

Effect of Peer Teaching on Students' Outcome among Second Year Nursing Students

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Abstract: All nurses require development of the teaching skills as a part of their roles; however most of them don't have any formal instruction on how to teach. Peer teaching is an effective educational approach for nursing students that prepare them for their future role as an educator which involves peers from similar academic groups in reciprocal learning experience where one educate another and the peers learn through gaining teaching experience. The aim of this study was to determine the effect of peer teaching on students' outcome among second year nursing students. **Subjects:** A random sample of 240 second year nursing students who were enrolled in Medical Surgical Nursing course during the academic year 2016/2017. The study subjects were divided into three groups :peer teachers (20 students) and the other 220 students were divided randomly and alternatively into two equal groups; study and control groups (110 students in each group). **Setting:** The study was conducted at Medical Surgical Nursing department of Faculty of Nursing and Surgical unit of Menoufia University Hospital, Menoufia University. **Tools of the study:** four tools were utilized for data collection as follow; Tool I: Interviewing questionnaire, tool II: Peer teaching experience questionnaire, Tool III: Performance observational checklist and Tool IV: Clinical teaching preference questionnaire. **Results:** The total peer teaching experience score was satisfied among 100% of peer teachers. 75.5% of study group and 96.4% of control group had high performance score for measuring central venous pressure, also 86.4% and 87.3% of both study and control groups respectively had high total performance score for electrocardiogram. 60.9% of peer learner students had unsatisfied preference with peer teaching method, while 87.3%of them had satisfied preference with instructor teaching method. **Conclusion:** Peer teaching is beneficial for peer teachers in gaining satisfied peer teaching experience. Instructor teaching approach is significantly better for performing center venous pressure than peer teaching approach. Students of study group significantly preferred instructor teaching approach than peer teaching approach. **Recommendations:** Faculty's instructors should make their students as active participants as possible to establish student's self-trust, prevent their fear and master their future role as educators.

Keywords: Effect, Peer teaching, Students outcome and Nursing students.

1. INTRODUCTION

Teaching medical and paramedical programs especially nursing, physical therapy and athletic training shares common characteristics in clinical education. Each one of these programs especially nursing requires their students to be experienced in real life situations in order to be able to provide professional patient's care ⁽¹⁾.

Nursing students must be experienced and competent to perform all their roles as a care giver, educator, manager, and researcher and/ or advocate ⁽²⁾. These roles require the nurses to use their nursing skills such as analysis, synthesis, critical thinking and effective communication to solve clinical problems. Moreover they should be equipped with clinical as well as interpersonal skills to assume these future roles. Traditional teaching alone is not enough for nursing students to perform all these skills and roles but they need active learning which can be performed by peer teaching ^(3,4).

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Nursing program always focus on the traditional method of teaching such as lectures that stress the role of instructor rather than the student's role and based on passive learning. But nowadays the focus of teaching nursing program is the active student participation such as role play and / or peer teaching in which peers learn from one another⁽⁵⁾. Faculty educators and members should use different active learning methods to enforce their students to have an active role in their learning process⁽⁶⁾.

Peer teaching is an effective educational approach for nursing students that is based on Bandura's social learning theory, which claims that individuals learn from observing the behaviors of others⁽⁷⁾. This method is a teaching strategy that includes people of similar social groups in reciprocal learning in which one peer teaches the others through teaching experience⁽⁸⁾. Also it is an educational process in which a person of the same age group or level of experience interacts with other persons who are interested in the same topic⁽⁹⁾. In this process, the peer is a student of same age group, level of experience and academic level⁽¹⁰⁾.

Some researches were done to assess the importance of peer teaching for nursing students which stated that peer teaching improved the professional clinical skills⁽¹¹⁾. Also Stone et al., (2013) reported that undergraduate nursing students could benefit from peer teaching by increasing students' confidence, improving their competence in performing clinical skills as well as improving the clinical experience for all students⁽¹²⁾.

