Effect of peer learning strategy on Technical Nursing Students' Knowledge, Skills and Attitudes.

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Abstract

Background: Peer learning in the context of nurse education has been widely used within the simulated clinical skills environment, utilizing junior and senior student nurses. It supported the acquisition of new clinical skills for junior students, whilst senior students consolidated teaching skills. Furthermore, peer learning in undergraduate nursing education has resulted in enhancements in student's skills of communication, critical thinking and self-confidence particularly in theoretical settings. Objective: to assess of Damanhur technical institute of nursing students' knowledge, skills and attitudes after application of peer learning strategy. Settings: The study was conducted at Obstetrics and Gynecology skill lab at   Damanhour Technical Institute of Nursing ,which affiliated to General Organization for Teaching Hospitals and Institutes. The subjects of this study were included the last academic year nursing students,(n=60), throughout the academic year (2022-2023), they were divided into two equal groups. Control group (n=30), while The study group (n=30). Tools: Three tools were used by the researcher in order to collect the required data from the study subject. Tool (I): Student's Clinical Evaluation Checklist: it consist of 2 parts Part (I): Socio- demographic data. part (II): Abdominal Examination Knowledge Assessment Questionnaire. Tool (II):Student's Clinical Evaluation Checklist. Tool (III): Nursing Student's Attitude toward Peer Learning Questionnaire. Results: It was shown that there was a statistically significant difference in knowledge and clinical performance scores concerning the abdominal examination during pregnancy procedures among the study and control group, where the study group was satisfied and have positive attitude toward peer learning strategy. Conclusion: Peer learning strategy is a more effective strategy in the improvement of nursing students' knowledge and practice than traditional learning method, it is beneficial in supporting students' confidence and team working skills. Recommendations: Implement of peer learning strategies in both classrooms and clinical settings to increase students' knowledge level and clinical performance. Ministries of Education and school authorities should sponsor teachers to attend conferences, seminars and workshops to update their knowledge on current pedagogies in science classrooms.

<u>Keywords:</u> Peer learning, Student knowledge, performance, attitude.

Introduction

The ultimate goal of nursing education programs is to graduate a greater number of competent, accountable, and reliable professionals capable of cooperating with one another and other members of the health care team. As a result, more student-centered methods are now being utilized to encourage student engagement and participation. One such method is peer learning (Beulah ,R. 2019)

Peer- learning is seen as a learning partnership between nursing students, where education is delivered in a reciprocal manner through shared knowledge, experiences and ideas, traditionally

without the immediate influence of an academic instructor. (Ravanipour2015). Peer learning can be defined as acquiring knowledge and performance through the active help and support of matched peers or partners. It is an educational practice in which students react with different students to achieve educational objectives. It is a student-centered approach and a total shift from the teacher-centered or lecture method of teaching. **.** (Zhang Q 2022) (Topping 2015).

Peer learning strategy encourage tutors to reflect upon and revise their own prior learning, to become more self-directed and increase their self-confidence in content knowledge and skills. They may be motivated to learn new content and find new ways of thinking about and structuring content. They gain practical experience and greater understanding of teaching with peers, and can lead to a greater sense of engagement. For tutees, they may also gain opportunities to ask questions and receive detailed feedback on their knowledge and skills. They seem more likely to disclose ignorance or misconception without concern that this may affect their assessmen (Burgess 2014) (O'Donovan J 2015)

Aldridge (2017) conducted a literature review by investigating ninety six studies conducted between 1980-2016. As a result of the investigation, six themes that were effective on the psychomotor skill learning of nursing students were created. In one of these themes, it was determined that peers have an important role in skills training and students create information and support for each other in psychomotor skill teaching. Öztürk and Göçmen Baykara (2019) conducted a study to evaluate the effect of peer learning on the teaching of nursing skills. The results indicate that the skills of students who learned in the peer group were more developed, better reinforced, and retained longer than the skills of students who learned with the present teaching methods.

However, some adverse effects have also been described, including students not being compatible with each other, not wanting to compete for clinical tasks, having to share the preceptor's attention and time, and having less time to practice independently, Less positive experiences that could occur include competition between students and a fear of not learning properly. Some students have also reported feelings of insecurity when working with a peer.(Stenberg 2015)

Aims of the Study

This study aims to determine the effect of peer learning strategy on technical nursing students' knowledge, skills and attitudes.

