study, there is a statistically significant positive correlation between the nurses' knowledge about neonatal palliative care and years of experience. This means that, nurses who have more experience with neonatal palliative care services are more likely to have more favorable knowledge. This result is in agreement with the finding by **Ayed, (2015)**[35] who found that, there is a positive relationship between nurses' knowledge regarding neonatal palliative care and their years of experience.

On investigating the relationship of nurses' attitude and their years of experience, the present study revealed that, there is a statistically significant positive correlation between the nurses' attitude and years of experience. The possible reason for this might be the neonates with life-threatening condition are mostly admitted to the neonatal intensive care unit, thus nurses who worked in this ward had daily contact with those neonates, and may have a powerful coping mechanism and developed favorable attitude towards palliative care. Also, the more exposure to death ,the more awareness of ones own emotions. The present study are in accordance with the study carried out in Jordan by **Khader, (2010)**[53]; **Abu Hasheesh etal., (2013)**[54] who found a positive correlation between nurses attitude and years of experience in caring of dying.

Conclusion:

Based on the results of the present study, it can be concluded that, the research hypothesis is accepted while it was found that, the educational program are an effective method to improve the nurses' knowledge, practice, and attitude regarding neonatal palliative care. However, There is a statistically

significant positive correlation between nurses' knowledge, practice and attitude related to neonatal palliative care and their

personal characteristics after program implementation.

Recommendations:

In the light of the findings of the current research, the following recommendations are suggested:

1. Continuous refreshing training program should be provided in order to update the nurses' knowledge, improve their level of practice and develop a positive attitude towards neonatal palliative care.

2. Neonatal palliative care must be incorporated in undergraduate nursing education curricula.

3 Availability and accessibility of written guidelines in hospitals and units related to neonatal palliative care.

4. Palliative care home visits should be arranged as a part of student curriculum to provide first - hand experience.

5. Nurse administrator must render attention in developing and maintaining neonatal palliative care.

6. Further researches can be done in other clinical setting regarding methods to improve the quality of neonatal palliative care.

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Effect of an Educational Training on Mothers' Competency Level for Managing the Children with Autism

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Abstract

Autism is a pervasive developmental disorder characterized by impaired social and communication skills as well as restrictive or repetitive patterns of behavior. These impairments significantly influence the manner in which children with autism interact with the environment. Competency level of parents affects their care and management for autistic child. ***Aim***: This study aimed to determine the effect of an educational training on mother's competency level for managing the children with autism. **Materials and Method:** This study was conducted on fifty mothers and their autistic children at Child Psychiatry out-patient clinic in Psychiatry and Neurology Center in Tanta University. Four tools were used: Biosociodemographic, knowledge and attitude structured interview schedule, Social Communication questionnaire, Parent sense of competency scale, and Mothers' practices structured interview schedule. The data were collected before, immediately after and 3 months after implementation of educational training. **Results**: The main results revealed significant increase in mother's competency level, decreased emotional stress and increased maternal satisfaction regarding parenting role and care of their autistic children. **Conclusion:** there was improvement in mother's competency level for managing their children with autism. This study recommended that parents should be actively involved in their children's intervention. Continuous health education programs are necessary to improve parenting approaches and coping strategies.

Key words: mother's competency level, educational training, autism management

Introduction

Autism spectrum disorder is a serious developmental disability that typically appears during the first three years of child's life as a result of a neurological disorder affecting the function of the brain. Autism also is a lifelong disability that occurs in all racial, ethnic and social groups[1] .The estimated prevalence of autism has significantly increased in recent years. It is currently considered to have a prevalence of 1%.[1] The prevalence in the United States is estimated to be 1 in 68 (at age 8) according to Center for Disease Control and Prevention 2014.[2] The gender ratio of children with autism is 4:1 (male to female). The prevalence rate of autism in Egypt was one child every 875, [3] and constitute 33.6%, among children with developmental disorders in Egypt. [4]

The causal mechanisms of autism are not known, it is likely to have multiple etiologies; including genetic causes which may be the most significant causes. [5] The risk of autism is also associated with several environmental factors that include prenatal factors as advanced age in one or both parents, diabetes, bleeding, and use of psychiatric drugs during pregnancy. Infection-associated immunological events in early pregnancy may also affect neural development. Postnatal factors include immune system abnormalities, allergies, and exposure of children to drugs, vaccines and infection. [6]

The disorder is characterized by a wide variety of possible symptoms such as communication skill deficits; which may include a delay or absence of spoken language. Children that do develop speech may not initiate or sustain conversations with others. Lack of social interaction may be manifested through impairment in social interaction, failure to create peer relationships, and lack of spontaneous or pretend play. The children with autism are usually present with restricted, repetitive, and stereotyped patterns of behavior, interests, and activities, and may exhibit high levels of aberrant behaviors such as tantrums, aggression and self injury. Children with autism may also have impaired cognitive skills and sensory perception which affect the child's ability to focus, pay attention and learn.[7]

Autism cannot be cured. The main management of autism is educational and behavioral interventions as social skills interventions which focus on enhancing social behavior and competence in children with autism. Communication skills intervention is one of the greatest challenges for families. Parents must be

able to teach their autistic children the communication skills by which they can express their wants and needs and share information. [8] Behavioral interventions focus on behaviors commonly associated with autism. These approaches attempt to ameliorate symptoms such as tantrums, self-injury and aggression. [9] Play interventions use interactions between children and adults to improve imitation, joint attention skills or the ability of the child to engage in symbolic play.[10] Massage intervention is a global treatment for the child. It can be delivered by parents to their children after appropriate training and support. It has been shown to improve developmental measures in young children with autism when given daily. This Intervention can be used to improve disturbances of sensory impairment, digestion, sleep and strengthen overall health of autistic children. [11]

Autism is a complex, and children with autism need varying levels of lifelong care. [12] Caregivers play a vital role in the care giving and a central part of the lives of children with autism. Caregivers are an instrumental partner taking active participation in affecting the nature and direction of care process of autistic children. [13] Parental self-efficacies refer to parents' perceptions of their capability

in the role of caring for and positively nurturing the growth and development of their children. Parental self-efficacy has a direct impact on the behaviors. [14] Primary caregivers' need for effective and efficient professional services to be better able to meet the needs of the family and help them cope with taking care of a child with autism at home and within the community. Parent education and support needs to improve the family's quality of life. Parental involvement in the intellectual, social, and emotional development of children with autism is vitally important to their growth. Once trained, parents can act as co-therapists, shaping behavior to reduce negative behaviors in daily life. Parent training interventions also have secondary targets of improving parental feelings of self efficacy and decreasing parental stress. [15]

The most significant role of nurse in autism recognition and diagnosis is education. The nurse must be able to familiarize the combination of symptoms associated with autism to the parents. This places nurses at a critical juncture, because they must be increasingly knowledgeable, understanding and supportive of the parents and children afflicted with this condition and facilitating development and learning, promoting socialization and

reducing maladaptive behaviors. The nurse is the coordinator of therapies and interventions that meet the specific needs of individual children. [16]

The number of children diagnosed with autism has dramatically increased in the past few years and it became the most commonly diagnosed childhood brain disorders [2]. The prevalence rate of autism in Egypt is one every 870 Egyptian children has autism [5]. This means that a considerable number of parents are directly involved in caring of the children with autism. Autistic children need special attention and care borne by parents. The inability of the parents to successfully play this role may frustrate them and deprive the children from developing better skills. Parent education is an important component of autism intervention, as it can provide positive outcomes for parents and, in turn, their children. This study investigated the impact of parent education on parents' sense of competence to manage their autistic children.

Aim of the study

The aim of this study was to determine the effect of an educational training on mother's competency level for managing the children with autism.

Research Hypothesis

The maternal educational training was improved mother's knowledge, practices, and attitudes and mothers' competency level for managing the children with autism

Materials and Method

Research Design:

A quasi experimental research design was used

Setting:

The study was conducted at Child Psychiatry out-patient clinic in Psychiatry and Neurology Center at Tanta University.

Subjects:

Fifty mothers and their autistic children were included in the study with no special criteria regarding their educational level, occupation or residence area. The children had the following criteria: Age ranged from 4 -12 years, both sexes and free from chronic physical illnesses.

Tools of data collection:

Tool I: Biosociodemographic, knowledge and attitude structured interview schedule:

It was developed by the researcher to obtain biosociodemographic data of the mothers and their autistic children, and assess mothers' knowledge and attitude about autism.

Part I:

Biosociodemographic characteristics of the mothers:

Mothers' age, level of education, occupation and residence. Family type, income , size, history of autism and consanguinity

Characteristics of children:

Child age, sex, birth order and educational level

Child's medical history which includes: autism related data, degree of disability, duration and age when autism discovered, pregnancy and first 3 years of life problems.

Part II: Mothers' knowledge and attitude toward autism:

Mother 's knowledge about autism :

It was developed by the researcher to assess mothers' knowledge about autism; meaning of autism and its causes, common age of autism occurrence , manifestation of autism and effect of autism on the child , diagnosis, duration of treatment, needs of the child, treatment approaches, side effects of drugs, play and massage management.

It included 13 items of multiple choice questions by using the following scoring system; A correct & complete response was scored (2), incorrect & incomplete (1), incorrect or don't know (0) then the total

score was calculated and converted into a percent score. Mothers' knowledge was considered good when the total score was (70%) or more, fair when it was from 50% - 69% and poor knowledge scored less than 50%.

B- **Mothers' attitude toward autism:**

This was measured using a scale developed by the researcher based on reviewing scales by Donenberg (1994), and Abidin (1995)[17, 18] and modified by the researcher to suit the study culture. It consisted three categories; Mothers' attitude toward nature of the disease and its effect on the child (9 statements), mothers' attitude toward consequences of autism on the family life (8 statements), and mothers' feelings towered autistic child including stress and frustration feeling (10 statements)

Each item was rated on a 3 – point likert scale, the mothers were asked to select the answer on each item according to how accurately the items described their attitude and feelings toward autistic child and autism. Each positive statement was scored as follows: Agree= 2, Uncertain =1 and Disagree = 0, the scoring was reversed for negative statements.

Tool II: Social Communication questionnaire:

It was developed by Rutter & Lord 2003. [19] This scale was used by the researcher to assess severity of autism regarding social interaction, communication and the repetitive, stereotyped patterns of behavior. It included 40 items, each item is rating on 2-point Likert scale, each item was either yes (1 grade) or no (zero grade), the total scores was 40 grades. The autism severity was categorized as: $\leq 15 =$ no autism, 15- 22= mild , 23- 31= moderate and 32 – 40= sever autism.

Tool III: Parenting sense of competence scale:

This was measured by using a scale developed the researcher based on reviewing scales originally developed by Johnston 2000 and Ruble 2005 [20, 21] and modified by the researcher and used to assess feelings of competence as a parent and feelings of comfort and value in that role. It consisted of three subscales:

The efficacy subscale: assessed the degree of acquired the necessary skills to enhancing their child development (10 items)

The responsiveness subscale: assessed parent's interaction and responsiveness toward their children (6 items).

The Satisfaction subscale: assessed parents' affective perceptions about their value of and comfort in the parenting role (8 items).

Mothers' Responses were rated on a 3-point Likert scale; agree=2, uncertain = 1 and disagree = o score. Items within each subscale were summed and converted into a percentage. The mother's competency level of care was considered low when the total score was less than (50%), moderate when it was from 50%- 69%, and high if total scores was 70% or more.

Tool V: Mothers' practices structured interview schedule:

It was developed by the researcher to assess mothers' practices in caring for their autistic children, it included;

1-Reported practices: It included five parts as the following:

Communication skills: it was used to assess mothers' practices to improve verbal and non verbal communication skill of the child, included (12) items.

Social skills: it was used to assess mothers' practices to improve child's Social interaction skills as interaction with others, eye contact and imitation, it included (19) items.

Behavior problem : it was used to assess mothers' practices to improve behavior

problem of the child as using reward **,** time out and management of maladaptive behavior as tantrums and aggression, it included (17) items.

Play skills: it was used to assess mothers' practices to improve using play activities as imitation of play activates , sharing play with others and choosing suitable toys for the child, it included (20) items.

Physical care skills:

It was used to assess mothers' practices related the activities of daily living as hygienic care, feeding, elimination, nutritional problems, sleep problems and safety environment (95 items)

Observed practices : It included three parts related to the following:

Strength the speaking organs: assess mothers' related to doing simple exercises for speaking organs of the child, it included (14) items**.**

Motor skills: assess mothers' management to improve fine and gross motor skills of the child, it included (14) items**.**

Massage technique: assess mothers' while doing massage for their children. It includes preparation before massage and techniques of massage, it included (20) items**.**

Scoring system; each item was scored as; correct or complete done = 1, incorrect or not done = 0. The mothers' practices was considered good when the total score was 70% or more , fair from 50% to > 69% and poor if the total score was less than 50%

Content validity

The study tools had been tested for content validity by five experts in the field of pediatric nursing and modifications carried out accordingly.

Ethical and legal considerations:

The agreement for participation in the study was taken from subjects after the purpose of the study was explained to them. Before data collection, the mothers and their autistic children were informed about the aim and the nature of the study which didn't cause any harm or pain. Also they were assured that the information would remain confidential and used for the purpose of research only.

Pilot study

A pilot study was carried out to test the clarity, and applicability of the tools, the required modification was done. A total of 5 subjects were recruited for the pilot study and excluded from total sample.

Procedure

An actual field work was carried out over a period of one year from November 2014 to October 2015. The following detailed description of the steps involved in the development, implementation and evaluation of the educational training;

Preparatory phase :

An oral approval for data collection was obtained from administrators responsible for the Child Psychiatry out-patient clinic in Psychiatry and Neurology Center at Tanta University for carrying out the study. The program was designed by the researcher after review of the literature to meet mothers' knowledge and practices deficits. The content was prepared according to the mothers' level of understanding.

The implementation phase:

The total number of the sample 50 mothers and their children, they were divided into 5 groups 10 mothers in each group. The educational training was introduced to each group separately 2 session / week, the total number of session was 10 session , each session was presented for one hour for knowledge and practices . The content of knowledge involves items about meaning of autism and its causes, common age of autism occurrence , manifestations of autism and effect of autism on the child , diagnosis, duration of treatment, needs of the child, treatment approaches, side effects of drugs, play and massage management. The content of practice was about communication skills**,** social skills, behavior problem, play skills

motor skills, massage technique and physical care skills.

In the first session; pre test was done and objective of the educational training were explained to the mothers. The teaching strategy includes lectures, discussion, role playing, data show, video, actual situation and demonstration. Also handouts of the educational training were given to the mothers.

Evaluation phase

Evaluation of the effectiveness of the educational training was done immediately after and three months after the educational training implementation by reassessment using the same questionnaires (post test).

Statistical Analysis

The collected data was organized, tabulated and statistically analyzed using SPSS software statistical computer package version 19. For quantitative variables, mean and standard deviation were calculated. The number and percentage distribution was calculated. Fisher exact test (p) was used to compare observations before and after training application. Significance was adopted at $p< 0.05$ for interpretation of results of tests of significance.

Results

Table (1): shows that nearly two thirds of the studied mothers (62%) were in the age group of 25 to less than 35 years, 48% had university education, 64% were not working and the most of them (80%) were resident in urban areas.

Table (2): shows the studied children according to their sociodemographic characteristics. It was found that the age of the autistic children ranged from 4-12 years, with a mean of 6.28±2.48.years. More than half of the them (52%) were in the age group of 4 to less than 6 years, and less than three fourth of them (74%) were males. The table shows that when autism was discovered, the age of studied children was 2-5 in 72% of them

Table (3): Shows the effect of the educational training on the total mean score of knowledge of mothers about autism through the study period. It was found that, before the educational training 78% of the mothers had poor knowledge about autism while 82% and 80% of them had good knowledge immediately after and 3 months after educational training respectively. There was significant improvement in the knowledge of studied subjects (P>0.05).

Table (4): It was found that the percentage of mothers according to their practices were 78% good,10% avarge,12% poor after the implementation of the training program compared to 6% good,32% average, 62% poor before the program. The difference was statistically significant where the mean score of practices were (71.2±56.2) before the training, (162.2±50.1), after and 3 months after the educational training (P<0.05).

Table (5) & Figure (7): Illustrate the effect of the educational training on the total mean score of attitudes of mothers about autism. Regarding nature of autism and child problems the total mean score increased from (6.72±6.91) before the educational training to (8.80±6.91) after training. Mother's attitude toward family problems was (6.84±6.01) before training which increased to (7.64±6.42). This table also shows that stress feelings of the mothers toward autism consequences were (13.96±7. 21) which decreased to (11.10±7.21) after the educational training implementation.

Table (6): Represents the effect of the educational training on mothers' competency level regarding total mean score of self efficacy, response and satisfaction. Regarding mothers' self efficacy, the total mean score increased from (10.24±8.08) before the training program to (21.26±8.34) after program.

The total mean score of mothers' response to the needs of their autistic children was (8.42±5.69) before training which increased to (15.66±4.63) immediately after educational training. This table also shows that the total mean of mothers' satisfaction regarding their parenting role before educational training was (8.14±5.84) which increased to (14.88±5.61) immediately after educational training implementation.