Moreover, it is stated that the peer teaching approach increases learner's self-efficacy through more active participation in learning, lower anxiety, and greater feeling of ownership of learning. At the same time, it improves the behavior and competence of peer teachers with the development of their teaching skills⁽¹⁰⁾.

It is estimated that peer teaching can be either formal or informal in nature and the students can learn greatly from the experiences of their peers based on the concept of indirect learning in which listening and reflecting the experience of others leads to learning⁽¹³⁾.

In relation to clinical teaching, students also learn skills and unwritten rules from their peers in which only other students understand issues and have the potential to help⁽¹⁴⁾. Also senior peers can provide junior students with emotional support and reassurance in a context that allows for asking questions and expressing uncertainty⁽¹⁵⁾.

Second year nursing students in Menoufia Faculty of Nursing attend a medical surgical nursing course aimed at qualifying them to provide nursing care to adult patients and their families in clinical settings. The course has formal theoretical part (lectures) and clinical training (practical part). The practical part is often taught by lecturers, assistant lecturers and clinical instructors to a group of about 18 - 20 students, a situation that makes complete guidance and supervision of the practical performance of each student is not feasible. To overcome this problem and at the same time motivate students' active learning; the researchers carry out this study in the clinical theatre (surgical unit of Menoufia University Hospital).

So the aim of the present study was to determine the effect of peer teaching on students' outcome among second year nursing students.

Operational definition:

Student's outcomes: Are the experience that the peer teachers gained it from practicing peer teaching approach, the performance of measuring central venous pressure (CVP) and electrocardiogram (ECG) for study and control groups and the preference for peer teaching approach versus instructor teaching approach among peer learners (study group).

Significance of the study:

Nursing students should be active in their learning process and today there is a great shift in teaching from teacher centered strategy in which teaching is performed by the traditional passive route to student centered strategy that is based on active learning that can be achieved by peer teaching.

Peer teaching is greatly performed informally in laboratory setting in many nursing faculties in which students play either the roles of peer teachers or peer learners. These roles may help nursing students to assume their future roles as educators and improve their skills and attitudes as well as improve their self-esteem. In spite of these important facts of peer teaching, limited studies were performed in Egypt regarding practical effect of peer teaching in Medical Surgical Nursing.

Research hypotheses:

The following research hypotheses were formulated in an attempt to achieve the aim of the study:

- 1- Students who assume the role of peer teachers gain a total satisfied peer teaching experience from this role.
- 2- Total performance scores of CVP and ECG for students who expose to peer teaching approach (peer learners) are significantly better than the students who expose to instructor teaching approach (instructor learners).
- 3- Students of study group who expose to peer teaching approach (peer learners) exhibit satisfied preference for peer teaching approach than instructor teaching approach.

2. SUBJECTS AND METHOD

Subjects:
Design:

A quasi experimental research design was utilized to achieve the aim of this study.

Setting:

The current study was conducted at Medical Surgical Nursing Department of Menoufia Faculty of Nursing and Surgical unit of Menoufia University Hospital (a clinical area for students' training) – Menoufia University - Egypt.

Subjects:

A random sample of 240 second year nursing students who were enrolled in Medical Surgical Nursing course during the academic year 2016/2017. The study subjects were divided into three groups as follow:

Peer teachers: A twenty students who were selected to be the peer teachers, had previous experience of the selected procedure (measuring central venous pressure and electrocardiogram) and performed these procedures with satisfied performance score prior to study. Then the other 220 students were divided randomly and alternatively into two equal groups 110 students for each group as following:

Study group I (peer learners): One hundred ten students who were exposed to peer teaching method.

Control group II (instructor learners): One hundred ten students who were exposed to instructor teaching as the routine faculty teaching method. Study and control groups were assigned into 6 subgroups of about 18 – 20 students in each.

Sample size was statistically calculated by using the equation of Steven Thimpsons equation at 95% confidence power of the study.

$$n = \frac{N \times P(1-P)}{\{(N-1) \times (d^2 / Z^2) + P(1-P)\}}$$

n=Sample size

N=Total society size(470 students)

d=error percentage = (0.05)

P=percentage of availability of the character and objectivity= (0.1)

Z=The corresponding standard class of significance 95%= (1.96)⁽¹⁶⁾.