Research hypotheses

H1- Nursing students who apply peer-learning strategy exhibit higher level of knowledge than those who not.

H2- Nursing students have satisfactory performance after application of peer-learning strategy more than those who not.

H3- Nursing students who apply peer learning strategy exhibit positive attitude toward it .

Materials and Method

Materials

Design: A quasi experimental research design (post- test only) was used to conduct this study.

Settings: The study was conducted at Obstetrics and Gynecology skill lab at Damanhur Technical Institute of Nursing, which affiliated to General Organization for Teaching Hospitals and Institutes. The duration of study at the institute is five years obligatory after preparatory school.

Subjects: The subjects of this study were included the last academic year nursing students (5th academic year) because they are more mature to apply the strategy, (n=60), registered in the Obstetrics and Gynecology nursing department throughout the academic year (2022-2023), they were divided into two groups. Study group (n=30). The control group include the students who follow the traditional method of teaching (demonstration and re-demonstration), attending the clinical training with the clinical instructor directly (n= 30)

Tools: the researcher used three tools in order to collect the required data from the study subject.

Tool (I): Student's knowledge Assessment : it consist of 2 parts

Part (I): **personal and academic data**. This part included the data such as student's age, sex, pervious academic achievement grade.

part (II): **Abdominal Examination Knowledge Assessment Questionnaire.** This tool was developed by the researcher based on the related literature to assess nursing students' knowledge in relation to abdominal examination during pregnancy. It consisted of 30 questions. 15 statements answered with true or false and the other 15 questions were multiple choice. Each correct answer was given one score and a zero for incorrect one with a total score of 30. Its distribution was as the follow, Excellent (≥27), Very Good (25 – <27), Good (22– <25), Satisfactory (20 – <22) and Poor (<20).

Tool (II): Student's Clinical Evaluation Checklist.

This tool was developed by Obstetrics and Gynecology nursing department in Damanhoure Technical Institute of Nursing .It is used to assess the nursing student's performance toward applying steps of abdominal examination during pregnancy taught in the practical part of Obstetrics and Gynecology nursing course and applied in the laboratory setting. It contain 24 steps, each step checked as "done " and "not done" . The score of total performance will be10. The grade system of performance was applied to the total score was 10 distributed as follows: Excellent (≥9), Very Good (7 – <9), Good (5 – <7), Satisfactory (3– <5) and Poor (<3).

Tool (III): Nursing Student's Attitude toward Peer Learning Questionnaire. This tool was developed by the researcher based on the related literature. Korkut S.(2020) AlShareef (2019) This tool was used to determine Students' attitude toward Peer Learning Strategy, peer tutors and organizational support.it consist of 31 item, which are entitled under two parts presented as follow:

Part 1: Students' Attitude toward Peer Learning Strategy Questionnaire. This part consist of 18 statements.

Part 2: Students' attitude toward peer tutors and Organizational Support questionnaire. This part consist of 13 statements.

The items had to be rated on three points likert scale where (1) denoting "agree" , (2) denoting " natural" and (3) denoting " disagree". Reversed score was taken into consideration. The scoring system was as follows; Negative attitude to peer learning score <50%. Neutral attitude to peer learning score 50%-<75% Positive attitude to peer learning score ;≥75%.

Method

-An official permission to conduct the study was obtained from director of Damanhur Technical Institute of Nursing. The tool I and III developed by the researcher. Tool III were translated into Arabic to be easily understood by the students. The validity of the tools were checked and revised by a panel of five experts in the field of study at Faculty Nursing, Damanhour University.

-Pilot study was carried out on a proximal 10% of sample size nursing students to check and ensure the clarity of items and identify obstacles that may be encountered during data collection, and they excluded from the sample. Reliability, The tools were measured to ensure that it was stable and produced consistent result overtimes. The reliability coefficient for the study tools were calculated using the correlation coefficient cronbach's alpha test that was 0.83 for knowledge , 0.87 for practice and 0.90 for attitude.