Table (7): The table shows that there was a significant correlation between the competency level of care with knowledge, practice and attitude before, after and 3 months after educational training (p<0.05).

Table (8): Represents the relationship between the mothers' competency level of care and their sociodemographic characteristics. As regard the age of the

mothers, the age group from 30 to less than 40 years had the highest mean scores of competency level of care in after and 3 months post program (69.14±1.46 and 69.14±1.57respectively). There was significant increase in the competency level among the different age groups of the studied mothers.

Table (9): Represents the relationship between the mothers' competency level of care and sociodemographic characteristic of their children. In relation to the disease severity, it was observed that the highest mean scores of competency level of the mothers was with children who had mild degree (69.16±1.60) than moderate (67.12±2.50) and severe degree of disease (39.32±15.73) after the program , the improvement was statistically significant where p<0.05.

Table (1): distribution of the studied mothers According to their Sociodemographic characteristics

Mothers characteristics	No	%
Mother age 25->35 35-45 >45	31 12 7	62.0 24.0 14.0
Mean± SD	30±8.09	
Educational level Illiterate Preparatory secondary University	5 9 12 24	10.0 18.0 24.0 48.0
Occupation Working House wife	18 32	36.0 64.0

Resident area Rural Urban	10 40	20.0 80.0
Family type Extended Nuclear	16 34	32.0 68.0
Family number 3-4 4-5 >5	11 25 14	22.0 50.0 28.0
Income Low (>1000P) Intermediate(1000- 2000P) Good(< 2000P)	10 33 6	20.0 66.0 12.0
Consanguinity Yes no	15 35	30.0 70.0
Family history of Autism Positive Negative	9 41	18.0 82.0

Table (2): Percentage of autistic children according to their sociodemographic characteristics.

Children characteristics	No	%
Age 4->6 6-> 10 10 -12	26 17 7	52.0 34.0 14
Mean± SD	6.28±2.48	
Gender male Female	37 13	74.0 26.0
Birth order First Second Third Fourth	20 16 8 6	40.0 32.0 16.0 12.0
Educational class Nursery School age	27 23	54.0 46.0
Age (in years) when autism discovered 1 2->5 >5	9 36 5	18.0 72.0 10.0
Duration of disease (in years) <1 1-5 >5	31 15 4	62.0 30.0 8.0

Degree of autism		
Mild	18	36.0
Moderate	26	52.0
Sever	6	12.0
Type of management		
- Speech therapy	48	96.0
- Behavioral modification	24	48.0
- Skills improvement	16	32.0
- all of above	10	20.0
Obstetric and neonatal problems		
Pregnancy or delivery problems	14	28.0
Neonatal jaundice	21	42.0
Premature birth	10	20.0
Twins birth	5	10.0
Development in first 3 years regarding social-communicative behaviors		
Upnormal	32	64.0
Normal then stopped	18	36.0

Table (3): Effect of the educational training on total score of knowledge of studied mothers

Total Knowledge of mothers	Before Program (I)		After Program (II)		3Months Post Program (III)		X^2	P
	No	%	No	%	No	%		
Poor	39	78	3	6	2	4		
Average	9	18	6	12	8	16	91.45	<0.05*
Good	2	4	41	82	40	80		
Mean ±SD	10.8±6.7		30.4±6.2		32.6±7. 2			
F- test **Scheffe test**	129.91 I&II,P*- I&III,P*- II&III, P							

*Significant p <0.05

Table (4): Effect of educational training on total score of management of autistic children performed by mothers

Total Practices of mothers	Before Program		After Program		3Months Post Program		X^2	P
	No	%	No	%	No	%		
Poor	31	62	6	12	4	8		
Average	16	32	5	10	9	18	49.1	<0.05*
Good	3	6	39	78	37	74		
Mean ±SD	71.2±56.2		162.2±50.1		159.4±52.4			
F-test **Scheffe test**	47.72, p* <0.05 I&II,P* - I&III,P* - II&III, P							

*Significant p <0.05

Table (5): Effect of the educational training on the total mean score of mothers' attitudes about autism

Mothers' attitudes	Before Program	After Program	3Months Post Program	F	P
	Mean± SD	Mean± SD	Mean± SD		
Natural of disease	6.72±6.91	9.06±6.63	11.40±5.68	6.62	<0.05*
Family problems	6.84±6.01	7.94±6.20	11.12±5.54	7.03	<0.05*
Stress feelings	13.96±7.02	11.10±7.21	10.34±6.99	3.63	<0.05*

*Significant p <0.05

Table (6): Effect of the educational training on mothers' competency level regarding total mean score of   self efficacy, response and satisfaction

mothers' competency level	before Program	after Program	3Months Post Program	F	P
	Mean± SD	Mean± SD	Mean± SD		
Self efficacy	10.24±8.08	21.26±8.34	19.96±8.86	25.45	<0.05*
Response	8.42±5.69	15.66±4.63	15.24±4.71	32.52	<0.05*
Satisfaction	8.14±5.84	14.88±5.61	14.58±5.98	21.42	<0.05*

*Significant p <0.05

Table (7): Correlation between mothers' knowledge, practices, attitudes and competency level scores regarding autism

Total score of efficacy of care score					
	before Program		after Program		3Months Post Program
	R	P	r	P	r	P
Knowledge	0.83	<0.05*	0.52	<0.05*	0.67	<0.05*
Practices	0.88	<0.05*	0.83	<0.05*	0.83	<0.05*
Attitudes	0.97	<0.05*	0.93	<0.05*	0.92	<0.05*

*Significant p <0.05

Table (8): Relationship between the mothers' competency level of care and their sociodemographic characteristic

Sociodemographic characteristics of the mothers		Total score of competency level of care score			F	P
		Before Program	after Program	3Months after Program		
		Mean ± SD	Mean ± SD	Mean ± SD		
Age (year)	20-30.	44.08±7.09	68.00±1.59	67.16±2.48	24.13	<0.05*
	30-40.	58.00±2.23	69.14±1.46	69.14±1.57	28.97	<0.05*
	>40.	13.06±7.77	41.61±16.54	38.67±16.42	159.30	<0.05*
Educational level	Illiterate	4.20±0.44	15.60±2.60	12.60±2.30	95.73	<0.05*
	Preparatory	8.27±1.34	33.72±6.88	31.63±7.58	150.33	<0.05*
	secondary	25.00±10.64	59.19±7.18	56.19±8.35	123.99	<0.05*
	University	54.07±4.89	69.07±1.03	69.97±1.11	7.27	<0.05*
Occupation	Working	13.56±8.15	42.31±16.7	39.40±16.67	-15.61	<0.05*
	Not working	50.33±7.70	68.66±1.23	68.22±1.92	-6.63	<0.05*
Resident	Urban	53.42±5.28	69.07±0.99	69.00±1.10	-5.04	<0.05*
	Rural	16.44±11.33	45.08±17.65	42.36±17.76	-11.67	<0.05*
Family number	3-4.	53.42±5.28	69.01±0.99	69.00±1.10	108.63	<0.05*
	5-6.	21.08±10.61	54.88±10.11	52.08±10.22	104.60	<0.05*
	>6.	5.90±1.81	22.18±7.73	20.09±8.47	117.91	<0.05*
Family income	Low	8.05±2.96	32.10±12.46	29.25±12.28	120.26	<0.05*
	Intermediate	31.85±11.81	63.14±5.45	61.04±6.71	86.89	<0.05*
	good	56.66±3.31	69.11±1.26	69.11±1.36	89.75	<0.05*

*Significant p <0.05

Table (9): Relationship between mothers' competency level of care and sociodemographic characteristic of the children

Sociodemographic characteristics of the children		Total score of efficacy of care score			F	P
		before Program	after Program	3Months after Program		
		Mean ± SD	Mean ± SD	Mean ± SD		
Child age	4->6	10.50±5.40	37.61±15.00	34.69±14.86	156.04	<0.05*
	6-10	38.88±10.24	66.35±2.99	64.88±4.21	44.44	<0.05*
	10-12	58.00±2.23	69.14±1.46	69.14±1.57	50.11	<0.05*
Sex	Male	52.00±6.32	68.93±0.99	68.88±1.35	-5.81	<0.05*
	Female	14.94±9.69	43.73±17.22	40.88±17.23	-13.91	<0.05*
Birth order	First	8.05±2.96	32.10±12.46	29.25±12.28	192.03	<0.05*
	Second	26.93±8.77	61.31±4.96	58.62±5.81	61.56	<0.05*
	Third	49.37±2.82	69.00±0.00	69.00±0.53	67.15	<0.05*
	Fourth	58.83±0.40	69.16±1.60	69.00±1.67	16.40	<0.05*
Educational level	Nursery	10.96±5.82	38.48±15.38	35.59±15.30	136.44	<0.05*
	primary class1-3	41.61±10.45	66.94±2.68	65.77±4.11	38.98	<0.05*
	primary class4-6	59.00±0.00	69.20±1.78	68.80±1.78	43.55	<0.05*
Duration of disability	<1	13.06±7.77	41.61±16.54	38.67±16.42	134.81	<0.05*
	1-5	46.60±8.25	68.26±1.53	67.73±2.49	24.11	<0.05*
	>5	59.00±0.00	69.00±2.00	68.50±1.91	28.87	<0.05*
Severity of the disease	Mild	58.83±0.40	69.16±1.60	69.00±1.67	39.02	<0.05*
	Moderate	41.62±9.35	67.12±2.50	65.93±3.85	34.34	<0.05*
	Sever	11.46±6.29	39.32±15.73	36.42±15.66	160.16	<0.05*

*Significant p <0.05

Discussion

The current study results showed that nearly two thirds of mothers' age ranged from 25-<35 years and nearly half of them were highly educated. As well, most of them reside in urban areas. These findings were in accordance with those of **Attiya 2006**, who found that, age of the mothers ranged between 31-< 38 years, and the majority of them were highly educated and living in urban areas,[22] and nearly two thirds of studied mothers were not working in accordance with study of **Brandon, 2007** who mentioned that working mothers raising a child with a disability have less time for work and other activities as socializing and leisure than mothers raising a typical child.[23] **Mostafa , 2012** also stated that housewives reported that their children displayed more autistic symptoms and externalizing problems than the working mothers.[24]

It was found that that most of children with autism are boys. This result was supported by**, Hassan 2008,** who found that majority of children were boys.[25] The present study result indicated that in most of children, autism was discovered in age 2-<5. This finding was in accordance with **Wong 2007** who mentioned that the autism typically appears in the first 3 years

of life.[26] This may be due to the important social self-regulation milestone which emerges in the third year of life, building on first-year milestones and early language development, and the ability to regulate behavior and emotions in response to social cues. The failure to achieve this milestone is relevant to autism, which constitutes the defining characteristic of autism by the age of three.[27] This also may duo to delayed in diagnosis of autism which in accordance with Elsheikh, 2016 who concluded that delayed psychiatric consultations among Egyptians may be attributed to lack of access to services (either because of cost or availability) and lack of awareness among the general Egyptian population.[28]

The finding of this study showed that the overall knowledge of the majority of the mothers regarding their autistic children care was good after the educational training implementation**.** This finding is similar to **Howyida 2012,** who found that the level of mother's knowledge improved immediately after the program implementation, [29] and **Case-Smith 2005,** reported that Parents desire information about their child and the diagnosis and ask for strategies to improve their child's

performance or manage difficult behaviors. [30]

Results of this study revealed that most of the mothers practice regarding their autistic children care was lacking and improved immediately after the program implementation. In this respect, **Volkmar2005,** stated that parents typically are active partners in their children's education , They transfer skills learned in the educational program to the home setting and teach their children many behaviors that are best mastered in the home and community [31] and according to **Tachechak 2009**, the parents should participate in the training for their children because they can use the training procedures to continually practice with their children by themselves at home. [32]

The current study has revealed that there was improvement in mothers' attitude after the educational training in which they gained more positive attitude regarding natural of autism and child problems .In accordance with **Gupta 2004**, we report that families have been successful in developing positive perceptions regarding raising a child with disability. [33] The current study has revealed that more than half of the mothers agreed that having a child with autism causing permanent problem to the family before the training

program. This negative attitude significantly improved after training. **Faux and Nehring 2007** stated that there is a long-held popular belief that having a child with autism is a universally negative event, leading to long-term parental suffering and negative emotional and psychological sequel for other family members. [34]

Most of the mothers before the training reported that autistic child cause so many problems which lead to stress. This negative attitude was improved immediately after training, similar to **Mungo, 2007,** who stated that Parents were found to experience heightened stress, impaired mental health, self-blame, weakened physical functioning, and tiredness. There are financial strains, stressful experiences with professionals, problems associated with school, ineffective services, unmet needs and concerns for the future.[35] **Silva 2012** concluded that parenting stress in autism reaches a level that is four times that of typically developing children and is frequently characterized by the feeling that "at times we cannot cope". [36]

According to **Bandera 1997,** Parental efficacy is defined as the parent's beliefs in his or her ability to influence the child and his or her environment to foster the

child's development and success.(37) The current study revealed that the majority of the mothers involved in the intervention of their autistic children with professional after the program compared to more than half before the program, also **Sofronoff 2002 found** that Parents are more likely to engage in these activities if they have the confidence that their behavior will indeed have a positive effect on their children. The mother is seen as an important partner to the professionals working with the child.(38) This study demonstrated that that there was significant improvement in mothers' responsiveness skills toward their autistic children after the educational program more than before the educational training. **Siller 2002**, found that children with autism who had parents with more synchronous or responsive behavior have been reported to achieve superior communication skills compared with children whose parents showed lower levels of responsiveness.(39) **Morgan 2004,** it is necessary for parents and other caregivers to make every effort to connect with the child i.e. physically touch and eye contact, stimulation, talking, smiling, and being sensitive and responsive are other strategies that parents could use to build attachment with their disabled children.(40)

This study revealed significant positive correlation between mother's competency level of care provided to their autistic children with their knowledge, practices and attitudes (table 32). This finding was in agreement with **Sanders 2005**, found that mothers who were more active in seeking information and being proactive in the treatment of the child were found to have a greater knowledge of autism. The mothers who reported being more active in their child's development experienced feeling of higher maternal competency.(41)

The present study revealed significant relationship between mothers' competency level of care and their sociodemographic characteristics. This is in agreement with **Sevigny 2009,** who stated Parental competency level is influenced by a wide range of variables, including parent characteristics and child characteristics.(42) The present study also showed significant relationship between mothers' competency level and the characteristics of their children. Mothers who have children with severe autism gain low score in their competency level, similarly **Hastings 2002**, concluded that autism severity appears to be a significant factor which influences parental self-efficacy. Because autism is a spectrum

disorder, how it impacts child development is highly variable. Mothers of children with more severe autism report lower self-efficacy than mothers of children with milder symptoms. [43]

Conclusions

Based on the results of the current study, the following can be concluded;

Educational training was effective for mothers to improve their knowledge about autism, increase quality of the practice and care provided to autistic children regarding communication , social interaction , maladaptive behavior, massage , play , motor and physical care , decrease negative attitude and parenting stress related to the impact of autism on the child and family. Educational training significantly influenced over all competency level in which mothers showed high self efficacy, parenting satisfaction and also increase maternal responsiveness toward their autistic children.

Recommendations

Based on the findings of the current study, the following recommendations were suggested:-

Children with autism should be enrolled in an early intervention program as soon as they are diagnosed

Continuous health education and counseling programs are necessary to improve parenting approaches and coping strategies

Nurses should receive adequate and continuous training courses in children care (physically, emotionally and socially). In order to improve their skills in health education for mothers toward their children care.

Mass media should play a significant role to disseminate the needed information about child health care and increase public awareness about autism

Established localized formal centers and special schools which provide treatment services and education for autistic children

More researches are needed to identify most common family problems in the community, and available resources that meet family needs.

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The effect of health education guidelines on women suffering from reproductive tract infections for seeking health care services

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Abstract

Background: The most important period in the life span of women is the reproductive period, which extends from menarche to menopause. Reproductive tract infections are endemic in developing countries and having a large burden on the society. **Aim:** to determine the effect of health education guidelines on women suffering from reproductive tract infections for seeking health care services. **Materials and Method:** A Quasi experimental research design was used to achieve the aim of the present study. The study was conducted at the gynecological outpatient & family planning clinics of Zagazig University hospital and Al-Ahrar hospital at Zagazig. A purposive sample composed of 200 women and who were fulfilled the inclusion criteria. Structured interview related to reproductive tract infections symptoms. Women knowledge regarding reproductive tract infections Barriers of seeking health care services for women suffering from reproductive tract infections. Health education guidelines for women suffering from reproductive tract infections. **The results**: There is a significant improvement of the women knowledge regarding most of the studied items in relation to RTIs immediately after health education guidelines. **Conclusion**: Health education guidelines regarding reproductive tract infections were effective in increasing women knowledge level after health education guidelines. The major barriers for not seeking health care services for women suffering from reproductive tract infections were the perception of symptoms as normal, shyness of genital examination or explain their symptoms, family responsibilities, the husband neglecting to the health of his wife, lack of awareness about RTIs and privacy. **Recommendations**: Health education to all women attending MCH and family planning services about reproductive tract infections and how can prevent. Furthermore, instruct women about early attending to seek medical care services if any symptoms of reproductive tract infections appear.