The sample size was calculated to be 236 students , that was increased to be 240 to increase the power of the study.

Tools:

Four tools were utilized by the researchers to achieve the aim of the study and to collect the necessary data. These tools were as follow:

Tool I : Interviewing questionnaire:

It was developed by the researchers to collect demographic data of the students of all groups. It was comprised of three items related to student's age, sex and previous exposure to peer teaching.

Tool II : Peer Teaching Experience Questionnaire (PTEQ):

It was developed by **Iwasiw and Goldenberg (1993)** ⁽¹⁷⁾ and used by the researchers to assess peer teachers for their experience gained from practicing peer teaching approach. It consists of fourteen statements such as teaching is an important role for nurses, the peer teaching experience was time and effort well spent, learning in this unit will help them with their graduate nurses role, the peer teaching experience was personally rewarding, peer teaching helps in understanding the principles underpinning teaching and learning, these were initially apprehensive about the peer teaching requirement in the unit, feeling comfortable teaching the other students and developing skills for teaching basic clinical skills,.....etc.

Scoring system: The questionnaire is a five point likert scale rated from one to five ranged from strongly agree to strongly disagree. In which one means strongly disagree, two means disagree, three means certain, four means agree, while five means strongly agree. The total score were summed and the possible score ranged from fourteen to seventy and the students were categorized into three groups based on their scores in which a score less than 60% denoted dissatisfaction with the gained experience, a score of 60-65% denoted fair satisfaction with the gained experience and a score more than 65% denoted satisfaction with the gained experience.

Reliability: Williams et al., (2013) tested the reliability of the questionnaire and found that, this questionnaire had high internal consistency (Cronbach's alpha = 0.89) with high test re-test reliability ⁽¹⁸⁾.

Tool III : Performance Observational Chicklist:

This chicklist was developed by the researchers to assess students of study and control groups for their performance of the selected clinical procedures (CVP and ECG) based on reviewing literatures ⁽¹⁹⁾. It consisted of the following two parts:

- **Part one : Central Venous Pressure (CVP) performance checklist:** It was developed by the researchers to assess the performance of study and control groups for measuring CVP. It consists of 10 steps to be checked by the researchers if they were done correctly, not done or incorrectly done. These steps are washing hands, placing the patient flat, locating the phlebostatic axis, allowing IV fluid to drip into the client for a few seconds, turning stopcock off to the client and filling the manometer with IV fluids but avoiding complete filling of the manometer, opening manometer to the patient, observing fall in fluid column until fluid level fluctuates, taking reading when the fluid level stabilizes, turning stopcock off to manometer and resuming IV infusion to the patient, wash hands and document the reading in patient's record.

Scoring system: The number of chicklist's steps were ten. The student's was given two degree for each step that was performed accurately, one degree for inaccurate technique or skipped step then all degrees were summed. The total score was ranged from ten to twenty and the score were categorized into unsatisfied performance if the total score is less than fifteen degrees, moderate performance if the total score is from sixteen to eighteen degree and satisfied performance if the total score is ninteen or twenty degrees.

- **Part two : Electrocardiogram (ECG) performance checklist:** It was developed by the researchers to assess the performance of study and control groups for ECG. It consists of 10 steps to be checked by the researchers if they were done correctly, not done or incorrectly done. These steps are washing hands, preparing the equipment, explaining the procedure to the patient, lubricating the inner aspect of the arm and attaching the arm electrodes, lubricating the inner aspect of the leg and attaching the leg electrodes, connecting the electrodes to the ECG machine, attaching the six chest leads in position, operating the ECG machine, removing the leads and any paste, document the results on the chart and note the time and condition of the patient.

Scoring system: The number of chicklist's steps were ten. The student's was given two degree for each step that was performed accurately, one degree for inaccurate technique or skipped step then all degrees were summed. The total score was ranged from ten to twenty and the score were categorized into unsatisfied performance if the total score is less than fifteen degrees, moderate performance if the total score is from sixteen to eighteen degree and satisfied performance if the total score is ninteen or twenty degrees.