Preparation phase

a) Assessment and preparing the environment: The researchers assessed and obtained data from the student affairs administration related to students' number, age, gender and the last year students' marks.

b) Content preparation: Preparing the intended learning outcomes concerning the content of the abdominal examination during pregnancy. c) Educational materials preparation: Instructional materials as handouts of learning materials concerning the selected skill and videos were provided to the students. d) Students preparation: A training concerning the tutoring process was conducted to both the intervention group students and the clinical instructors of the obstetrics and gynecology department. The training includes the following points; role of the tutor; the tutor as a helper and the tutor as a "model student", tutor code of ethics, general tutoring tips and techniques, tips for group tutoring, characteristics of successful tutors, active listening strategies, role of the tutees. A total of 6 tutor students were selected randomly from students with higher marks in the previous year and semester. Tutor students receive concentrated training on the abdominal examination during pregnancy under supervision of the researcher, then demonstration and re-demonstration on it was supervised by the researcher. Each student was allowed to apply steps of procedure in the skill lab under the supervision of the researcher in order to master the skill.

Implementation phase

 • The 30 students in the intervention group were divided one peer tutor to four students in every group for application of the peer learning process. • The student tutors then designed lesson plans that were revised by the researcher. • The researcher prepared a schedule for the trained students to act as peer teachers for their colleagues. • The control group (n = 30) students were trained by clinical instructors in traditional clinical sessions. The clinical sessions started from **evaluation phase**

Tool I and II: Students' knowledge and Clinical Performance were evaluated by the check lists that distributed among both the intervention and control group. Then Tool III: Students' feedback and satisfaction about the effectiveness of the peer learning strategy distributed among study group.

Ethical Consideration

Written informed consent was obtained from the study subject after explanation the aim of the study. Privacy and Confidentiality of the collected data were maintained during implementation of the study. The students' anonymity was assured. Right to withdraw to participate in the research was assured.

Statistical analysis

The data from the participants were entered and analyzed using statistical package for the social science software (SPSS) the following statistical measures were used; Descriptive statistics such as frequency, percentage, means, and standard deviations were calculated. Chi-square, Z-test and t test of statistical significance were used for statistical comparison between study and control group. Significance of the obtained results were judged at the < 0-05 level.

Results

   Table (1) shows distribution of nursing students in both control and study groups according to their personal and academic characteristics. Concerning age, it was observed that nearly two thirds of the control group (66.7%) aged 19 to less than 20 years, while a half of Study group (50%) were aged 19 to less than 20 years, and (50 %) were 20-21 years.

   Regarding academic achievement it was noticed that less than half of students in control group and one-third of study group (46.7 % and 33.3%) respectively achieved excellent score. Followed by one third of control group (33.3%) and a half of study group (50 %) were very good.

Table (2) : Demonstrates the number and percentage distribution of nursing students in both control and study groups after implementing traditional and peer learning strategy according to their level of total knowledge scores. It was observed that no one of the control group students had excellent scores after implementing traditional learning, while after implementing the peer learning , a third of study group students (33.3%) had excellent scores.

The difference between the two groups concerning the total level of knowledge in abdominal examination during pregnancy was found to be statistically significant (P= 0.000).The difference between control and study groups according to their poor and satisfactory level of knowledge score were found to be statistically significant (z-test =7.325 and 1.187) respectively.

Table (3) :show significance of mean scores of total knowledge for both control and study groups after implementing traditional and peer-learning strategy.

It was observed that the mean score for control group after implementing traditional learning was (18.06 ± 4.87), while it was (21.53 ± 4.27) for study group after implementing peer learning. The table also revealed that the differences between control and study groups after implementing traditional and peer learning strategy was found to be statistically significant (t = 2.9344P =0.001).

Table (4): show the number and percentage distribution of nursing students in both control and study groups after implementing traditional and peer learning strategy according to their level of total practice scores.

It was observed that less than the half of the control group students (40%) had very good scores after implementing

traditional learning, while after implementing the peer learning, 60% of study group students had very good scores. The difference between the two groups concerning the total level of practice in abdominal examination during pregnancy was found to be statistically significant (p=0.006). The difference between control and study groups according to their very good, good and satisfactory level of practice score were found to be statistically significant (z-test = 11.891, 6.267 and 2.281) respectively.

Table (5): show significance of mean scores of total practice for both control and study groups after implementing traditional and peer learning strategy.

It was observed that the mean score of control group after implementing traditional learning was (21.83 ± 3.94). While, it was (25.70 ± 4.30) for the study group after implementing peer learning strategy. The table also revealed that the differences between control and peer groups after implementing traditional and peer learning strategy was found to be statistically significant (P =0.001).

Table (6): show the number and percentage distribution of nursing students in study group according to their total attitude toward peer learning.