Keywords: Reproductive tract infections, barriers, treatment seeking, health education.

Introduction:

Reproductive Tract Infections are caused by bacteria, viruses, chlamydia, mycoplasma and other pathogens that invade the genital tract.[1] They can be in either the upper reproductive tract (Fallopian tube, ovary and uterus), and the lower reproductive tract (vagina, cervix and vulva).[2] RTIs are one of the most prevalent health morbidities among women throughout the world, particularly in developing countries among women of reproductive age.[3]

In a house-to-house survey using cluster sampling, 1344 married women from urban and rural areas of Upper Egypt (Minia, Assiut and Sohag) were interviewed to study the magnitude and determinants of RTIs. Overall prevalence was found to be 52.8% [4] RTIs, as a silent epidemic for women of reproductive age in developing countries, studies in India, Bangladesh and Egypt have shown that 52-92% of women are suffering from RTIs.[5]

Female RTIs usually originate in the lower genital tract, as vaginitis or cervicitis and may produce symptoms such as abnormal vaginal discharge, genital pain, itching and burning feeling with urination.[6] RTIs contributing to gynecological morbidity and maternal mortality globally, including low-middle-income countries. Untreated infections can lead to pelvic inflammatory diseases, ectopic pregnancy, infertility, cervical cancer, fetal loss or infant health complications.[7]

There are many barriers to seeking health care. They include symptoms of RTIs are usually considered to be not dangerous, or simply a normal outcome of marriage and childbearing, and therefore not urgent enough to be paid attention to. Furthermore, women often feel embarrassed to discuss such symptoms for fear of social associated invasion of confidentiality. In addition, lack of economic independence, limitation of physical movement of women in most communities, poor quality of care, inaccessibility of services, non-availability of female physicians at a health care facility and the high expense are considered other obstacles.[8]

In health education and health promotion plans, the first step for intervention is an assessment of health needs. The most successful educational program is based on the distinction between the groups at risk, community situation, planning for health education, changing the high-risk behaviors, and making the changes stable.[9] Since too many factors affect

decision-making about a particular health behavior, the health education expert is responsible for determining individuals' personal characteristics, environment and behavior, and then for necessary planning to promote health situation. [10]

Aim of the study to:

Determine the effect of health education guidelines on women suffering from reproductive tract infections for seeking health care services.

Research Hypothesis:

Women who have exposed to health education instructions their knowledge about reproductive tract infections while increase and they attend to seek medical services early.

Material and Method

Material

Research design: A quasi-experimental research design was used

Setting: The study was conducted at the Gynaecological outpatient & the family planning clinic of Zagazig University Hospital and Al-Ahrar Hospital that are considered from the largest and most important governmental hospitals of Zagazig city.

Sampling: a convenient sample of 200 women with reproductive tract infections who attended clinics of the above previously mentioned settings

Sample size:

Taking the prevalence of RTIs symptoms among women (18–45 years) as 37%, with relative error of 20%, and taking non-response rate of 10%, the total sample size is calculated to be 200.

Criteria of the study sample

Women were selected according to the following criteria:(1) Women who are in the age group 18 to 45 years, (2) Women who attended to the gynecological outpatient &the family planning clinics of the previously mentioned setting, (3) Women with symptoms of RTIs diagnosed by a physician. In addition, women who were free from medical and gynecological complications.

Tools of data collection:

Three tools were designed by the researcher after reviewing the related literature for data collection, which consists of the following parts:

Tool I: Structured interview questionnaires schedule: It consisted of two parts as the following:

Part (I): Socio-demographic data of the studied women. It included: age, marital status, level of education, residence area, employment status and socioeconomic status. Socioeconomic is classified into high, middle, and low.[12]

Part (II): Data about the current symptoms related to RTIs as reported by the studied women. Assessment current complaints of women concerning RTIs (women have mentioned more than one symptom), such as lower back pain, lower abdominal pain, itching over the vulva area, frequency or painful of urination. Additionally, abnormal vaginal discharges whether odor besides color of vaginal discharges.

Tool II: Women assessment questionnaire sheet: this part consisted of two parts as the following:

Part (I): Women's knowledge regarding RTIs. This part included questions in relation to its definition, causes, risk factors, signs and symptoms, complications, and their adverse effect on pregnancy. Moreover, prevention and management measures.

The scoring system of women knowledge:

A scoring system for knowledge was determined through: (2) scores were given for complete correct answer, (1) score for an incompletely correct answer, and (0) score for don't know or incorrect answer. A total knowledge score that ranges from zero to 16 points was adopted. Total scores level of knowledge less than 8 (<50%) were classified as poor knowledge, women

who had total scores level for knowledge range from 8 - 11 (50 - <70%) were described as fair knowledge and women who had complete correct answers range from 12 to 16 (70-100%) were described as having good knowledge.

Part (II): Barriers of seeking health care services for RTIs.

a) **Reasons for not seeking health care services regarding RTIs.** These can be classified as: perceived as a normal and do not need treatment, didn't know the dangers of RTIs, counseling about RTIs and sources of information. Additionally, severity of pain, discharges and itching.

b) **Factors affecting seeking health care services regarding RTIs.** These factors can be categorized as: (a) Social and cultural factors (feeling of shame, husband neglecting of his wife's health, limited decision making by women, lack of control over resources), (b) Environmental factors (lack of accessibility, shortage of time, lack of awareness), (c) Economic factors (poor socioeconomic conditions and treatment are expensive, family responsibilities), and (d) Health care facility factors (distance to health care facility,

duration of waiting for the services, lack of privacy).

Tool III: Health education guidelines for women suffering from reproductive tract infections. It consisted of the following:

These guidelines were prepared by the researcher based on a review of the recent relevant literature using articles and scientific magazines to be acquainted and guided in the process of the tool designing. These guidelines covered theoretical parts such as definition, causes, risk factors, signs and symptoms, adverse effect on mothers and the baby and complications. In addition, management and preventive measures regarding RTIs and hygienic care of the genital tract.

Method of data collection

- The researcher obtained a letter from the Dean of Faculty of Nursing to the hospital administrators containing the title and aim of the study of the previously mentioned settings. The aim of the study was explained to all of the women. Confidentiality and privacy regarding women's rights were maintained through the stage of the study.
- The tools have been revised by three academic nursing experts in the field of obstetrics and Gynecology to test the content validity of these tools for validation and ensure that these items adequately represent.

- A pilot study was carried out on 10% (20 women) of the total sample. The pilot study was carried out 3 days /week among women with RTIs attending in the clinics at of the previously mentioned settings. These tools were modified according to the recommendations of specialist before starting the data collection in order to evaluate the applicability and clarity of tools. The pilot study sample was excluded from the main study sample.

Field of work:

- The study was carried out in a period of nine (9) months from the beginning of July 2013 to the end of March 2014, two days per a week from 9 a.m. to 12 p.m.
- The researcher introduced herself and explained the aim of the study to all participants at the beginning of each visit.
- The researcher interviewed each woman individually in the clinics at of the previously mentioned settings to assess women current RTIs symptoms, their knowledge regarding RTIs and barriers to seeking health care services for RTIs in order to

determine the gaps and needs of women through an interview, took about 10-15 minutes for each woman.

- Based on the results gathered from assessment staging, guidelines were designed to meet the women lack knowledge.

- Nursing guidelines were ranged from half to one hour. The content of the guidelines included definition or meaning of RTIs, causes, signs /symptoms, risk factors, complications, and prevention and care measures (health care services) regarding RTIs as well as their point of view regarding the barriers to seeking health care services.

- Different methods of guidelines were used such as presentation, group discussion, demonstration and re-demonstration. The video also was included.

- The outcome of the guidelines was assessed immediately (through sessions) after the guidance sessions to evaluate the effect of guidelines on women.

- Reproductive tract infection has been identified according to symptomatic diagnosis of RTIs based on a syndromic approach has also been recommended by the World Health Organization (WHO) and Center for Disease Control and Prevention (CDC) as an effective and inexpensive approach for diagnosis of RTIs in low resource settings (13, 14) and confirm the diagnosis of RTIs by physicians' examinations.

Limitation of the study

There was no cooperation from some health care providers team and some women refused to complete the interview during a data gathering stage.

Statistical Analysis:

Data was entered and analyzed by using the Statistical Package for Social Science (SPSS), version 18. Categorical variables were displayed as numbers and percentages. The findings were summarized by using tables and histogram. The chi-square test was used for evaluating the magnitude of associations between seeking health care of the women and their social-demographic characteristics. A *P*-value less than 0.05 was considered significant.

Results:

Table (1): Shows that the highest percentage (67.0%) of women were in the age group 30 - < 40 years, with a mean age of 31.7 ± 5.7. As for marital status, the majority (80%) of the women were married. Concerning the educational level,

35.0% of them were illiterate, and more than three-fifths (62.0%) reside in rural areas. Concerning employment status, the majority (87%) of women were not working. As for socioeconomic status, nearly half (45.0%) were of low socioeconomic status.

Figure (1): Displays current symptoms of RTIs as reported by women. This figure discloses that lower back pain (26.4%) and lower abdominal pain not related to menses (25.0%) these were the most complaints related to RTIs, followed by the symptom of itching/irritation over the vulva area (21.6%). Furthermore, it is found that the highest percentage (68.8%) of the women stated odourless vaginal discharges whereas, the prevalence of white cheese like vaginal discharges was identified as a symptom of RTIs by (51.8%).

Table (2): Clarifies that there is a significant improvement of the women knowledge regarding most of the studied items in relation to RTIs immediately after health education guidelines at p<0.001.

Figure (2): Displays total score level of knowledge of women regarding reproductive tract infections. It clears that, 54% of women had poor knowledge toward RTIs before health education

guidelines. Only, 19% of them had good knowledge toward RTIs.

Figure (3): Clarifies that, 53% of the women have inadequate of knowledge regarding RTIs.

Table (3): Illustrates a statistical significance difference between the women the adequate level of knowledge and both age and family income at p = 0.00.

Table (4): Indicates that, about three-quarters (74%) of the participants perceived as symptoms normal and did not need treatment. Furthermore, the higher percentages (65% & 67.5%) of women did not know the possible dangers of RTIs and did not get information about RTIs, respectively. On the other hand, more than three-quarters (77.5%) of women had none to mild pain, while 60% & 74% of them had none to mild vaginal discharge and itching, respectively.

Figure (4): Illustrates the percentage distribution of the studied women according to their sources of getting information about RTIs. Most (36.9%) of women mentioned the main source of knowledge about RTIs were mothers and mothers in law, followed by friends or relatives (33.8%). A small percentage their information from mass media and health care providers regarding RTIs (18.5% & 10.8%, respectively).

Table (5): Displays the percentage distribution of the studied women according to their factors affecting seeking of health care services for RTIs. *As for social and cultural factors*, shyness of genital examination (86%), neglecting the husband for his wife's health (74%) these were the most factors affecting seeking health care mentioned by women, followed by more than two-thirds (69.0%) of these resulting from limited decision-making. Concerning environmental factors, it is found that the majority (71% & 66%) of these were due to lack of accessibility of treatment and lack of awareness about RTIs, respectively. The table also shows that, less than two third (64.0%) due to lack of time.

As for economic factors, it reveals that, the highest percentage (84% & 60%) of women reported it was due to family responsibilities and services are expensive respectively, whereas more than fifty percent (58%) was due to self-therapy as regards to economic factors.

Regarding health care facility factors, the most common (71%) found to be the health care providers are not friendly. Meanwhile, the table also shows that, more than half (54% & 57%) of women that were due to long distance to health care facility and long waiting for the services (> one hour), respectively. In addition, 64% of them did not seek health care for RTIs because lack of privacy.

Table (6): Shows the relationship between seeking of health care for RTIs symptoms by participants and their socio-demographic characteristics. The proportion of participants who did not seek health care for RTIs was higher, among participants within the age group, 30-40 years (75.7%), than the other age groups. As for education level, the percentage of participants who didn't seek health care for RTIs was the highest among secondary school (41.4%) than the university and higher levels (14.3 %) (X^2 = 27.4 and P = 0.000).

Concerning the marital status and residence of the participants, the unmarried women and those residing in rural areas were less likely to seek health care of RTIs (67.1% & 56.4%, respectively) than the married ones and those residing in urban areas (32.9% & 43.6%, respectively). Marital status and residence area had statistically significant associations with seeking health care of RTIs (X^2=9.7, & 6.2 at P = 0.001, 0.05 respectively). The analysis of the relationship between seeking of health care by participants, and employment status revealed a considerable difference. Nearly half (51.4%) of non-working participants were not-seeking health care services for RTIs symptoms, whereas the percentage of students not-seeking health care services was 35.0%.

Table (1): Percentage distribution of the studied women according to their socio-demographic characteristics (n = 200).

Items	No.	%
Age (years)		
18 -	32	16.0
30 -	134	67.0
40 - <50	34	17.0
Mean ± SD	31.7±5.7	
Marital status		
Married	160	80.0
Unmarried	40	20.0
Educational level		
Illiterate	70	35.0
Primary school	60	30.0
Secondary school	40	20.0
University or higher	30	15.0
Residence area		
Urban	76	38.0
Rural	124	62.0
Occupation		
Working	26	13.0
Not working	174	87.0
Socioeconomic level		
Low	90	45.0
Middle	70	35.0
High	40	20.0
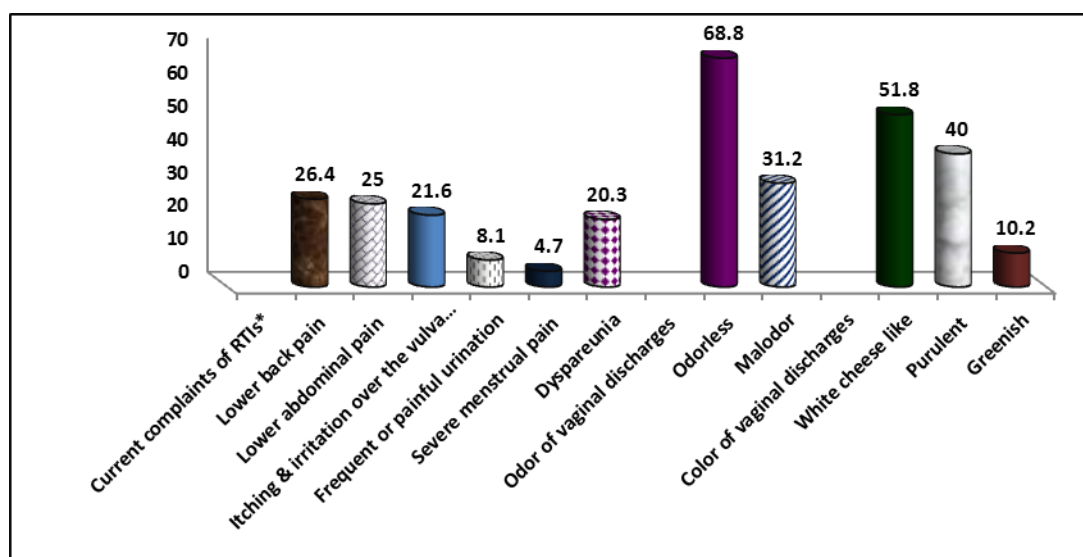
Figure (1): Percentage distribution of the studied women according to their current symptoms related to RTIs (n=200)

*Note: The percentages add up to more than 100% because many respondents reported more than one symptom.

Table (2): Mean scores of women knowledge regarding reproductive tract infections before & immediately after health education guidelines related to RTIs.