Tool IV : Clinical Teaching Preference Questionnaire (CTPQ):

This tool was developed by **Iwasiw and Goldenberg (1993)**⁽¹⁷⁾ to assess students of study group for their preference either for the peer teaching approach or instructor teaching approach. It consists of ten items covered several aspects such as anxiety when performing a nursing skill during presence of peers, more interaction and collaboration with other students, communication more freely with peers, peer are more supportive, increase self confidence with peers, honest, realistic and helpful feedback from peers and improve the ability to solve problems....., etc.

Scoring system: The questionnaire is a five point likert scale rated from one to five in which 1 means strongly disagree, 2 means disagree, 3 means certain, 4 means agree, while 5 means strongly agree. The total score is divided by the researchers into two parts as following:

- **Total score for peer teaching preference:** The score of question number one to question number six were summed to be ranged from six to thirty in which a total score of less than 60% denoted unsatisfied preference with peer teaching, while 60 to 65% denoted fair satisfaction with peer teaching and more than 65% denoted complete satisfaction with peer teaching.
- **Total score for instructor teaching preference:** The score of question number seven to question number ten were summed to be ranged from four to twenty in which a total score of less than 60% denoted unsatisfied preference with instructor teaching, while 60 to 65% denoted fair satisfaction with instructor teaching and more than 65% denoted complete satisfaction with instructor teaching.

The total score of performance of both procedures was adopted from the grading system of Menoufia faculty of nursing.

Reliability: Williams et al., (2013) tested the reliability of the questionnaire. It was demonstrated to be 0.92 with a strong test re-test agreement⁽²⁰⁾. Because the researchers modified the total score of the questionnaire to get the aim of using it, they tested the questionnaire for reliability again by using test re-test method and It was demonstrated to be 0.94.

Methods:

- **Formal approval:** An official permission was obtained from the responsible authorities of Faculty of Nursing, Menoufia University after an explanation of the aim of the study.
- **Tools development:** After reviewing the literature extensively, the study tool I and III were developed by the researchers while the second and fourth tools were developed by **Iwasiw and Goldenberg, (1993)**⁽¹⁷⁾. They were tested for its content validity by a panel of five experts specialized in Medical Surgical Nursing and education to ascertain relevance and completeness.
- The reliability of the interviewing questionnaire and the performance observational checklists was measured using a test- retest method and Pearson correlation coefficient formula to ascertain relevance and consistency of the tools to measure its items. The values were 0.92 and 0.89 respectively.
- **Pilot study:** A pilot study was conducted prior to data collection on 24 students (10%) to test all tools for clarity, objectivity, relevance, feasibility and the applicability of the tools. Also it was conducted to identify any problem associated with administering the tools and measure the time needed for data collection then the necessary modifications were carried out accordingly. Students of pilot study were excluded from the current study sample.
- **Ethical considerations and human rights:** A written consent to participate in the study was obtained from all participant students after explaining the aim of the study and they were assured that all collected data would be confidential and only will be used for the study' aim. The researchers emphasized that participation in the study is entirely voluntary and anonymity of the students were assured through coding data. Students were also informed that refusal to participate in the study would not affect their degrees of achievement.
- **Data collection Procedure: -**
- Data was collected over a period of five months from beginning of October 2016 to the beginning of May 2017 with the exclusion of January and February months, the time of term exam and half term vacation.