Concerning the overall and total attitude toward peer learning strategy, the results reveal that less than three quarters (70.0%) of nursing student had a positive attitude regarding the peer learning strategy and one third of students (30%) had a natural attitude toward peer learning strategy. Regarding to students' attitude toward peer tutors and organizational support, it is noticed that more than three quarters of nursing student (86.7%) had a natural attitude toward it, while only 6.7% had a positive attitude.

Discussion

Peer learning is a kind of cooperative learning that promotes the value of students-students interaction and results in different advantageous learning outcomes. Peer Learning strategy encourages students to improve skills in organizing and planning learning activities, working cooperatively with others, giving and receiving feedback in addition to evaluating their own learning. Moreover it also helps to provide training leadership, improving confidence and intrinsic motivation, and may enhance an interest in academic careers. (Finkelstein A, 2020).
So the present study is atrial to apply peer learning strategy and to assess its efficacy in helping nursing students to achieve the goal of clinical performance. Study group were taught by peer learning method while students in control group were taught by traditional learning method.

The finding of the present study revealed that, there was statically significant difference between both study and control groups regarding the total main scores of knowledge concerning abdominal examination during pregnancy after implementing peer and traditional learning. It may be due to that fact that close and smooth interaction and collaboration between students are able to explain the concepts to another student in unique way.

This finding was consistent with other previous research study done by Ahmad and Mohamed (2018) which indicate better performance score among peer learning group. Moreover, Pålsson et al., (2017) in his study, reported that learning in peers improved learning and development of learning process. Also Immaculata et al., (2018) reported that peer learning strategy has been proven, not only to improve student's achievement but also increased the rate of class participation, active involvement in class activities. It has also been adjudged to foster sound relationship among students**.** In a study conducted by Anantharaman et al. (2019) who used peer learning in teaching bone anatomy in first-year medical students, the students who were trained by the peer learning method performed better in their final exam, and in comparison with the traditional method, the peer-taught students had more active participation in group discussions and interactions and attended classes with a prior overview of the class content.

In contrast, Shaaban and Mohamed (2020) reported that their was no statically significant difference between peer teaching group and control group regarding both knowledge and practice concerning hemodialysis session termination. Similar finding was reported by Rad et al., (2020) [147] which revealed that clinical skills score of student who trained via peer learning was the same to traditional teaching. The disparate study findings can be attributed to differences in sample characteristics, educational contents, domains of learning, types of peer learning model used, educators' skills, and corresponding learning environments.

The present study revealed that, the differences between the two groups in abdominal examination during pregnancy was found to be statistically significant. It can be due to that peers manner match their level of understanding, and peers respond to their concerns, as they know problems and challenges faced them, this reflects cognitive congruency, which means delivering teaching at the same level of learners. This results agrees with the findings of Kalu,Uche, et al., (2020) , and Osei-Himah, et al., (2022). They all reported that the students taught using peer learning achieved better results than those exposed to using the lecture method.

In relation to the significance of mean scores of total practices for both study and control groups after implementing peer and traditional learning, the result of the present study revealed that more than the half of study group students had very good scores and more than one third had excellent score after implementing the peer learning while,

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less than the half of the control group students had very good scores. This study parallel to Ribeiro et al., (2020) who assessed students before and after the peer assisted learning program. They identified that the workshop score of students who obtained the peer assisted learning program was significantly higher than the workshop score of students before the peer assisted learning program.

Regarding to attitude of students regarding peer learning, current study portrayed that most of students of the study group were satisfied with peer learning as they felt that they were more comfortable and relaxed to ask questions to peers. Furthermore, it was easy to communicate with others. This was in line with Abdel Ra'oof et al., (2021) Loda et al., (2019) , Harish & Nicola, (2017) who revealed that there was existence of high comfort zone between students did not pay attention in the class or their questions were found to be silly which allow free and open communication between them. In the fact it may be attributed what is called social congruency, which means learning in nonthreatening environment where teachers, peers here, have less authority.

Concerning the overall and total attitude toward Peer Learning Strategy , the results reveal that less than three quarters of nursing student had a positive attitude regarding the Peer Learning strategy which it is in the same vein with Essa, et al., (2018) , Alegre et al., (2017) and Jassim, T et al., (2022) who noted that most of the students were satisfied with this method and they valued it positively. Most of students also said they would be interested in trying other cooperative learning techniques, confirming that they were motivated and interested in this particular technique and in methods that require students to participate actively.