Items	Women Knowledge scores (Mean ±SD)		P – Value
	Before	**After**	
Definition or meaning of RTIs	4.6±1.2	10.23±1.03	<0.001
Causes of RTIs	3.2±1.3	6.03±0.08	<0.001
Signs and symptoms of RTIs	3.7±1.5	4.14 ± 0.005	0.01
Risk factors of RTIs	5.8±1.7	11.4±0.07	<0.001
Complications of RTIs	3.9±1.3	10.1±1.8	<0.001
Adverse Effect on mothers and baby	3.69±1.6	6.25±1.11	<0.001
Hygienic care of the genital tract regarding RTIs	4.6±1.2	8.98±1.06	<0.001
Preventing and managing care measures of RTIs	3.0±1.86	6.45±1.02	<0.001
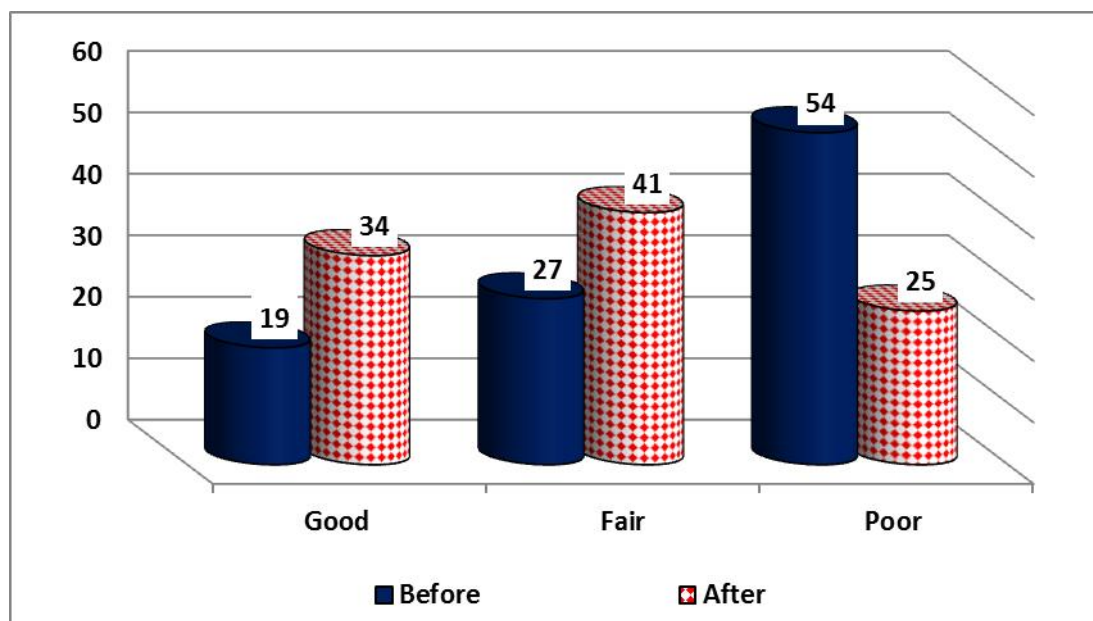
**Figure
2:** Total score level of knowledge of women regarding reproductive tract infections before & immediately after health education guidelines.
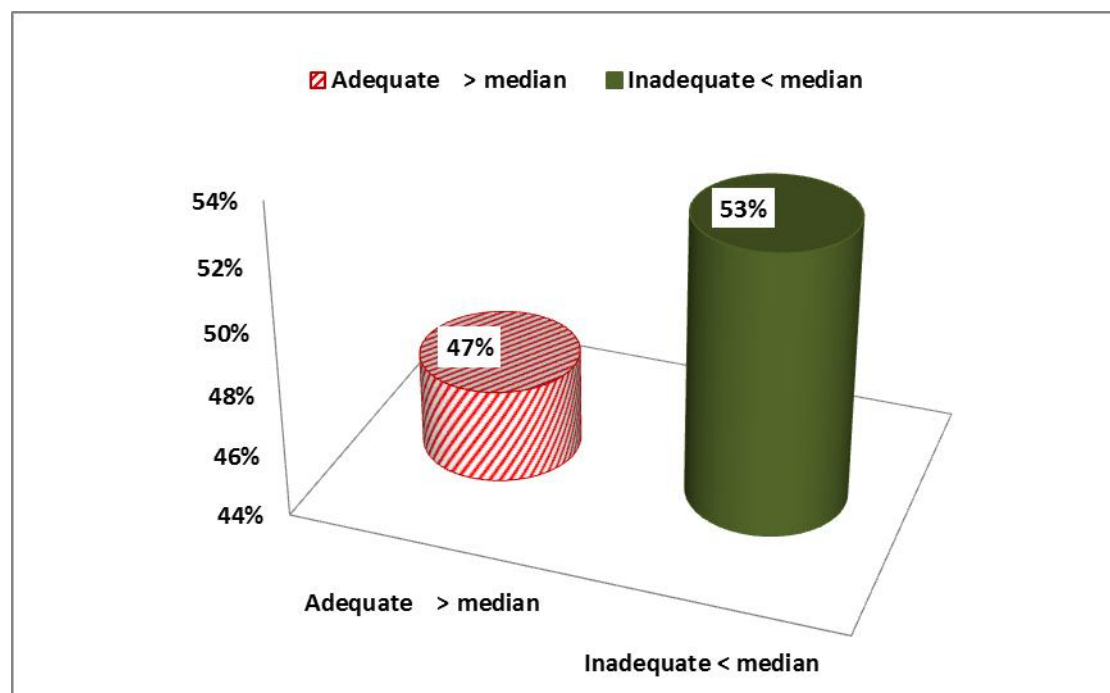
**Note: median = 102

Figure 3: Distribution of the studied women according to adequate level of knowledge.

Table 3: Association between percentage of change and sociodemographic characteristics of the studied women

Items		Adequate (n=94)		Inadequate (n=106)		P
		No	%	No	%	
Age	<20	16	17.02	6	5.6	
	20-	42	44.6	73	68.8	0.003*
	30-	28	29.7	22	20.7	
	>40	8	8.6	5	4.9	
Residence	Rural	55	58.5	60	56.6	0.78
	Urban	39	41.5	46	43.4	
Education level	Primary	40	42.5	61	57.5	0.07
	Secondary	12	12.7	7	6.6	
	Higher	42	44.8	38	35.8	
Occupation	Working	23	24.4	31	29.3	0.44
	Not working	71	75.5	75	70.7	
Income	Not enough	8	8.6	38	35.8	0.00**
	Enough	83	88.2	68	64.2	
	Enough and more	3	3.2	0	0.0	

Table 4: Percentage distribution of women according to their reasons for not seeking health care services for RTIs (n=200)**.**

Items	No.	%
Perceived as normal & not need treatment		
Yes	148	74.0
No	52	26.0
Know the dangers of RTIs		
Yes	70	35.0
No	130	65.0
Counselling on RTIs	65	32. 5
Yes	135	67.5
No		
Severity of pain		
None to mild	45	77.5
Moderate to severe	155	22.5
Severity of discharges		
None to mild	80	60.0
Moderate to severe	120	40.0
Severity of itching		
None to mild	52	74.0
Moderate to severe	148	26.0
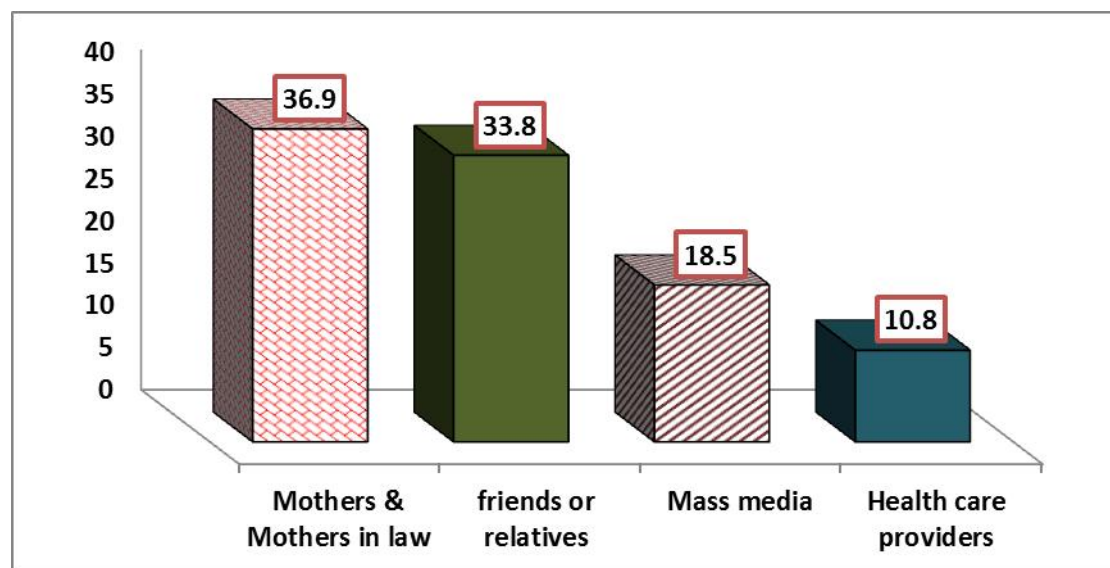
Figure (4): Percentage distribution of the studied women according to their sources of getting information about RTIs.

Table 5: Percentage distribution of women according to their factors affecting seeking of health care services for RTIs (n=200)**.**

Items	No	%
Social and cultural factors		
Shyness of genital examination	172	86.0
Husband neglects his wife's health	148	74.0
Limited decision making by women	138	69.0
Lack of control over resources	124	62.0
Environmental factors		
Lack of accessibility of treatment	132	66.0
Didn't find time	128	64.0
Lack of awareness about RTIs	142	71.0
Economic factors		
Services are costly	120	60.0
Family responsibilities	168	84.0
Self-therapy	116	58.0
Health care facility factors		
Distance to health care facility is long	108	54.0
Providers are not friendly	142	71.0
Long waiting hours for the services (> one hour)	114	57.0
Lack of privacy	128	64.0

Note: The total number of participants' answers are not equal the actual number of cases due to multiple choice questions (affected by clients' answers).

Table (6): Relation between seeking of health care for RTIs by participants and their socio-demographic characteristics (n=200).

Items	Not Seek health care (140)		Seek health care (60)		Total No.	X^2 P-Value
Age						
18-	18	12.9	14	23.3	32	8.3
30-	106	75.7	18	30.0	124	0.015*
40-<50	16	11.4	28	46.7	44	
Education						
Illiterate	28	20.0	8	13.3	29	27.4
Primary education	34	24.3	10	16.7	54	0.0000**
Secondary education	58	41.4	12	20.0	65	
University/higher	20	14.3	30	50.0	40	
Marital status						
Unmarried	94	67.1	20	33.3	40	9.7
Married	46	32.9	40	66.7	160	0.001**
Residence						
Urban	61	43.6	45	75.0	106	6.2
Rural	79	56.4	15	25.0	94	0.05*
Occupation						
Working	19	13.6	33	55.0	26	7.4
Not working	121	86.4	27	45.0	174	0.05

Discussion

Regarding the increase in the prevalence of RTIs and GTIs in various communities, the World Health Organization (WHO) often emphasizes on their prevention and control. The necessity of consultation and education for efficient preventive healthy behaviors is one of the hottest topics in sexual and reproductive health. Education of women at reproductive age towards infection prevention, using health services, and self-care methods aiming at the reduction of disease transmission and treatment, is a necessity in societies [15]

Regarding socio-demographic characteristics of the studied women, the results showed that, the mean age of the study sample was 31.7±5.7 years, where three-fifths of women their age ranged between 30- <40 years. This result is in line with **Abraham et al. (2002)**[13] who reported that the proportion of RTIs symptomatic was the highest, in the age group of 30-34 years. This could be attributed to the composition of the studied groups, biological factors and lack of awareness among women aged 30 to 39 years. Moreover, the higher percentage of women with reproductive tract infection were found among married women. This result agrees with **Rathore et al. (2003)** [16] who found that marital status and RTIs are

associated with each other. The interpretation of these findings may be due to married women are leading an active sexual life are having a higher risk of getting RTIs.

The findings of the current study also observed that the incidence of reproductive tract infections increases among the illiterate women and those were living in rural areas. These findings are in accordance with the conclusion given by **Sangeetha and Bendigeri (2012)**[17],who found that the prevalence of RTIs symptoms was common among illiterate women and showed a reduced trend with an improvement in the level of education. This result is also supported by by **Ibrahim et al. (2007)** [18] who reported that more than three quarters of women with RTIs were from rural areas. Meanwhile*,* **Dawn and Biswas (2012)**,[19] who stated that reproductive tract infection is slightly more common among rural women (30%) compare to urban (26%) also the prevalence rate is lower for educated women, 31% among illiterate compared to 22% among women who have completed 10th grade or high school level. *This may be related to* women who are not maintaining proper personal and

genital hygiene tend to have a higher risk of reproductive tract infections.

The present study result revealed that the majority of women were not working with low socioeconomic status. This result is consistent with a study done **Sangeetha and Bendigeri (2012)**[17] who showed that the prevalence of RTIs was increasing trend with the decrease in socioeconomic class. This may also be attributed to such factors as traditions and beliefs who are residing in rural areas with a lower socioeconomic level that leads to reducing the level of awareness regarding reproductive health needs and lack of proper personal and environmental hygiene, population susceptibility.

Regarding the symptoms of reproductive tract infections as diagnosed and reported by the women, most of the study sample reported lower back pain and pain in lower abdominal (supra pubic area), while minimum symptoms were frequent/painful of urination, followed by dyspareunia. These findings are in agreement with **Mamta and Kaur (2014)**[20] who found that a relatively high percentage of the participants stated lower back pain, while the least stated symptom was burning urination. On the contrary, the study carried out by **Philip et al. (2013)**[21] who identified that, most common RTIs

symptoms among women sufferers were frequent urination, followed by dyspareunia.

According to the findings of the present study pointed that the highest proportion of abnormal vaginal discharges among the study sample were odorless and white cheese like.Study findings are supported by a study done by **Global Prevalence of Cervical Cancer (2010)** [22] **who** reported that 32.77% had abnormal excessive white vaginal discharge. The study recommends that the population is in need of counseling regarding abnormal vaginal discharges and how therapy and getting health care for it. The present study findings also revealed serious deficiencies in women's knowledge regarding most of the studied items before the health education guidelines. The majority of women lacked knowledge about the meaning of RTIs, risk factors of RTIs, complications of RTIs, they didn't know the hygienic care of the genital tract regarding RTIs and also were unaware of the adverse effect of RTIs on themselves and their baby. These findings may reflect the need to raise awareness regarding RTIs and to expand services for prevention and treatment for women as well as health education to seek health care services is crucial. This is incongruent with **Verma et al. (2015)**[23] who concluded that when

asking about the knowledge of RTIs, 50.2% of respondents in urban, and 41.8% in rural areas were aware about the presence of discharge as an indication of infection.

As regards the total score level of knowledge of women regarding reproductive tract infections before health education guidelines. In the present study noticed that a majority of women before the guidelines gave low score levels or poor scores of knowledge (gave incorrect and incomplete answers). These findings are expected due to the improper knowledge and lack of awareness on the issue of RTIs during their life. These results also notify that women need a clear understanding of problems arisen as well as possible complications. This conclusion clarifies that women require increasing their information about causes, symptoms and consequences of RTIs and how to deal with it, so the nurse should be knowledgeable with good teaching guidelines to provide sound advice about health care measures to prevent and relieve these discomforts and helps to promote the reproductive health and well-being of the woman.

Concerning the total score level of knowledge of women regarding reproductive tract infections immediately

after health education guidelines. The findings of the present study indicated that significant improvements were shown in women total scores of knowledge from poor or weak score levels to good levels regarding most of the studied items. The items that demonstrated significant improvements after health education guidelines were related to meaning, causes, signs and symptoms, risk factors of RTIs, complications associated with RTIs, adverse effect on pregnancy and baby. Also, hygienic care of the genital tract regarding RTIs, prevention and management measures to relieve RTIs symptoms. This improvement refers to the effect of the health guidelines and teaching sessions given to the women to change their culture, enhance and upgrade their awareness. This is accordance with the results of another study on woman's practice and knowledge concerning the genital tract health (at the age of reproduction admitted in Shahid Beheshti hospital, Kashan, Iran) **Suki & Hatamian, (2004)** [24] who suggested that women be educated in suitable locations including health centers through educational pamphlets, in order to change their performance.

The present study has shown a significant improvement in women knowledge score

about RTIs after the health education guidelines at p = 0.001. Hence, it is interpreted that health education guidelines regarding reproductive tract infections were effective in increasing the knowledge of women. In Iran, **Parsapur, (2005)**[25] who confirmed the positive effect of education on improvement of knowledge, attitude and practice in some types of vaginitis. A study in Tehran-Iran has confirmed the positive effects of health education on improvement of knowledge, attitude practice, and duration of fungal vaginitis treatment. Researchers concluded that health education is an efficient method for improving the related variables.

Concerning reasons for not seeking health care services for RTIs. The current findings indicated that, the majority of the participants perceived as symptoms normal and did not need treatment. Furthermore, the higher percentages of them did not know the possible dangers of RTIs and did not get information about RTIs. On the other hand, most of the participants were suffering from mild symptoms of RTIs, so they neglected it. This result is in accordance with **Golden and Peterson (2010)**[26] who revealed that women are many more than men to consider RTIs symptoms as natural discomfort and therefore often do not seek

therapy. The explanation of this might be due to that women are perceived and believed the symptoms of RTIs as normal changes throughout their lives and something to be tolerated. These findings suggested that the provision of more family planning service and promotion of RTIs knowledge to the floating women of childbearing age is critical. Also, this result is comparable to a study carried out by **Puthuchira and Athimulam (2013)**[6] who found that educated women can be acquired health-related information from mass media. For effective prevention and management of RTIs, accurate information related to RTIs is necessary and should be up to date, widely available in a clear and accessible manner.

This present study revealed that mothers & mothers in law and friends or relatives were the main sources of getting information about RTIs. The findings were in consonance with **Puthuchira and Athimulam (2014)** [27] who observed that the most important source of information regarding RTIs was mothers and friends/relatives in rural areas. Health educators play a leading role in educating the population about prevention RTIs.