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- An interview was carried out by the researchers for all students of peer teachers group for collecting baseline demographic data using tool I and for orienting them about benefits of peer teaching and discussing their role. The interview carried out in the medical surgical nursing skill labs - Faculty of Nursing – Menoufia University. It took about 60 to 90 minutes.
- The researchers' selected two main clinical skills that must be learnt in the clinical part of the Medical Surgical Nursing curriculum (measuring Central Venous Pressure (CVP) and Electrocardiogram (ECG)).
- The peer teachers were assigned accordingly into two equal subgroups, ten students for each subgroup in two skill labs. One lab was for performing CVP measurement procedure and the other lab was for performing ECG procedure. One researcher demonstrated CVP and the other demonstrated ECG. Then each subgroup re-demonstrated the selected procedure and repeated it until mastering this skill under the supervision of the researchers.
- The researchers prepared a plan and schedule for the trained peer teachers to implement their role for their peer students in study group (peer learners) at the time of training in surgical department, Menoufia University Hospital (clinical area for students' training).
- All eligible students who agreed to participate in the study were divided alternatively and randomly into two equal groups; study and control groups. 110 students in each group. Each of these groups was divided according to the clinical teaching plan of Medical Surgical Nursing Department, Menoufia Faculty of Nursing into six subgroups (18 - 20 students).
- All students of study group who were exposed to peer teaching approach and control group who were exposed to instructor teaching approach were interviewed at a lecture room of Menoufia Faculty of nursing to collect their demographic data.
- The clinical training of the students of the study group started from 9 am to 2 pm for 4 days/week for five months. Each subgroup took about one month for training in the surgical department–Menoufia University Hospital.
- Students of control group were trained by their faculty instructors of medical surgical nursing department from 9 am to 2 pm for 4 days/week for five months in the surgical department–Menoufia University Hospital.
- The CVP and ECG performance of students in both study and control groups were evaluated using tool III (performance observational checklist)
- The peer teachers were assessed for their teaching experience that was gained from practicing peer teaching using tool II (Peer Teaching Experience Questionnaire (PTEQ)), while the preference of students of the study group about peer teaching versus instructor teaching methods was assessed using the fourth tool (Clinical Teaching Preference Questionnaire (CTPQ)). These assessments were done at the end of training period in the surgical department–Menoufia University Hospital (May, 2017).
- A comparison between both study and control groups was carried out after the end of clinical training in the surgical unit about performing the selected procedures to evaluate the effect of peer teaching on students' performance.

Statistical Analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 19, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category, comparison between two groups and more was done using Chi-square test (χ^2). For comparison between means of two groups of parametric data of independent samples, student t-test was used. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p < 0.05$ for interpretation of results of tests of significance⁽¹⁶⁾.

3. RESULTS

Table (1) shows that the mean age for peer teachers was 21.15 ± 0.49 years. The majority of students of this group (80%) were females.

Table (2) reveals that majority of peer teacher' students strongly agreed about peer teaching was time and effort well spent and personally rewarding but they were initially apprehensive about peer teaching requirements (90%, 100% and 85 % respectively). Also almost all students agreed about teaching is an important role for nurses, they developed skills for teaching basic clinical skills and they were be more confident teaching a clinical skills after this experience (100%, 100% and 85% respectively).

Table (3) illustrates that all students of peer teachers (100%) gained a total score of satisfied peer teaching experience.

Table (4) shows that the mean age of study group was 19.49 ± 0.63 years and 19.39 ± 0.49 years for control group. The majority of study group (88.2%) was male; while all students of control group (100%) were females. About half of study group (50.9%) and about two thirds of control group (64.5%) didn't expose to previous peer teaching.

Table (5) reveals that about three fourths (75.5%) of study group (peer learners) versus majority (96.4%) of control group (instructor learners) had satisfied performance score for measuring CVP. As regard total performance score of ECG, majority of both study and control groups (86.4% and 87.3%) had satisfied total performance score.

Figure (1) reveals that the mean total performance score of CVP for study group was 18.98 ± 1.00 versus 19.56 ± 0.57 for their control. While the mean total performance score of ECG for study group was 19.15 ± 0.71 versus 19.13 ± 0.84 for their control.

Table (6) shows that more than half of peer learner students (60.9%) had unsatisfied preference score with peer teaching method and majority of them (87.3%) had satisfied preference score with instructor teaching method.

Table (1): Distribution of peer teacher students regarding their demographic characteristics (n=20).

Demographic characteristics	Peer teachers (n=20)	
	n	%
Age (years)		
Range	20-22	
Mean \pm SD	21.15 ± 0.49	
Sex		
Males	4	20.0
Females	16	80.0

NB. All students (100%) were exposed to previous peer teaching method.