Conclusion

From the present study, it can be concluded that: Peer learning strategy is a more effective strategy in improvement of nursing students' knowledge and practice than traditional learning method and it can explained by The statistically significant difference in the level of knowledge and practice scores related to abdominal examination during pregnancy procedure between study and control group after implementing of peer learning and traditional learning.

- Moreover, the majority of the study group nursing students had positive attitude toward peer learning. In addition, they had a natural attitude toward peer tutors and organizational support. There was significant positive correlations between student's knowledge, clinical practice regarding abdominal examination and nursing student's attitude toward peer learning.

Recommendations

In line with the findings of the study, the following recommendations are made:

(1) Implement of peer learning strategies in both classrooms and clinical settings to increase students' knowledge level and clinical performance.

(2) Conducting more training workshops for nurse educators to increase their competencies in applying peer learning.

(3) Allotted time for all students to practice the procedure until they reaches competency level.

Recommendation for further studies:

(1) (1)Replicate the study with other groups of students in different locations and branches of nursing to further validate the results.

(2) Conduct peer leaning strategy in other clinical teaching situations and using other peer learning models.

Peer Learning, Knowledge, Performance, Attitude.

Table (1): Distribution of nursing students in both control and study groups according to their personal and academic characteristics.

demographic data	Control group (n=30)		Study group (n=30)	
	No	%	No	%
Age				
o -19- years	20	66.7	15	50.0
o 20-21 years	10	33.3	15	50.0
Previous academic grade				
o Excellent	14	46.7	10	33.3
o Very Good	10	33.3	15	50.0
o Good	6	20.0	5	16.7

Table (2): level of knowledge score concerning abdominal examination during pregnancy for nursing students (control and study groups) after intervention.

Total abdominal Examination Knowledge	Control group (n=30)		Study group (n=30)		Test of significant	
	No	%	No	%	Z –TEST	p
Poor (less than 20)	10	33.3	1	3.3	7.325	0.000
Satisfactory (20 – <22)	5	16.7	4	13.3	1.187	0.050
Good (22– <25)	8	26.7	8	26.7	……	…….
Very good (25 – <27)	7	23.3	7	23.3	……..	…….
Excellent (≥27)	0	0.0	10	33.3	………	……….
Chi-Square test	X^2= 17.475		P= 0.000			

Table (3) : Total knowledge score for both control and study group after implementing traditional and peer-learning strategy.

Total knowledge score	Control group(n=30)	Study group(n=30)
Mean ± SD	18.06 ± 4.87	21.53 ± 4.27
MIN - MAX	8-27	12- 30
Std. Error of mean	0.890	0.780
T test	2.9344	
P value	0.001	

Table (4): Number and percentage of nursing students (control and study group) after implementing traditional and peer learning strategy according to their total level of practice score concerning abdominal examination during pregnancy.

Total levels of practice.	Control group (traditional) (n=30)		Study group (peer group) (n=30)		Test of significant Z -TEST	
	No	%	No	%	Z -TEST	p
o Poor (<3)	2	6.7	0	0.0	…..	……..
o Satisfactory ((3– <5)	5	16.7	3	10.0	2.281	0.041
o Good (5 – <7)	10	33.3	4	13.3	6.267	0.023
o Very good (7-<9)	12	40.0	18	60.0	11.891	0.000
o Excellent (>9)	1	3.3	5	16.7	………	………
Chi square and P	X^2= 8.938 P= 0.006					

Table (5): Significance of mean scores of total practice for both control and study groups after implementing traditional and peer learning strategy.

Total practice score	Control group (traditional) (n=30)	study group (peer) (n=30)
Mean ± SD	21.83 ± 3.94	25.70 ± 4.30
MIN - MAX	15 – 35	19 – 36
Std. Error of mean	0.712	0.786
T test	3.6345	
P value	0.001	

Table (6): total attitude of nursing students in study group about peer learning strategy.

Nursing Student's Attitude toward Peer Learning	Study group	
	No	%
Students' Attitude toward Peer Learning Strategy		
o Positive attitudes	21	**70.0**
o Neutral attitudes	9	**30.0**
o Negative attitudes	0	**0.0**
Students' attitude toward peer tutors And Organizational Support		
o Positive attitudes	2	**6.7**
o Neutral attitudes	26	**86.7**
o Negative attitudes	2	**6.7**

Peer Learning, Knowledge, Performance, Attitude.

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