The current study revealed the major barriers, as mentioned by women,for not seeking any health care for RTIs. They

were shy of genital examination or explain their symptoms, family responsibilities, husband neglecting to his wife's health, lack of their awareness about RTIs morbidity, and lack of privacy. Other important factors that prevent them from seeking health care were that they didn't find time to go to the hospital, and health care providers are not friendly and limited decision making by women. Similarly, **Rizvi and Luby (2004)**[28] who found that of all cases they studied, women who did not seek care representing 20%, the reason was due to shame, fear, and lack of privacy in biomedical institutions. Similarly, **Dawn and Biswas (2005)**[29] who mentioned that two-thirds of women had not sought any treatment; the reasons cited were absent of a female provider at the nearby health care center, lack of privacy, distance from home, cost and a perception that their symptoms were normal. The low social status of women, especially young women, appears to be a significant influence on their low rates of treatment for these conditions. In another study, conducted by **Puthuchira and Athimulam (2013)**[6] who showed that the perception of RTIs symptoms as normal, a feeling of shyness, lack of female health workers, the distance of health facility, the cost of treatment, and a shortage of

availability of treatment were identified as major obstacles for not seeking treatment for RTIs among the study population. Education and outreach are needed to reduce the feeling of shyness and lack of awareness related to RTIs.

The current study indicated statistically significant associations between socio-demographic characteristics and seeking of health care services for RTIs symptom among the study population. A higher proportion of women in the age group 30 - <40 years were found to not seeking health care for RTIs symptoms compared to those in younger or older age groups. This finding differs from that of a study done by **Ravi and Kulasekaran (2014)**,[30] who found that younger women were very more likely to receive treatment for their RTIs than the elderly women. This can be attributed to the reality that younger women do not have decision-making authority regarding seeking health services as compared to older age group women, because of various traditional cultural beliefs and attitudes of the people living in this area.

In this study, seeking of treatment increased among women with secondary educational status. This finding is similar to that reported in a study done by **Puthuchira and Athimulam (2013)**[6]

who revealed that, the less educated women are more likely to be affected by RTIs due to lack of awareness. Educated women are more able of seeking the source of treatment and they can utilize health care facilities more efficiently. In a similar study, conducted by **Ravi and Kulasekaran (2014)**[30] in which overwhelming proportion of women received treatment of RTIs who completed secondary education (85.7%) compared to those who completed primary education (70.0%) and illiterates (66.7%). It assumed that improving education and awareness level among women regarding reproductive health is needed to reduce the incidence of RTIs.

In the present study, the level of health care seeking among unmarried ones was lower than that among married women, which may indicate that reproductive health symptoms evoke greater awkwardness among unmarried women and their families than among their married counterparts. Additionally, rural life represented the key factor in hindering seeking health care among the study population. Programs should increase efforts to serve unmarried women and recognize their needs to reproductive health information and services. Moreover, health care providers in the health sectors

need to improve information/ awareness of women who live in rural areas about reproductive health services. These findings are in line with those from previous studies, as in India **Lan (2009)**[31], which suggested that there are significant associations between seeking reproductive health care services and unmarried women, and place of residence. So, increased information is required through mass media, besides, health care facilities are the best option at the basic step of rural women.

In the present study, non-working women hadn't a better health care seeking than working women representing more than half. This finding is comparable to that found in a study done by **Sabarwal and Santhya, (2012)**[32] who found that the greater proportion of the working women sought treatment as compared with the not working women. In order to create better maternal and child health, the health workers need to provide information and treatment for high-risk women.

Conclusion:

Health education guidelines regarding reproductive tract infections were effective in increasing women knowledge level after health education guidelines. The major barriers for not seeking health care services for women suffering from

reproductive tract infections were the perception of symptoms as normal, shyness of genital examination or explain their symptoms, family responsibilities, the husband neglecting to the health of his wife, lack of awareness about RTIs and privacy.

Recommendations:

- Health education to all women in childbearing age about reproductive tract infections and how to prevent it.

- Further study in another setting to detect the prevalence of reproductive tract infections and barriers of seeking health care services to treat it.

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Effects of Different Maternal Positions during Non-Stress Test on Maternofetal Physiological Parameters

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Abstract

Aim of the study to compare effects of different maternal positions during non-stress test on maternofetal physiological parameters. **Setting:** the current study was conducted at fetal monitoring room of obstetrics and gynecology department, Benha University hospital. **Sample**: A purposive sample of 72 women was recruited according to inclusion criteria. Three **tools** were used for data collection 1) A structured interview questionnaire. 2) Maternal-fetal physiological parameters sheet. 3) Visual analogue scale of maternal discomfort. **Results:** There were a highly statistically significant difference in maternal physiological parameters (systolic blood pressure, diastolic blood pressure, and pulse rate) in the three positions during the non-stress test (p=0.000). Number of accelerations and number of fetal movements in left lateral position was significantly higher than supine and semi fowler positions (p=0.030) and (p=0.133) respectively. Mean time taken for first fetal movement, and reactive non-stress test are significantly less in left lateral position compared to supine and semi fowler positions (p=0.000). Almost the studied women showed moderate variability in the three positions. A highly statistically significant difference regarding discomfort during non-stress test the three positions (p=0.000). **Conclusion:** The left lateral and semi-fowler positions during non-stress test demonstrated favorable maternofetal physiological parameters and women felt more comfortable than in supine position. The study **recommended** left lateral and semi-fowler positions can be encouraged as alternative positions during non-stress test.

Key Words: Fetal, Maternal, Parameters, Physiological, Positions, Non-stress test.

Introduction:

The electronic evaluation of antenatal fetal heart rate pattern is a widely accepted screening test of fetal well-being. Non-stress test (NST) is often used as the first choice for fetal health and survival assessment Non-stress test still continues to be a valuable procedure for the assessment of fetal wellbeing at high-risk pregnancies [1,2].

Non-stress test is based on the premise that the heart rate of a fetus is not acidotic or neurologically depressed will temporarily accelerate with fetal movement. Heart rate reactivity is thought to be a good indicator of normal fetal autonomic function. Loss of reactivity is most commonly associated with a fetal sleep cycle, but may result from any cause of central nervous system depression, including fetal academia [3].

Furthermore, non-stress test is a non-invasive method that combines detection of fetal heart rate accelerations and presence of spontaneous or evoked fetal movement. NST is a relatively inexpensive procedure and has no known contraindications. NST is performed by nurses in a variety of settings including outpatient, inpatient, and home environment [4].

Non-stress test can be reliably performed after 28 weeks gestation. In the healthy fetus with a functional central nervous system, fetal heart rate accelerations are reassuring finding related to fetal status [5]. The tracing of non-stress test is categorized as a reactive or nonreactive test. A reactive non-stress test shows the presence of two or more fetal heart rate accelerations of at least 15 beats per minute above the baseline fetal heart rate sustained for 15 seconds within a period of 20 minutes. It may be necessary to continue the tracing for 40 minutes accounts fetal sleep-wake cycles, because it may take this long for the healthy term fetus to display two fetal heart rate accelerations. If after 40 minutes the criteria are not met, the test is considered or nonreactive [6].

Nurses play an important role in non-stress test; prior to the NST, explain the testing procedure and asked woman to empty bladder. Place the woman in the appropriate position and apply the two external monitor belts. Document the date and time of test, the reason for testing, and maternal vital signs. Obtain a baseline fetal monitor strip over 15 to 30 minutes. During the test, observe for signs of fetal activity with a concurrent acceleration of the fetal heart rate. Interpret the NST as a reactive or nonreactive. After NST

procedure, assist the woman off the table. The results are discussed with the woman by the health care provider. Provide teaching about warning signs and symptoms. If serial NSTs are being done, schedule the next testing sessions [7].

Significance of the study:

In last trimester of pregnancy non-stress test is a part of prenatal diagnosis to monitoring fetal wellbeing. Through clinical experience, the researchers found that in most hospitals, pregnant women are generally positioned in the supine position for non-stress testing, because this position allows easy application of the test. However, supine position causes aortocaval compression which decreases blood supply to the fetus leading to non-reactive results. Hence, position is one of the main factors to be considered during non-stress testing where proper maternal position eliminates procedure related errors and prevent false interpretation. Thus, the current study is undertaken to compare the effects of different maternal positions during non-stress test on maternofetal physiological parameters.

Aim of the study:

The present study aimed to compare the effects of different maternal positions during non-stress test on maternofetal physiological parameters.

The study hypotheses:

Left lateral and semi-fowler maternal positions during non-stress test showed better maternal and fetal physiological parameters than supine position.

Left lateral and semi-fowler maternal positions during non-stress test were more comfortable than supine position.

Subjects and Methods

Study design:

Quasi -experimental design was used for this study.

Setting:

The study was conducted in fetal monitoring room at obstetrics and gynecology department, Benha University hospital.

Sample:

Type and size: A purposive sample of 72 pregnant women attending predetermined setting was recruited in the study.

Technique: Eighty-six women were eligible for the study according to inclusion criteria at time of data collection. Six women refused to recruit the study. The reason for refusal was not having time to complete the study procedure. The final sample consisted of eighty women (72 sample size plus 8 pilot study).

Inclusion criteria: Pregnant women with singleton pregnancies, gestational age 32-42 weeks, primigravidae or multigravidae

with intact amniotic membranes attending for NST monitoring during the antenatal check-up, and willing to participate in the study.

Exclusion criteria: Pregnant women in labor, multiple gestations, had any medical diseases (such as severe hypertension, eclampsia and heart disease), ruptured membranes, intrauterine growth retardation and intrauterine fetal death.

Tools for data collection:

Three tools for data collection as follows:

Tool I: A structured interviewing questionnaire included general characteristics of study sample such as age, educational level, occupation, residence, and food intake prior non-stress test. Obstetric history included gravidity, gestational age, and indications of non-stress testing.

Tool II: Maternal-fetal physiological parameters sheet, this tool was designed by the researchers and composed of two parts:

Part (1): Maternal physiological parameters included pulse rate, respiratory rate, systolic and diastolic blood pressures.

Part (2): Fetal physiological parameters included baseline fetal heart rate, number of accelerations, time taken for first fetal movement, a number of fetal movements;

time is taken for reactive NST, reactivity of NST and variability.

Interpretation of fetal parameters:

Based on the National Institute of Child Health and Human Development [8].

Baseline heartbeat is defined as the mean of heartbeats in 10 minutes after rounding more than 5 beat/minute increases.

Variability is defined as change in fetal heartbeat for 2 cycles in a minute. Variability is determined as the distance between the minimum (0) and maximum (25) number of heartbeats. Accordingly: Lack of variability: The distance is not measurable. Mild variability: The distance is measurable to ≤ 5 beat/minute. Average variability: The distance is 6-25 beat/minute. Severe variability: The distance is >25 beat/minute.

Acceleration is defined as a sudden, detectable above 15 beat/minute or more in fetal heartbeat lasting for more than 15 seconds.

Reactive: Two or more FHR acceleration of 15 beat/minute lasting 15 seconds in 20 minute.

Non-reactive: any tracing with no FHR acceleration or inadequate acceleration that is less than 15 beat/minute.

Tool III: Visual analogue scale of maternal discomfort:

The visual analogue scale of maternal discomfort was adopted from [9]. to assess the intensity of the discomfort. It consists of a 10 cm horizontal scale with verbal descriptors. The descriptors 'no discomfort' corresponds to '0' on the extreme left and 'severe' corresponds to '10'on the extreme right. Participants were asked to put a mark on the 10 cm line at a point that corresponds to level of discomfort in the three positions (supine, semi fowler, and left lateral). At this scale, the classification of discomfort was done according to the scores of discomfort (no discomfort: 0, mild: 1< 4, moderate: 4 < 7, severe: 7-10).

Tools validity and reliability:

The tools of data collection were reviewed for comprehensiveness, appropriateness by a panel of three experts of maternal health nursing and obstetrics medicine. The panel ascertained the validity content of the tools. The reliability was done by Cronbach's Alpha coefficient test which revealed the three tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of maternal-fetal physiological parameters sheet was α 0.73, and visual analogue maternal discomfort scale was α 0.75.

Ethical considerations:

An explanation of the study aim and process were given to women, oral consent was obtained from each woman, strict confidentiality was ensured for any obtained information. Each woman was informed that the study do not entail any harmful effect on her health and fetus, participation is voluntary. Withdrawal from the study at any time is allowed without any effect on the care provided.

Pilot study:

The pilot study was carried out on ten percent of the total sample (8 women) to ascertain the relevance, clarity, applicability of the tools, and to detect any problems peculiar to study conduct. Also, the pilot study helped to estimate the time needed to complete the questionnaires. According to the results of the pilot study, modifications were done such as adding question about food intake prior non-stress test. Women involved the pilot study were excluded in the main study sample.

Field work:

The study was carried out from the beginning of September 2014 to the end of November 2014. Official approval was obtained from Dean of Faculty of Nursing

to Director of Benha University Hospital. The researchers attended the previously mentioned setting three days per week from 9.00 a.m until 2.00 p.m.

The study purpose and procedure were explained to every woman and an oral consent to participate in the study was obtained. The interview was conducted individually. The researchers instructed women that no need for oral intake of food or drinks during the testing. Afterward, the general characteristics of studied sample were collected through a structured interviewing questionnaire.

For maternal physiological parameters, brachial blood pressure was assessed in the woman's dependent arm, using an automatic cuff. This assessment was performed at least 5 minutes after assumption of the randomized study position to allow hemodynamic equilibrium to occur. In addition, maternal pulse and respiration are assessed in the three positions supine, semi fowler, and left lateral.

For fetal physiological parameters, the researchers perform an abdominal examination to detect the quadrant of the maternal abdomen corresponding to the fetal back for location maximum tone of fetal heart sound. Ultrasonic gel was applied to the transducer connected to NST machine, and placed on the selected site of fetal heart sound. The transducer was strapped snugly on the woman. The recording was done initially with the woman in the supine position as per hospital protocol followed after 10 minutes by left lateral position and lastly after 10 minutes followed by a semi-fowler position with angle 45-degree. If signal is lost due to fetal and or maternal movement, the transducer was readjusted until a good tracing was obtained. Fetal movement was marked by the woman by pressing the remoter switch. Recording time was 20 minute for every position. NST Graph was observed for baseline heart rate, number of accelerations, time is taken for first fetal movement, a number of fetal movements, reactive NST and variability.

After completion of non-stress test, the women were asked to rate their discomfort at the three positions by using visual analogue scale.

Limitation of the study:

The researchers faced some resistances from some obstetricians during performing non-stress test, because the study procedure took a long time.

Statistical analysis:

Data entry and analysis were done using the Statistical Package for Social Sciences

(SPSS version 20.0) followed by tabulation. Descriptive statistics were applied (mean, standard deviation, frequency, and percentages). Test of significance (Chi-square test, Fisher Exact Test, and ANOVA test) were used to test the study hypothesis. A statistically significant difference was considered at p $\leq$ 0.05, and a highly statistically significant difference was considered at p $\leq$ 0.001.

Results:

Table (1) shows that, 68% of studied women were in the age group 21-25 years with mean age 24.84 $\pm$ 1.16 years. 59.7% had secondary educational level, whereas only 11.1% of women can read and write. Regarding occupation, 63.9% of the women were working. As regards residence, 58.3% of women were living in rural areas. 79.2% of women had food intake more than two hours prior non-stress test.

Table (2) depicts that, 70.8% of women were primigravidae, the mean gestational age of the study women was 37.74 $\pm$ 1.99 weeks. As regards indications of non-stress test, 52.8% of the studied women had decreased fetal movement, 22.2% had gestational diabetes, 13.9% had pregnancy induced hypertension and 11.1% had Rh – ve incompatibility.

Table (3) reveals a highly statistically significant difference in maternal physiological parameters (systolic blood pressure, diastolic blood pressure and pulse rate) in the three positions during the non-stress test (p = 0.000). In supine, semi fowlers, and left lateral positions, mean systolic blood pressure was 100.43 $\pm$ 8.30, 115.54 $\pm$ 3.99 and 117.15 $\pm$ 4.69 mmHg respectively. Mean diastolic blood pressure was 64.48 $\pm$ 3.79, 75.93 $\pm$ 3.44, and 77.38 $\pm$ 2.76 mmHg respectively. Mean pulse rate in supine position was 69.63$\pm$ 5.05 beats/min while in semi-fowler position was 86.26$\pm$9.10 beats/min and left lateral position was 79.81 $\pm$ 2.63 beats/min. Meanwhile, there was no statistically significant difference regarding respiratory rate among the three positions (p = 0.923).

Table (4) shows a highly statistically significant difference in baseline fetal heart rate between supine, semi-fowler and left lateral positions (p=0.000). The mean baseline fetal heart rate was 134.28 $\pm$ 5.66, 137.12 $\pm$ 0.78 and 140.32 $\pm$ 3.26 beat/minute respectively. Number of accelerations in left lateral position was significantly higher 5.48 $\pm$ 1.07 than supine and semi-fowler positions 4.97 $\pm$ 1.17 and 5.14 $\pm$ 1.27 respectively

(p=0.030). Regarding mean time taken for first fetal movement, and reactive non-stress test are significantly less in left lateral position compared to supine and semi-fowler positions(p=0.000).   a mean number of fetal movements was higher in left lateral position 5.88 ± 2.14 than supine and semi-fowler 5.29 ± 1.61, and 5.76 ± 1.83 respectively with no statistically significant difference (p=0.133).