Table (2): Distribution of peer teacher students regarding the gained peer teaching experience (n=20).

Peer teaching experience	Peer teachers (n=20)	
	n	%
Teaching is an important role for nurses		
Agree	20	100
What I have been learned in this unit will help with my graduate nurses role		
Certain	5	25.0
Agree	13	65.0
Strongly agree	2	10.0
The peer teaching experience was time and effort well spent		
Agree	2	10.0
Strongly agree	18	90.0
The peer teaching experience was personally rewarding		
Strongly agree	20	100
I now understand the principles underpinning teaching and learning		
Certain	1	5.0
Agree	19	95.0
I was initially apprehensive about the peer teaching requirement in the unit		
Agree	3	15.0
Strongly agree	17	85.0

I felt comfortable teaching the other students		
Strongly disagree	3	15.0
Disagree	16	80.0
Certain	1	5.0
I have developed skills for teaching basic clinical skills		
Agree	20	100
Peer teaching experience allowed me to reflect on my own previous learning		
Agree	7	35.0
Strongly agree	13	65.0
I enjoyed working with the Junior students		
Agree	20	100
I felt uncomfortable assessing the other students' skills		
Agree	16	80.0
Strongly agree	4	20.0
I would be more confident teaching a clinical skill after this experience:		
Agree	17	85.0
Strongly agree	3	15.0
There should be more opportunities for peer teaching in the curriculum:		
Agree	8	40.0
Strongly agree	12	60.0
Nurses have a professional responsibility to teach students and their peers:		
Agree	12	60.0
Strongly agree	8	40.0

Table (3): Distribution of peer teachers students regarding their total peer teaching experience score (n= 20).

Peer teaching experience score	Peer teachers (n=20)	
	N	%
Mean total score of peer teaching experience		
Range	60-64	
Mean ±SD	21.15±0.49	
Total peer teaching experience score:		
Unsatisfaction with the gained experience	0	0
Fair satisfaction with the gained experience	0	0
Satisfaction with the gained experience	20	100

Table (4): Distribution of students of study group (I) and control group (II) regarding their demographic characteristics (n=220).

Variables	The studied 2 nd year nursing students (n=220)				χ ² P
	Study group (I) (n=110)		Control group (II) (n=110)		
	N	%	n	%	
Age years:					
Range	19-21		19-20		
Mean ±SD	19.49±0.63		19.39±0.49		
t-test	1.312				
P	0.191				
Sex:					
Males	97	88.2	0	0	173.496
Females	13	11.8	110	100	0.0001*
Previous exposure to peer teaching					
No	56	50.9	71	64.5	4.191
Yes	54	49.1	39	35.5	0.041*

*Significant (P<0.05)

Table (5): Distribution of study group (peer learners) and control group (Instructor learners) regarding their total performance scores for Central Venous Pressure (CVP) and Electrocardiogram (ECG) (n=220).

Total performance scores	Studied peer learners and instructor learner				χ ² P
	Study group (n=110)		Control group (n=110)		
	n	%	n	%	
Total performance score of CVP					
Unsatisfied performance score	0	0	0	0	19.863
Moderate satisfied performance score	27	24.5	4	3.6	0.0001*
Satisfied performance score	83	75.5	106	96.4	
Total performance score of ECG					
Unsatisfied performance score	0	0	0	0	0.040
Moderate satisfied performance score	15	13.6	14	12.7	0.842
Satisfied performance score	95	86.4	96	87.3	

*Significant (P<0.05)