Figure (1) shows that the fetal reactivity was changed according to the maternal position, 87.5% had reactive in left lateral position, 66.7% reactive in semi-fowler position, and 51.4% in a supine position (P= 0.000).

Figure (2) reveals that almost the studied women showed moderate variability in the three positions.

Figure (3) illustrates that 65.3% of the studied women during non-stress test reported severe discomfort women in supine position compared to 0.0% and 7.8% in left lateral and semi-fowler positions respectively (p≤0.000).

Table (1) Distribution of the studied women according to their general characteristics (n =72)

Variables	No	%
Age (years):		
≤ 20	1	1.4
21– 25	49	68.0
26 - 30	22	30.6
Mean ± SD	24.84 ± 1.16	
Level of education :		
Read and write	8	11.1
Primary education	12	16.7
Secondary education	43	59.7
University education	9	12.5
Occupation :		
Working	46	63.9
Housewife	26	36.1
Residence :		
Urban	30	41.7
Rural	42	58.3
Food intake prior non-stress test:		
Less than one hour	5	6.9
1-2 hours	10	13.9
More than two hours	57	79.2

Table (2) Distribution of the studied women according to obstetric history (n =72)

Variables	No	%
Gravidity :		
Primigravidae	51	70.8
Multigravidae	21	29.2
Gestational age (weeks):		
32 - 35	9	12.5
36 -38	40	55.5
39 - 42	23	32.0
Mean ± SD	37.74 ± 1.99	
Indications of non-stress testing:		
Decreased fetal movement	38	52.8
Gestational diabetes	16	22.2
Pregnancy induced hypertension	10	13.9
Rh –ve incompatibility	8	11.1

Table (3) Comparison of the maternal physiological parameters between supine, semi-fowler and left lateral positions (n=72).

| Maternal Physiological parameters	Supine Position n =72 Mean ± SD	Semi Fowler Position n =72 Mean ± SD	Left lateral Position n =72 Mean ± SD	F	P-value
Blood pressure (mmHg)					
Systolic	100.43±8.30	115.54±3.99	117.15±4.69	171.785	0.000**
Diastolic	64.48±3.79	75.93±3.44	77.38±2.76	318.030	0.000**
Pulse rate (beat/min).	69.63±5.05	86.26±9.10	79.81±2.63	131.481	0.000**
Respiratory rate (cycle/min).	21.36±0.48	21.33±0.47	21.36±0.48	0.080	0.923

**A highly statistically significant difference

Table (4) Comparisons of fetal physiological parameters during non-stress test in supine, semi-fowler and left lateral positions (n=72).

Fetal physiological parameters	Supine Position n =72	Semi Fowler Position n =72	Left lateral Position n =72	F	P-value
	Mean ± SD	Mean ± SD	Mean ± SD		
Baseline fetal heart rate (beat/minute).	134.28 ± 5.66	137.12 ± 0.78	140.32 ± 3.26	45.54	0.000**
Number of accelerations	4.97 ± 1.17	5.14 ± 1.27	5.48 ± 1.07	3.57	0.030*
Time taken for first fetal movement (minutes).	7.75 ± 1.32	7.19 ± 1.64	6.31 ± 2.12	12.76	0.000**
Number of fetal movements.	5.29 ± 1.61	5.76 ± 1.83	5.88 ± 2.14	2.04	0.133
Time taken for reactive non-stress test (minutes).	15.15 ± 1.77	13.40 ± 1.51	10.27 ± 2.51	39.025	0.000**

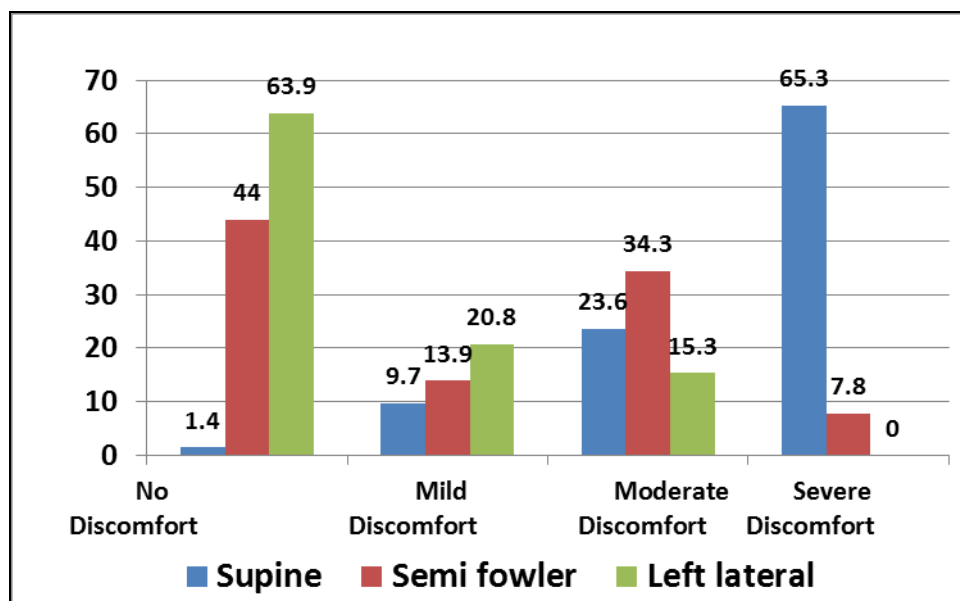*A statistically significant difference   **A highly statistically significant difference
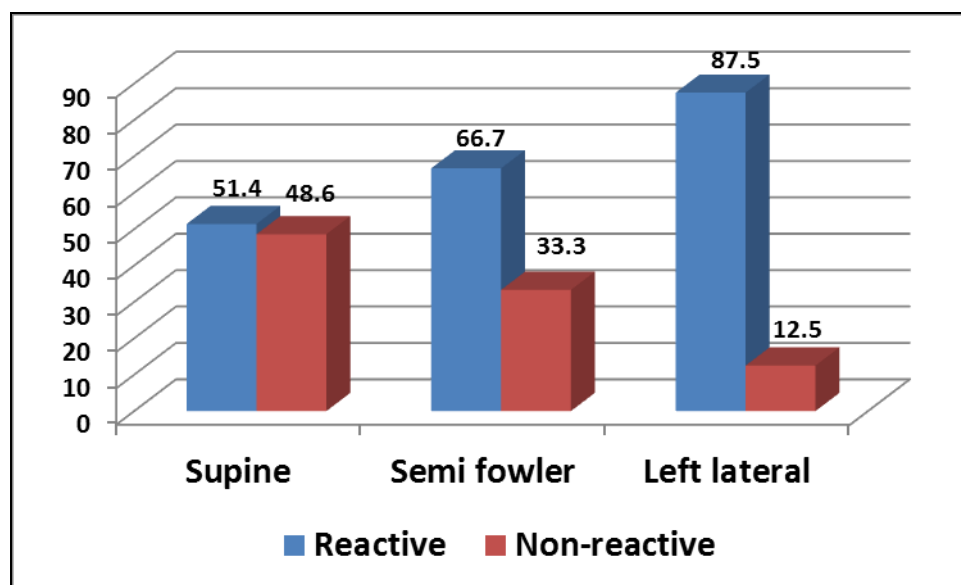
$X^2=21.93$ P= 0.000**

Figure (1): Percentage distribution of the studied women according to fetal reactivity (n=72).
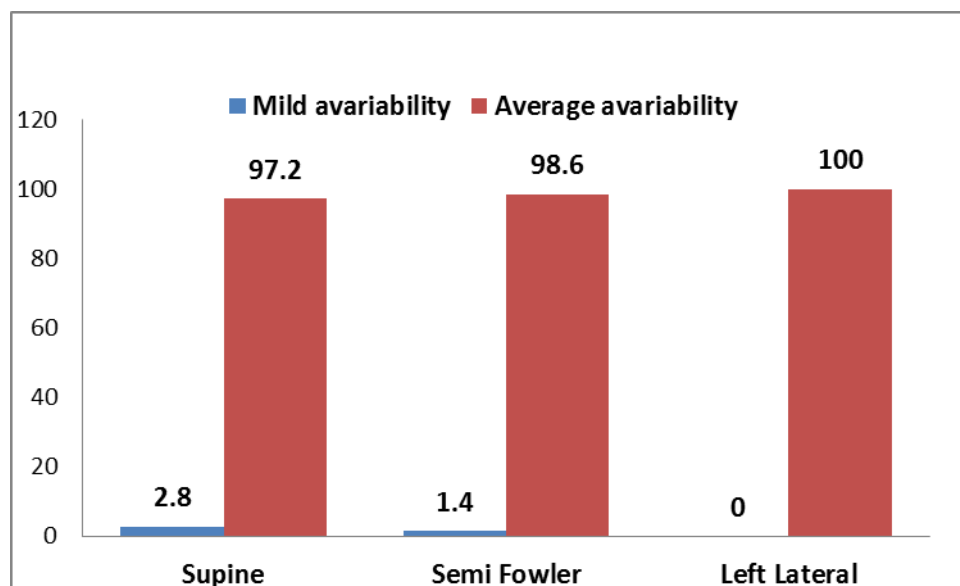
Figure (2): Percentage distribution of the studied women according to fetal variability (n=72).

FET P = 0.000**

Figure (3): Percentage distribution of the studied women according to their discomfort level during non-stress test in supine, semi-fowler and left lateral positions (n=72).

Discussion

The present study aimed to compare the effects of different maternal positions during non-stress test on maternofetal physiological parameters. The finding of the present study showed that more than two-thirds of the studied women were in the age group 21-25 years with mean age 24.84 ± 1.16 years. This finding is in agreement with **Lohana et al.,** [10] who reported that the mean age in pregnant women performing non-stress test at 37 to 42 weeks of gestation was 24.18 ± 3.25 years. Also, **Riahin et al.,** [11] found that the mean age of the participants during non-stress test was 24.7 ± 5.2 years. In addition, the present study finding showed that more than three-quarters of the women had a food intake more than two hours prior the non-stress test. This is similar to **Samuel et al.,** [12] mentioned that 77.3% had food intake less than two hours before the test.

Regarding obstetric history, the findings of the present study illustrated that less than three quarters of women were primigravidae, the mean gestational age of the study women was 37.74 ± 1.99 weeks. As regards indications of non-stress test, more than half of the studied women had decreased fetal movement. These findings are disagreed with **Kaur and Saha** [13]

who reported that 54% of antenatal mothers were primigravidae. Period of gestation 33% were having 32-35 weeks of gestation, 40% were having 36-38 weeks of gestation and 27% were having 39-41 weeks of gestation.

On investigating maternal physiological parameters, the findings of the current study revealed a highly statistically significant difference in maternal systolic blood pressure, diastolic blood pressure and pulse rate in the three positions during the non-stress test. Blood pressure and pulse rate in left lateral and semi-fowler positions were more favorable and within normal range than in the supine position. However, there was no statistically significant difference in maternal respiration rate in the three positions during the test. This is related to the fact that the enlarged uterus of late pregnancy can compress the inferior vena cava when a woman lies in a supine position, resulting in decreased blood pressure. Positioning a pregnant woman in left lateral or semi-fowler positions during non-stress test can alleviate symptoms of aortocaval compression, hemodynamic alteration in brachial blood pressure and heart rate within normal values.

These findings were supported by **Tamas et al.,** [14] who found that non-stress test parameters were correlated with maternal hemodynamic indices and alert fetal heart rate patterns that change with different maternal positions. Additionally, **Esin** [15] recommended that lateral recumbent or sitting positions may be more acceptable for the pregnant women after 32 gestational weeks to avoid supine hypotension or maternal and possibly fetal discomfort. In contrast, **Maneesha** [9], found no significant difference in the maternal physiological parameters (pulse, respiration, systolic and diastolic pressure) in the supine, left lateral and semi-sitting positions during the non-stress test (p>0.05).

Concerning fetal physiological parameters during a non-stress test, there was a significant difference in baseline fetal heart rate between supine, semi-fowler and left lateral positions. However, the baseline fetal heart rate varies significantly with left lateral and semi-fowler positions compared to the supine position, all the studied women had a normal baseline heart rate. This is due to fact changes in maternal position, possibly evoking a response in fetal heart rate. In supine position, the pressure on the inferior vena cava and pelvic veins of enlarged uterus causes a decrease in venous return and leading to less placental perfusion and lower fetal heart rate. This finding is supported by **Pandey and Magon,** [16] mentioned that the baseline fetal heart rate should be within the normal range of 110 to 160 beats/minute.

Moreover, number of accelerations was significantly higher in left lateral position than semi-fowler and supine positions. The mean time taken for first fetal movement and reactive non-stress test is significantly less in left lateral position compared to supine and semi-fowler positions. The mean number of fetal movements perceived by women in left lateral position was higher than supine and semi-fowler with no statistically significant difference. In addition, left lateral position was associated with more fetal reactivity than semi-fowler and supine positions. These findings may be due to supine position causes aortocaval compressions that affect maternal hemodynamic indices that cause redistribution of blood flow and nonreactive fetal heart rate. Meanwhile, left lateral and semi-fowler positions optimize uteroplacental perfusion and fetal heart rate patterns.

These findings are in accordance with **Aluş et al.,** [17] who reported that supine position showed less fetal reactivity than

lateral position (p= 0.01) and required more time to achieve reactivity (p = 0.02), they concluded that supine position causes lowest non-reactivity with physical discomfort. Also, **Cabaniss and Ross** [18] pointed out that NST in lateral position may be rewarded with fetal accelerations, as uteroplacental circulation may be increased. **Sekhavat and Tabatabaei,** [19] added that supine position showed less fetal reactivity and required more time to achieve reactivity than left lateral position, the average time required to demonstrate a reactive NST was 10.62 minutes in lateral and 15.48 minutes in the supine position.

In relation to a comfortable position during non-stress test, the finding of the current study revealed that about two-thirds of the studied women felt severe discomfort in supine position compared to left lateral and semi fowler positions. This may attributed to women during NST suffered from shortness of breathing and backache in supine position secondary to pressure of gravid uterus. This finding is consistent with **Sekhavat and Tabatabaei** [19] who found that 16.43% of women were uncomfortable in lateral position during NST compared to 67.86% in supine position. As well, **Kaur and Saha** [13] reported that more than half of antenatal women 65% reported to be comfortable in

left lateral position during the non-stress test, whereas only one-fourth of them supported sitting position and 10% were comfortable in both positions.

Conclusion:

The left lateral and semi-fowler positions adopted for non-stress test by the antenatal women during the third trimester demonstrated favorable maternofetal physiological parameters. As well as, antenatal women are more comfortable than in supine position. Thus, the study hypotheses were supported.

Recommendations:

Left lateral positions and semi-fowler can be encouraged as alternative positions during non-stress test.

The preference of the pregnant women position should be determined before non-stress test technique to minimize discomfort.

The study can be replicated on a larger sample for generalizing the findings.

Further studies:

Designing health training programs regarding protocol for non-stress test to healthcare providers especially staff nurses.

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Situational Leadership And Emotional Intelligence Contribution
To Promote Nursing Leaders Effectiveness

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Abstract

Background: Situational leadership demonstrated when the leader chooses behavior style suitable with maturity level of followers. Through emotional intelligence nursing leaders can focus on followers emotions as part of the leadership process. **Aim:** The aim of the present work is to study situational leadership and emotional intelligence contribution to promote nursing leaders effectiveness.**Setting**: The study was conducted at Desouqe General Hospital, Faysal Hospital, Tropical Hospital, Chest Hospital and Medical Center affiliated to Ministry of Health. **Subjects:** Head nurses(25) and their nurses subordinates(180). **Tools:** Four tools were used including leader effectiveness and adaptability description based on situational leadership, emotional competency profile scales, situational leadership and emotional intelligent knowledge test ,and an educational program for nursing leaders about situational leadership and emotional intelligence. **Results**: Nursing leaders level of knowledge regard situational leadership and all total emotional intelligent competencies improved post program than pre program. Post program nursing leaders participating leadership style has the highest probability of success style. Also the levels of nursing leaders effectiveness was promoted and rater readiness for situational leadership style were improved post program than pre program. **Conclusion:** nursing leaders at the studied setting need great attention to periodically attend program on situational leadership and emotional intelligence to keep their promotion of leadership effectiveness .**Recommendations**: Periodic attendance of educational and training programs for nursing leader and nursing staff about various leadership styles, and situational leadership skills and emotional intelligence competencies.

Keywords: Situational leadership, emotional intelligence, nursing leaders.

Introduction

leadership is an interpersonal process , involves both followers and leaders to direct followers' activities towards the purposeful pursuance of given objectives within a particular situation by means of communication[1] .Leadership considered as a social influence process to seek the voluntary participation of subordinates in an effort to reach organizational goals [2].

Leadership effectiveness determined by the leader ability to influence followers within a particular situation and social context in a way that induces them to follow, to be modified, and to be directed toward goal achievement [3]. As well as to turn own beliefs and visions into reality, through the control and influence they exercise over followers [4]. Effectiveness of nursing leaders appear in their ability to act the appropriate leadership style to inspire followers to work together willingly and cooperatively with zeal and confidence and to their greatest potential using appropriate means to achieve common mission and goals[5] .