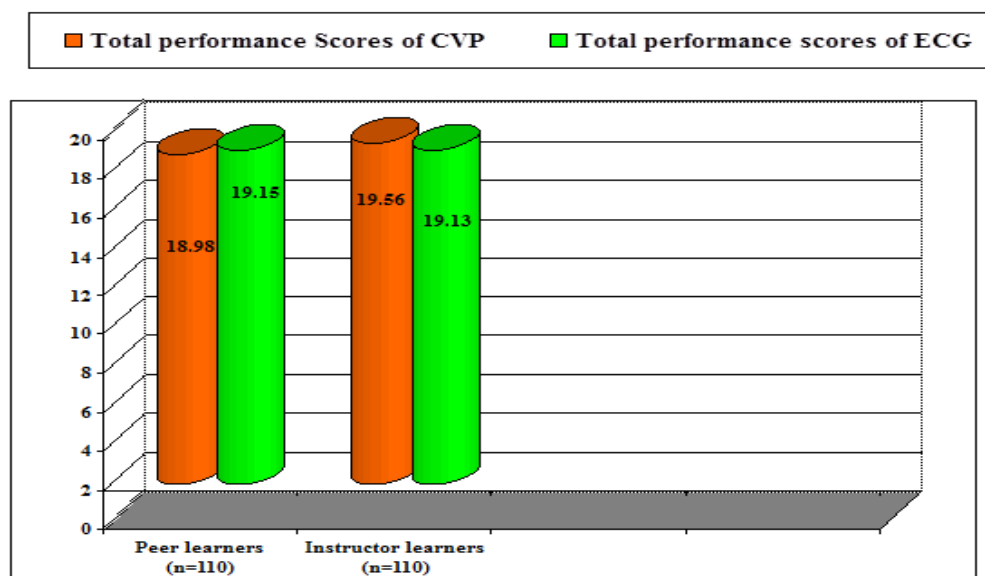


Figure (1): Mean total performance scores of Central Venous Pressure (CVP) and Electrocardiogram (ECG) among study and control group (n=220).

Table (6): Distribution of peer learner students (study group) regarding their total clinical teaching preference scores (n=110).

Clinical teaching preference scores	Student's preference of clinical teaching method (n=110)				χ ² P
	Peer teaching preference		Instructor teaching preference		
	n	%	n	%	
Total clinical teaching preference score					
Unsatisfied preference	67	60.9	4	3.6	108.478
Fair satisfaction	22	20.0	10	9.1	0.0001*
Satisfied preference	21	19.1	96	87.3	
Mean total clinical teaching preference score					
Range	9-24		9-20		T= 0.422
Mean± SD	16.36±3.41		16.19±2.59		P=0.673

*Significant (P<0.05)

4. DISCUSSION

Many researchers investigated the effects of peer teaching and found great benefits of this approach to all participant students⁽¹¹⁾. It enhances the development of self-confidence and reflective practice for peer teachers, while it can reduce anxiety and stimulate practice opportunities for peer learners⁽²¹⁾.

Demographic characteristics of studied students:

Regarding age of the peer teachers, the present study revealed that the range of their age was from twenty to twenty two years old. This age group is consistent with the age group of the second year university students in Egypt.

As regard that age of students of study and control groups, the current study showed that there was no statistical significant difference between them regarding their age. This result is in the same line with Hamdy et al., (2013) who reported that the students of both groups of their study had similar age group⁽²²⁾. Moreover Fujiwara et al., (2011) who conducted a study to compare peer led versus professional led training in basic life support for medical students, stated that the mean age of their participants was similar among study and control groups⁽²³⁾.

Regarding sex, the majority of peer teachers in the current study were females. This result is in consistent with the result of Williams et al., (2015) who examined the peer teaching in paramedic education and explored that more than two thirds of their sample were females⁽²⁴⁾.

The current study findings showed that there was significant difference between study and control groups regarding their sex. This difference is out of the researchers hand because students were divided into subgroups aphetically by information technology unit (IT) of the faculty that may affect the equality of students regarding sex.

Gaining peer teaching experiences:

It is generally thought that students experience mutual benefits from practicing peer teaching approach whether they are giving or receiving peer assisted learning interaction⁽¹⁾. This report explained the result of the current study which showed that the majority of peer teachers either strongly agreed or agreed about many benefits of peer teaching approach such as peer teaching was time and effort well spent, personally rewarding, teaching is an important role for nurses, they developed skills for teaching basic clinical skills and they were be more confident teaching clinical skills after this experience. These results were in agreement with Kamali et al., (2012) and Botma et al., (2013)^(25, 26).