Situational leadership effectiveness needs that a leader has to be appropriate own behavior regarding the commitments and competences of nursing subordinates in every situation . Effective leadership is demonstrated when the leader chooses a behavior that coincides with the maturity or readiness level of followers[6].Effective situational leaders diagnose the situation, identify the leadership style that will be most effective, and then determine whether they can implement the required style.

However situational nursing leader is effective only if can recognizes the needs of nursing staff and change own behavior according to according to their needs [7] . That leaders decide **task behavior and ∕or relationship behavior** to act according to follower's **maturity levels** to lead them toward goal achievement . **Task behavior** is a directive behaviors, leaders use for goal setting, developing action plans, clarifying roles, showing how, evaluating, establishing timelines, and setting priorities. **Relationship behaviors** is a supportive behaviors leaders use for praising , organizational and individual information sharing, problem solving, asking for input, and providing rationale .

Effective situational leaders apply both task and relationship behavior through four leadership styles (telling, selling, participating and delegating)to match from them with the followers maturity level[7,8]**.** **Maturity or readiness** level is the degree of followers state of being ready or

prepared for action, use information and communication , having good will, handiness, promptitude, alertness, cleverness and zeal to act gladly in arriving mission[7,8].

Telling style is directing style, leaders focus on the task and not on the relationship with the employee. Leaders used to deal with subordinates who are neither competent nor confident and unable to achieve the task. Leader use to define roles and tells them how to do their jobs especially followers lack both skills and confidence to perform own assigned duties [7,8].**Selling style** is both directive and supportive style. Leaders used when followers have some competence of the task but lack full capability to complete it, that they are motivated but currently lack the appropriate skills. Leaders identify roles and give followers an opportunity to ask for direction and clarification also encourage subordinates to complete tasks.

Participating style is a supporting style leaders use to increase motivation when employees have high competence and commitment to achieve, leader share ideas and discuss what to do and let the employee be the one that decide how to complete the task. **Delegating style** leaders use it when followers are expert self-motivated, and have commitment to

achieve the task. So followers able and willing to accomplish goals by themselves with little or No direction or support.

That leaders delegate the task and let followers complete it .

Emotional intelligence has vital role for leadership effectiveness. Through emotional intelligence nursing leaders focus on followers emotions as part of the leadership process . Emotional intelligence was defined as the ability to perceive , appraise, and express emotions appropriately. Effective nursing leaders through emotional intelligence consistently communicate appropriately with others, recognize others emotional needs and own, and create positive relationships based on mutual safety, trust, and confidence[9,10].

So developing emotional intelligence competencies establishes capabilities for functioning within the situational leadership effectively. Consequently nursing leaders must develop the following emotional intelligence competencies(emotional literacy, self-esteem/self-regard , self management , self motivation , change resilience , interpersonal relations and integration of head and heart) that will aid in exercising situational leadership effectively [10-12].

The first competence is emotional literacy means awareness and understanding of subjects (own and other people's) emotions ,second competence self-esteem means ability to have the courage to stand by one's values in the face of opposition, as well as the ability to admit to mistakes in public and even possibly laugh at oneself, if and when appropriate ,third competence self-management means ability to manage stress and harness energy to create wellness and healthy balance between body, mind and soul without neglecting on to gratify another forth competence is self-motivation means ability to create a challenging vision and stretching goals; to remain focused and remain committed to cause ; and to take responsibility for one's successes and failures.

Fifth competence is change resilience means ability to remain flexible and open to new ideas and people, advocating the imperative for change and innovation when appropriate, with due concern and consideration for the emotional impact of change on people, Six competence is interpersonal relations means intuitive understanding of , and deep level of caring and compassion for people; a real concern for subjects well-being, growth and development, and joy and recognition for subjects success and the last integration

of 'head and heart' means ability to make decisions and solve problems with due consideration of both facts and feelings and with the commitment to create win-win solutions that serve both the goals and the relationships concerned.

Apparently nursing leaders who utilize emotional intelligence be able to effectively develop goals and create ways to achieve those goals, as well as effectively communicate a newly created vision in a way that motivate nurses to share the vision. As the utilization of emotional intelligence allowed nursing leaders to assess and manage others' emotions when making decisions, when assisting followers in identifying and expressing emotions, and when altering the feelings of followers in more productive ways to transform the organization [9,10].

Situational leadership and emotional intelligence educational program for nursing leaders may help them to be more effective through managing different highly charged emotional situations. The modern demands of nursing drew the skills of emotional intelligence to meet the needs of directed patient care and cooperative negotiations with multidisciplinary team [9].

Aim Of The Study

The aim of the present work is to study situational leadership and emotional intelligence contribution to promote nursing leaders effectiveness.

Research hypothesis

1-The educational program for situational leadership and emotional intelligence can improve nursing leaders knowledge.

2- Nursing leaders improvement of knowledge about situational leadership and emotional intelligence can promote their level of leadership effectiveness.

Materials and Method

-Materials

Study Design

A quasi-experimental research design was used to achieve the aim of present research.

Setting

The study was conducted at Desouqe General Hospital,Faysal Hospital,Tropical Hospital, Chest Hospital and Medical Center affiliated to Ministry of Health

Subjects

- Professional head nurses leaders (25) who have actual leadership role were included in the study . Head nurses leaders working at Desouqe General Hospital were (16) . Faysal Hospital were (4) , Tropical Hospital were (3) . one head nurse Chest Hospital and one working at the Medical Center.

- All (180) nurses subordinates were included in the study. Each of the (25) nursing leaders subject had at least (2-5) subordinates subject. Nurses subordinates subject working at Desouqe General Hospital were 100, Faysal Hospital were 24, Tropical Hospital were 27, Chest Hospital were 11 and Medical Center were 18 nurses.

Tools: To achieve the aim of the study four tools were utilized

Tool(I):The leader effectiveness and adaptability description based on situational leadership, it consisted of two parts :-

Part one This part included items related to characteristics of the subjects such as age, marital status, work unit, years of experience, leadership years of experience , qualification and previous attendance of leadership programs.

Part two This part included leader effectiveness and adaptability description questionnaire developed by Paul and Kenneth (1988)[13] then reused by Léo and Eduardo (2006) [14] . Two forms for the questionnaire were used ,one for leader and the other for rater .

-Lead-self Scale is the leader form to determine what leadership style they perceive themselves to follow .The leaders were asked how would they will act in specific twelve situations to identify their leadership style.

-Lead-other form is the subordinate rater form to identify their perceptions for their leader's style of leadership .

The forms of leader and rater contained the same twelve situations written from different perspectives. Every situation has four answers to choose to determine leaders adaptability style as well as the level of leader effectiveness indicated by subordinate readiness to do tasks.

Scoring for leaders leadership adaptability style

Leaders leadership adaptability style were designed in a way that there is no "right" or "wrong" answers, only different ways of acting in certain situations to determine the leader leadership style.Each situation has four responses(A,B,C and D) , each response correspond to specific leadership style to choose among them.

The leadership style and effectiveness scoring key represents as follow:

- The style with highest probability of success scored with (+2) .

- The second best alternative is scored (+1).

- The third alternative is scored (-1).

- The style with lowest probability scored (-2).

Percentages of each style was calculated to determine dominant style which has highest frequency percent and second styles has at least 16.7%.

Leadership effectiveness scoring is ranging as follow:

-High leader effectiveness (range +13 - +24).

-Moderate leader effectiveness (range +1 - +12).

-Low leader effectiveness (range -12 -0).

-Very low leader effectiveness (range -24 - -13).

Tool (II): Emotional Competency Profile Scales

The emotional competency profile scales was developed by Wolmarans and Greeff (2001)[15] and reused by Palmer and Jansen (2004) [16].It consists of leader and rater forms to determine the emotional intelligence of nursing leaders subjects.

-The leader's form to be completed by leaders to determine their own level of emotional intelligence .The rater's form includes the same questionnaire to be completed by subordinates regarding their leader's emotional intelligence.

The emotional competency profile scale contains 46 items divided into seven

competencies subscales emotional literacy (6 items), self-esteem/self-regard(6 items), self-management (6 items), self-motivation(6 items), change resilience(7 items), interpersonal relations (9 items), and the integration of head and heart(6 items) .

Scoring of emotional competency profile scales(leader and rater forms) are measured on a seven-point Likert Scales ranging from 1-7 (never, hardly ever , seldom, do not use rating , occasionally , most of the time and always). The higher the mean score on the current behavior scale, the higher the level of emotional intelligence demonstrated by the leaders.

 Levels of emotional intelligence:-

- High level =>75% .

- Moderate level = 60 % − 75% .

-Low level = <60%.The high and moderate levels mean nursing leaders have   adequate emotional intelligence while low level means nursing leaders have

inadequate emotional intelligence.

Tool (III) Situational Leadership and Emotional Intelligent Knowledge Test.

This tool developed by the researcher based on recent related literature[7,8,9,11] to collect data about nursing leaders' knowledge for situational leadership and emotional intelligence . The questions constructed in the form of either complete from the list ,true or false and multiple choice questions. The test composed of fifty questions .

Scoring system of the knowledge test

The total score for knowledge test was 100 score ,the correct answer take two points and incorrect answer take zero.

Levels of knowledge on situational leadership and emotionally intelligent:

-High level = >75%.

-Moderate level = 60% − 75%.

 -Low level = <60.

The high and moderate levels mean nursing leaders have adequate knowledge but the low level means nursing leaders have inadequate knowledge.

Tool (IV): An Educational Program for Nursing Leaders about Situational Leadership and Emotional Intelligence.

The program developed by the researcher based on the findings of tool (I) Leader effectiveness and adaptability description based on situational leadership , tool (II) :emotional competency profile scales and tool (III) situational leadership and emotional intelligent knowledge test , as well as reviewing of recent relevant literature .At the end of educational program nursing leaders expected to improve their knowledge for both

emotional intelligence and situational leadership

Method

1-Official permission to carry out the study was obtained from responsible authorities of study setting .

2-Tool(I)Leader effectiveness adaptability description questionnaire (leader and rater forms) and tool (II) emotional competency profiler questionnaire (leader and rater form) were translated into Arabic language . The translated tools tested by nine expertise in nursing services administration and in psychology to evaluate the translated tools items in relation to its relevance and appropriateness on a five points scale ranging from 1-5 as follows:-

1=Not very relevant   2=Not relevant

3= Usual   4= Relevant

5=Very relevant

An evidence of content validity was then calculated .The content validity of the study tools were for tool (I) ranged from 82.5% to 87.5% , for tool(II) ranged from 82.5% to 87.5% , and for tool(III) ranged from 84% to 100% .The content validity scored 80% or more is considered have accepted content validity

3-Pilot study conducted on five leaders and six subordinates to ensure the clarity and identify obstacles during data collection (pilot study sample did not involved in study sample).

4-Modifications were done based on the results of pilot study sample and jury opinion of nine expertise.

5-Tool(I)The leader effectiveness and adaptability description based on situational leadership, lead – self scale were administered to studied nursing leaders to determine what leadership style they perceive themselves to have pre program. And the form lead -others were administered to their raters to determine their perception on their leader's leadership style .

6-Tool (II): The emotional competency profile scales leader form were administered to studied nursing leaders and rater form were administered to studied nursing rater to determine the emotional intelligence of nursing leaders subject.

7- Nursing leaders situational leadership and emotional intelligent knowledge was tested by tool(III) pre and post program.

8-Responding time for tool(I),tool(II)and for tool(III)half hour. The researcher was present during data collection to provide guidance and clarification.

9-An educational program for nursing leaders for situational leadership and emotionally intelligent knowledge was designed and translated into Arabic language based on the collected data and literature review .

10-The program was implemented by the researcher; it encompassed ten hours duration divided into five session each one two hours repeated for five times , and administered according the suitable and agreed time for nursing leaders.

11- Duration of data collection lasted seven months began from the last week in October 2010 till the third week in May 2011.

Program of this study classified into four phases as follows:-

phase 1:Assessment

Nursing leaders situational leadership and emotional intelligence levels were assessed using tools (I,II) pre and post program implementation. Then researcher administered situational leadership and emotional intelligent knowledge test tool (III) to assess nursing leaders levels of situational leadership and emotional intelligent knowledge for developing the needed educational program.

Phase 2 Development of the educational program

The constriction of educational program included statement of general and specific objectives ,as well as selection and organization of the program contents were in 5 sessions .

Learning Strategies

Selection of teaching methods was governed by studying the subject themselves and content of the situational leadership and emotional intelligence program .The methods used in teaching of the program included group discussion and lecture .The teaching aids used in the situational leadership and emotional intelligence program were flip chart and examples from work environment.

Phase 3:Implementation of the program

The situational leadership and emotional intelligence program is a theoretical sessions were held in the study setting. The program has ten hours divided into five sessions every session two hours. Activities carried out in the sessions illustrated in the following sheets. The program repeated for 5 times each sessions 5 nursing supervisors. The studied nursing leaders were informed about the general instructional objectives of program of

each session .The researcher built good relation and gave a simple form of motivation to enhance the leaders participation and more involvement in the program activities.

Phase 4:Evaluation of the program

The situational leadership and emotional intelligence educational program for nursing leaders was evaluated through :

1-Tool (I) demonstrated to nursing leaders and raters pre and post program to assess the change in nursing leaders effectiveness and adaptability act for situational leadership styles.

2- Tool (II) demonstrated to nursing leaders and raters pre and post program to assess nursing leaders change in emotional intelligence levels .

3-Nursing leaders were given a knowledge test tool (III)pre and post program to assess their change in knowledge regarding situational leadership and emotional intelligence

12-Researcher put the educational materials of situational leadership and emotional intelligence program in booklet to be a guide for them and other leaders to improve and practice

emotional intelligence and situational leadership.

Statistical analysis

Results were tabulated and statistical analysis was performed with Statistical Package for Social Sciences(SPSS version 17.0).For quantitative data,the mean and standard deviation were calculated. Comparison between the studied sample(pre program and post program data)was performed using t-test and paired t-test .For qualitative data, the number and percent was calculated .Chi square was used as a test of significance.P-value$\leq$0.05 were considered statistically significant.

Results

Results revealed that Table(1)represents characteristics of nursing subjects, leaders and raters. Equal percent 40% of nursing leaders were in age group less than 30and from 30-35years . High percent 76% of nursing leaders were married . 68% have less than 10 years of experience and 88% have more than 5 years of experience as leaders. All nursing leaders have baccalaureate degree and only 20% of them were attend leadership programs . Half of nursing raters age ranging 30-35and equal 25% aged less than30 and more than35. Majority 71.7% of nursing raters were married and 60.6% have more than and equal 10 yearsof experience. Majority 92.77% of nursing raters have

technical degree education and only7.22% have baccalaureate degree.

Table(2)represent differences between nursing leaders levels of knowledge for situational leadership styles pre and post educational program. The table shows statistically significant improvement of nursing leaders levels of knowledge on all situational leadership styles (telling, selling, participating, delegating) post the educational program at p<0.05.

Table (3) represents nursing leaders levels of knowledge for leadership effectiveness aspects pre and post the educational program. The table shows statistically significant improvement of nursing leaders levels of knowledge for leadership effectiveness aspects post program at p≤ 0.05 than pre program.

Table (4) Differences between nursing leaders levels for knowledge for emotional intelligence competencies scales pre and post educational program. The table shows that there is a statistically significant improvement of nursing leaders level of knowledge on all emotional intelligence and competencies post the educational program at p<0.05.The nursing leaders high level competencies increased and the low level competency decrease for all type of competencies on emotional intelligence post program.

Figure (1) shows nursing leaders situational leadership and emotionally intelligent knowledge level pre and post program. The nursing leaders high level of situational leadership and emotionally intelligent knowledge doubled, their moderate level decreased and their low level decreased post program than pre program.

Figure (2) Nursing leader effectiveness and adaptability description data profile illustrate that pre program less than half of nursing leaders behave in participating style followed by selling style and telling style . Post program participating style has the highest responses of nursing leaders to perceive own selves followed by selling style ,delegating style and l telling style respectively

Figure(3) shows levels of leaders effectiveness for situational leadership pre and post program among raters. Pre program more than half of raters showed themselves at moderate readiness level which mean moderate effectiveness level for leaders ,followed by low readiness and high readiness level respectively. But post program, most raters showed themselves at high readiness level, followed by moderate readiness and low readiness level respectively.

Table(1) Characteristics of Nursing Subjects (Leaders and raters) n=205

Demographic Characteristics		Nursing Leaders N = 25		Nursing Raters N =180	
		N	%	N	%
Age	<30	10	40%	45	25%
	30-35	10	40%	90%	50%
	>35	5	20%	45	25%
Marital Status	Married	19	76%	129	71.7%
	Single	6	24%	51	28.3%
Years of experience	<10	17	68%	71	39.4%
	≥10	8	32%	109	60.6%
Years of experience as a leader	<5	22	88%	-	-
	≥5	3	12%	-	-
Educational qualification Baccalaureate		25	100%	13	7.22%
Technical degree		-	-	167	92.77%
leadership of Attendance programs Yes No		5	20%	0	0
		20	80%	180	100%
Department Desouqe General Hospital		16	64%	98	54%
Faysal Hospital		4	16%	24	13%
Tropical Hospital		3	12%	27	15%
Chest Hospital		1	4%	11	6.1%
The MedicalCenter		1	4%	20	11.1%

Table(2)Differences between nursing leaders levels of knowledge for situational leadership styles pre and post educational program n=25

Situational leadership styles	Pro-gram	Levels of nursing leaders Knowledge						Chi square	
		High		Moderate		Low		x^2	p-value
		N	%	N	%	N	%		
Telling	pre	5	20	10	40	10	40	3.02	0.05*
	post	10	40	10	40	5	20		
Selling	pre	3	12	10	40	12	48	3.09	0.05*
	post	12	48	8	32	5	20		
Participating	pre	5	20	12	48	8	32	3.00	0.05*
	post	20	80	2	8	3	12		
Delegating	pre	4	16	10	40	11	44	3.01	0.05*
	post	18	72	5	20	2	8		

*significance at p<0.05

Table(3) Nursing leaders levels of knowledge for leadership effectiveness aspects pre and post the educational program

leadership effectiveness aspects	Program	Levels of nursing leaders knowledge leadership effectiveness aspects						Chi-square	
		High 100 ≥75		Moderate 75 ≥ 60		Low 60 ≥ 0			
		N	%	N	%	N	%	X^2	p-value
Leadership effectiveness aspects	pre	2	8	5	20	18	72	4.01	0.05*
	post	17	68	3	12	5	20		
Total	pre	2	8	5	20	18	72	4.22	0.05*
	post	17	68	3	12	5	20		

* significance at p≤0.05

Table (4) Differences between nursing leaders levels of knowledge for emotional intelligence competencies scales pre and post educational program N=25

| Scale s of emotional intelligence competencies	Pro-gram	Levels of nurs ing leaders knowledge						Chi-s quare	
		High		Moderate		Low			
		N	%	N	%	N	%	X2	p-value
Emotional literacy	Pre	0	0	10	40	15	60	3.4	0.05*
	Post	10	40	12	48	3	12		
Self-esteem	Pre	2	8	12	48	11	44	2.4	0.05*
	Post	12	48	11	44	2	8		
Self management	Pre	2	8	15	60	8	32	3.9	0.05*
	Post	11	44	11	44	3	12		
Self motivation	Pre	1	4	15	60	9	36	4.1	0.05*
	Post	10	40	12	48	3	12		
Change resilience	Pre	2	8	8	32	15	60	5.2	0.05*
	Post	13	52	9	36	3	12		
Interpersonal relations	Pre	3	12	5	20	17	68	4.9	0.05*
	Post	12	48	9	36	4	16		
Integration of head and heart	Pre	2	8	8	32	15	60	4.6	0.05*
	Post	13	52	9	36	3	12		
Total	Pre	2	8	15	60	8	32	4.3	0.05*
	Post	12	48	8	32	5	20		

* significance at p<0.05
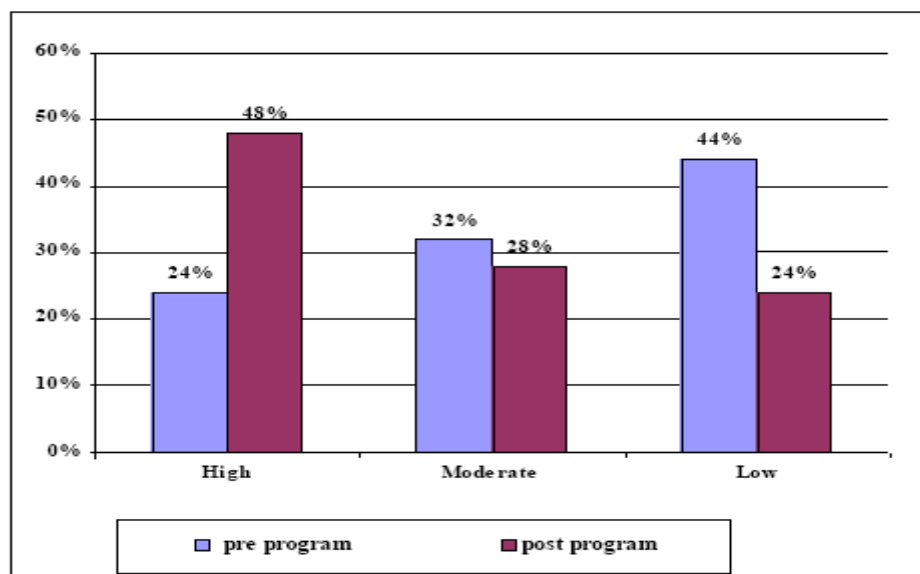
Figure (1) Nursing Leaders Situational Leadership and Emotionally Intelligent knowledge level pre and post program N=25
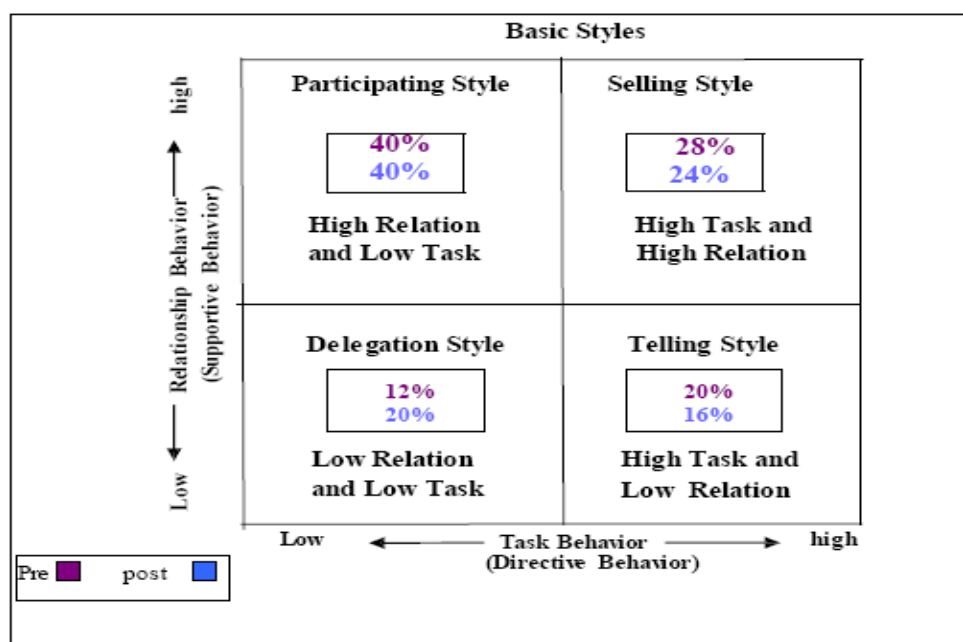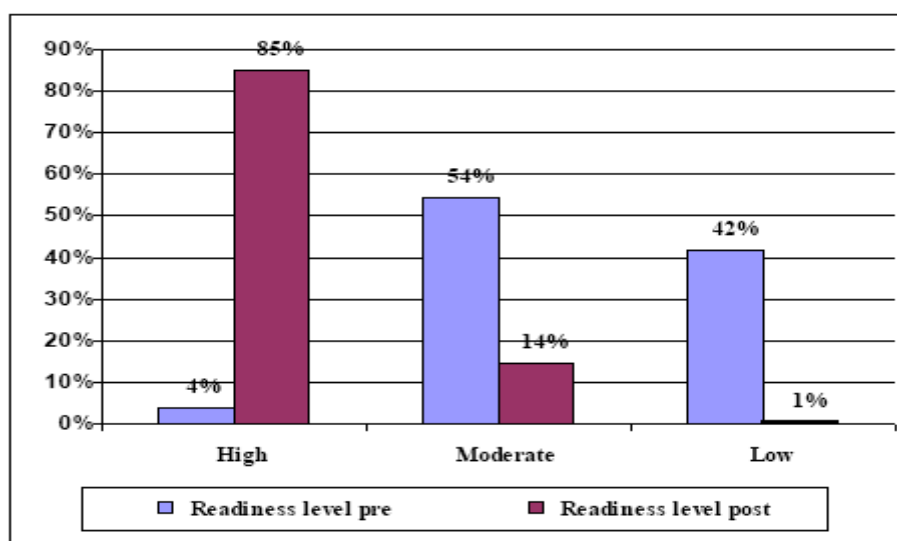

Figure (2)Nursing leader effectiveness and adaptability description data profile N=25

Figure (3) levels of Nursing Leaders Effectiveness for Situational Leadership pre and post program among raters N=180

Discussion

Situational leaders are able to determine followers needs in different work situations and adopt suitable leadership style to behave to accomplish the intended goal. Emotional competence plays critical role in leadership, whose quintessence lies in putting others on the right path to do their jobs more efficiently. The emotionally intelligent leaders are more apt to engage in necessary needed leadership behaviors such as listening, praising, information sharing, asking for input and providing rationale with in different situations. Effective situational leaders depend on their emotional intelligence competencies when switching from one leadership style to another according work situation and followers needs .

The present study revealed statistical significant improvement in the nursing leaders level of knowledge about situational leadership and emotional intelligence post program . Apparently the nursing program was effective in improving those nursing leaders situational leadership and emotional intelligent knowledge. The fact is that the nursing leaders became knowledgeable for different situational leadership styles and recognize the use of emotional intelligence for changing their leadership style according to their followers readiness .Most probably they know how to use

situational leadership model to place less or more emphasizes on the task and on relationship with the followers depending on what is needed to get the job done successfully.

Duggan(2013)[17] study about description of leadership effectiveness and adaptability, supported results of the present study and reported that with training , employees develop leadership skills that enable them to inspire and engage the rest of the company. Morale improves despite a global workplace atmosphere of constant change and challenges. Leadership development programs allow executives to be promoted from within the organization, allowing for more seamless and less disruptive succession when current leaders retire or leave for other job opportunities.

Mehta(2011)[18]study about situational leadership and personal effectiveness : profile of managerial functionaries in development organizations in India supported results of the present study and concluded that leadership being viewed as a behavioral that can be learned

Also **Hersey (2012)** [19] study about management of organization behavior: utilizing human resources, supported results of the present study through the underlying notion of situational leadership

is that individuals can be trained to adjust their leadership styles depending on the situation, as well as the idea that leaders should treat different employees differently ,and the same employees differently depending on the situation.

Danborg(2011)[20]study about the link between project management leadership and project, success supported results of the present study and summarized that the competencies for an effective leader are learned abilities.

Results revealed statistically significant improvement of nursing leaders level of knowledge on emotional intelligence and competencies post the educational program .This mean that the nursing leaders understand methods to control temper or get along with others .They know that their own and others emotional when makeup well can move people in directions that help accomplish intended goals and adapt to problem solving. Those nursing leaders became better equipped to use emotions to proactively redirect their attention to important events (e.g., face continuous work environment change)use emotions to enhance thought are through considering alternate perspectives, flexible planning, and creative problem solving .

The findings of the present study is supported by **Raza & Kashif (2011)** [21]

study about the impacts of emotional intelligence on leadership and team work .They found that emotional intelligence training can raise some sort of (self) awareness, which could change and/or develop one's individual perception of seeing and dealing with emotions.

Goleman (2008) [22] study about best of HBR on emotionally intelligent leadership, support present study result and reported that the skills of emotional intelligence can be learned and growing own emotional intelligence takes practice and commitment. Also they insists that emotional intelligence can be measured, learned, and developed.

McKee et al (2008) [23] study for becoming a resonant leader supported the present study results and found that emotional intelligence can never be fully learned, but that there are several ways of building one's competences through training while emotional intelligence can never be fully developed, the training initially goes fast, and that the current or future leader must have the will to take on the training and be willing to develop it.

Adding **Boyatzis (2007)** [24] study about developing emotional intelligence through coaching for leadership, professional and occupational excellence , found that one can, through coaching, develop emotional

intelligence. Also **Lopes, Cote and Salovey (2006)** [25] study on an ability: model of emotional intelligence: implications for assessment and training, supported the present study results and found that training can raise awareness about the importance of emotional skills and motivate people to learn.

Goleman et al. (2002) [26] study about primal leadership supported the results of present study and found that emotional intelligence is learnable. Also results confirmed by **Mayer& Salovey (1993)** [27] study about the intelligence of emotional intelligence and found that emotional intelligence is an ability that can be developed and improved in the individuals for better results in the teams/groups. But **Caruso et al.(2006)** [28] study on emotional intelligence in the workplace, not support present study results and they were not convinced that emotional intelligence actually can be taught, and training did not increase the emotional intelligence.

Results of present study revealed that the participative leadership style was the predominant one for nursing leaders and the selling leadership style was the second style for pre and pot program. The fact is that those nursing leaders were having high relationship and low task behavior that best suited for followers of moderate

to high maturity. Those leaders does not make decision until problem is presented to their followers while their advice and suggestions are received .The decision is still the leader's but it is not taken until the staff are consulted . Participative leadership is for followers with competence but lack confidence or motivation ,they do not need much direction because of their skills, but need support to bolster their motivation.

The selling style as the scored predominant style indicates that leaders have high task and high relationship behavior, they make their own decisions, and announcing them to their followers and , tries to persuade them to accept it. Beside they accepts the possibility that their followers may resist the decision. The leaders in this case work well with follower with some competence, commitment ,unable but willing and motivated. Nursing leaders with both selling and participating styles tend to do well working with followers with average levels of readiness ,while would find it difficult to handle discipline problems and work groups with low levels of readiness .

Goleman(2008)[22]study about best of harvard business review on emotionally intelligent leadership, supported results of the present study that the most effective executives use a collection of distinct leadership styles each in the right measure, at just the right time. Such flexibility is tough to put into action, but it pays off in performance. And better yet, it can be learned.

Also **Larsson and Storhannus (2008)** [29] study about understanding leadership in successful non-profit organizations, support the results of present study and revealed that the majority of leaders thought that their most used leadership style was participating leadership style.

The participative leadership style is most appropriate to use when employees have fairly high competence and a variable commitment to achieve, while the managers perceive themselves to use supporting. The perception of what leadership style one uses could vary depending on the relationship with the employees. That is if the leader is a good friend of a subordinate, one can assume that the leader would use less harsh methods and letting the subordinate decide for him or herself instead of just telling them what to do and how to do it.

The present study results revealed statistically significant improvement of levels of leaders effectiveness on situational leadership post program from moderate to high level according to

improvement of raters readiness level post program. The fact is that the improvement of nursing leaders levels of knowledge changed their level of leadership effectiveness .They understand that their is no one leadership style is most effective when nursing leaders are trying to influence followers, and that effective leaders are those who vary their leadership styles based on the readiness level of the follower and the situation.

This results are confirmed by Mehta **(2011)** [18] who found that majority of respondents belong to the moderate effectiveness category confirmed the present study results leaders effectiveness level pre program. Also **Bull(2010)**[30] who showed that majority of staff perceived their supervisors as having moderate effectiveness level followed by low effectiveness level.

As well as **Larsson and Storhannus (2008)** [29] supported the results of pre program readiness levels and found that all leaders are on the moderate leaders effectiveness level .Beside **Lay and Bruno (2006)** [31] study about personal values and leadership effectiveness supported the results of present study for leaders effectiveness levels pre program and found that majority of sample of

executives has a moderate level of leadership effectiveness.

Readiness refers to the follower's experience, willingness and ability to take responsibility given a specific task. The level of maturity determines the appropriate combination of task and relationship behavior for the leader . The words maturity, readiness, willingness, and development are used alternatively to mean the same[32]. Effective leaders are those who vary their leadership styles based on the readiness level of the follower and the presenting situation. Effective leadership is determined by the ability of the leaders to assess the follower's readiness level and apply the appropriate leadership style to match the follower's readiness level[33].

Conclusion

Pre program the level of majority of nursing leaders knowledge was moderate and low either for situational leadership, emotional intelligence competencies or effectiveness and adaptability based on situational leadership. They predominately use participating leadership style followed by secondary one selling style. Also most of nursing raters showed that their leaders were at low emotional intelligence competencies level and use participative

leadership style .

After implementing of a well planed and organized educational program about situational leadership and emotional intelligence the nursing leaders showed improved leadership effectiveness. Apparently the situational leadership and emotional intelligence levels of nursing leaders improved so that contributed and improved their level of leadership effectiveness which indicated in the change in using participating leadership styles as predominant style for most of raters and improvement in their raters level of readiness.

Recommendations

- Prime importance establishing of learning center in every hospital for periodical improvement of knowledge and skills for nursing staff regarding situational leadership and emotional competencies which will increase their management awareness toward improving work performance.
- Train and increase nursing students awareness how to act nursing practices professionally using emotional intelligences competencies and using situational leadership theory
- Nursing leaders' attention to care for their nursing staff emotions.

Further research are needed

-Study other variables as financial performance, academic performance, clinical performance , and job satisfaction as variables for both emotional intelligence competencies and situational leadership styles .

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