Moreover Christianson and Bell (2010) mentioned that the peers gained experience in reinforcing their prior learning⁽¹⁵⁾. This result supported the results of the current study. On the other hand, Ross (2012) added that the participants of their studies strongly agreed that the teaching was important part of the healthcare professions⁽²⁷⁾. Also Silbert and Lake (2012) and Iwata et al., (2014) reported that the peer teaching is a valuable tool to increase student's confidence and clinical skills^(28, 29). These results support hypothesis number one of the current study.

Student's performance score of CVP and ECG:

The current study revealed that the control group (instructor learners) had a significant better total performance score for CVP than study group (peer learners), while the total performance score for ECG for majority of both groups were satisfied performance scores. These results contradict the result of Williams et al., (2014) who stated that students who participated in peer assisted learning program in their study obtained higher clinical performance score than those of non-peer assisted learning colleagues⁽⁸⁾. Also the results of Hamdy et al., (2013) reported significantly better performance score among students of peer teaching in all tested areas. Moreover, almost all students in this group got excellent grade compared to very few ones in the control group⁽²²⁾.

This may be due to the effect of peer teaching on performance scores may be varied by area of practice such that their sample studied administration course that is taught in the fourth grade who were older than the current students. This older age may affect personnel characteristics, make them more confident and may affect their performance. On the other hand the performance of the current students were in the real setting (hospitals) that is completely different from nursing laboratory in which the other studies were carried on and this may affect student's confidence and performance. These results of the current study don't support study hypothesis number two.

Student's performance of the teaching approach:

The current study's results showed that more than half of peer learner students (study group) had unsatisfied total preference score for peer teaching approach, while majority of them had satisfied preference score with instructor teaching approach. These results are in line with the result of the study that examined the professional barriers with peer assisted learning which was done by McKelland et al., (2013) who stated that the students in their study preferred instructor teaching method because they were more likely to learn from instructors than peers⁽³⁰⁾. Also a study that was carried out by Henning et al., (2006) on peer assisted learning on athletic training reported that students preferred instructor teaching method especially because the feedback that were received from their instructors⁽³¹⁾.

This may be explained by Ravanipour et al., (2015) who clarified that one of the perceived disadvantages of peer teaching from the student's view was they could be more dependent on their peers if they didn't find any opportunity to do the cares independently and may acquire the ideas in wrong or limited ways, thus not being able to solve the clinical problem⁽⁹⁾.

Controversy, results of the most studies such as Kamali et al.,(2012), Hemate et al.,(2012) and Dehghani et al., (2012) indicated that peer teaching encourages interaction, facilitates engagement with learning and increases personnel development^(25, 32, 33). These contradiction explained by McLelland et al., (2013) who reported that inadequate training of peer teachers has an impact on student' preference⁽³⁰⁾. These results of the current study don't support study hypothesis number three.

5. CONCLUSION

Based on the results of current study, it was concluded that:

- 1- There are great benefits for nursing students who assumed the role of peer teachers from practicing the peer teaching approach in gaining satisfied clinical experience with developing and understanding skills and principles of teaching basic clinical procedures which is an important future role for nursing students.
- 2- Peer teaching approach is beneficial for acquisition of clinical skills of monitoring CVP and ECG for peer learners but with less performance score than students who exposed to instructor teaching approach.
- 3- After implementation of peer teaching approach, a significant greater satisfaction preference was found among peer learners to instructor teaching approach than peer teaching approach.

6. RECOMMENDATIONS

Based on the findings of the current study, the following recommendations can be suggested:

1. The administrators of Nursing Faculties should integrate peer teaching approach in all nursing curriculums putting into consideration the criteria of peer teachers and ensure that faculty environment and staff should be prepared to apply peer teaching approach in a wide range.
2. Faculty's instructors should make their students as active participants as possible to establish student's self- trust, prevent their fear and master their future role as educators.
3. Replication of the study with the use of larger samples, various clinical procedures and locations to allow for greater generalization of the results.

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