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Peer learning versus conventional teaching regarding antenatal assessment among nursing students in terms of knowledge, skills, and satisfaction: An interventional study

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Abstract:

INTRODUCTION: Eaching methods are the stimulation, guidance, direction, and encouragement for learning and also the means to achieve the desired educational objectives.

AIM: This study aimed to assess peer learning (PL) versus conventional teaching (CT) regarding antenatal assessment in terms of knowledge, skills, and satisfaction among nursing students.

METHODS: This was a quasi-experimental study conducted on 51 B.Sc.Nursing 3rd-year students who were selected by convenient sampling and randomly assigned to PL ($n = 21$) and CT ($n = 30$) group. Sample characteristics pro forma, structured knowledge questionnaire, observational checklist, and satisfaction rating scale wereused to collect data from nursing students through self-report and observational technique.

RESULTS: The study results revealed that the mean posttest knowledge score (19.1 ± 0.75) in PL group was higher than that in CT group (17.0 ± 0.741) and the mean rank skill score of PL group (44.90) was higher than that in the CT group (20.30). There was no significant difference ($t = 1.08$, $P > 0.05$) in mean posttest knowledge score, whereas the significant difference was found in posttest skill score ($Z = 5.00$, $P \leq 0.01$) among nursing students. Most of the nursing students were satisfied with the CT method. There was a mild positive correlation *(r = 0.25)* between knowledge and skills regarding antenatal assessment among nursing students.

CONCLUSION: Based on the findings of the study, it can be concluded that both PL and CT groups were found to be equally effective in improving knowledge and skills of nursing students regarding antenatal assessment.

Keywords:

Antenatal assessment, conventional teaching, peer learning

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Introduction

The world has gone through a great expansion in education over the past two centuries. Global literacy rates have been climbing over the last two centuries, mainly through increasing rates of enrollment in primary education.[1] Secondary and tertiary education hasalso seen drastic growth,[2] with global average years of schooling being much higher now than 100 years ago.

Peer learning (PL) is an innovative idea of learning and a form of collaborative or community action, and probably, it has always taken place and extended in types and forms, in curriculum areas, and in contexts of application beyond school.

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The idea of PL came from Case Western Reserve University in the mid-1950s. It was expanded due to the efforts of Harold Barrows, a Professor at McMaster University, Canada, over the late 1960s. In 1974, Maastricht University became the first in Europe to adapt PL in their course plan for the students.[3]

PL helps to increase cognitive skills, self-confidence, practical skills, accountability, and interest toward learning. This gives the opportunity to the students to share the experience of learning with their classmates without interference of the tutors or instructors.[4]

With this background, the study was carried out to assess the effectiveness of PL versus conventional method regarding antenatal assessment among nursing students.

Methods

The present study was a quasi-experimental study conducted on 51 B.Sc.Nursing 3rd-year students of M.M. College of Nursing, Mullana, Ambala, from October to December 2018. Based on the previous similar study by Devi *et al*.[5] and based on previous research evidence for the intervention studies among nursing students and using Cohen's d formula $d = (\mu_1 - \mu_2)/\sigma = 0.75$, the calculated effect size was 0.75 at the power of 0.80; the recommended sample size for each group was in between 33. Hence, $n = 33$ for each group was decided (33 for experimental group and 33 for comparison group). Due to nonavailability of the participants ($n = 3$), sample attrition ($n = 3$), and exclusion of the peer leaders ($n = 6$), the study subjects remain 51 B.Sc. Nursing students.

The ethical approval (IEC: 1178) for the study was obtained from the institutional ethical committee. Formal administrative approval was obtained from the Principal (M.M. College of Nursing, Mullana, Ambala, Haryana). Nursing students were explained the nature of the study, and informed consent was obtained from the nursing students regarding their willingness to participate in the study. The study included those who were pursuing B.Sc. Nursing 3rd-year because there is no introduction of midwifery subject before the 3rd year. Students who were not available at the time of data collection were excluded from the study.

Convenience sampling technique was used to select the sample, and the lottery method was used to randomly allocate the nursing students in PL and conventional teaching (CT) group. Data werecollected using four tools. Selected variable pro forma that was prepared by researcher comprised age in years, gender, any additional qualification before the nursing course (if yes specify), do you have any exposure related to antenatal assessment (if yes specify), have you attend any training on antenatal assessment (if yes specify), and have you ever performed antenatal assessment (if yes specify).

Structured knowledge questionnaire (KR20 = 0.67) comprised 35 multiple-choice questions that was categorized into concept, importance, and obstetrical assessment. Each item had a single correct answer and awarded as "one" and for incorrect answer as a "zero."

Observational checklist ($\kappa = 0.7$) consisted of 109 items, which was further categorized into following subdomains: preparation, prerequisite for the procedure, preparation of the articles, general examination, after procedure, recording, and reporting. Each item in the observational checklist was score as 2 for correct step, 1 for partially done, and zero for not done.

Satisfaction rating scale ($\alpha = 0.8$) was used to assess the satisfaction of PL and CT among nursing students. Each item in the scale is scored on a five-point scale starting from 1 to 5, which indicates one for low satisfaction and five for higher satisfaction. Satisfaction rating scale consisted of 10 items.

After establishing the rapport with nursing students, informed written consent was taken and the students were assured about the confidentiality of their responses. Before giving the intervention, both the groups were taught antenatal assessment and demonstration was given by the respective subject in-charge to maintain the baseline of all the students. Pretest of knowledge and skills was obtained, and six peer leaders were identified for PL after performing two correct attempts of antenatal assessment in the obstetrics and gynecology laboratory. Six peer leaders were selected on the basis of their confidence, clarity, knowledge, communication, professional attire, and skills. Six nursing students were allotted to each peer leader, and they observed the skills in obstetrics and gynecologylaboratoryand in clinical settings. Regular laboratorydemonstration and clinical posting were going on as planned in CT group. Peer leaders rectified the mistakes in the form of reinforcement given to each nursing student, and it was done until they attained 80% competency in performing. Satisfaction of nursing students regarding PL was assessed by satisfaction rating scale.

Statistical analysis

Data wereanalyzed using SPSS (IBM Corp., Armonk, NY, USA) version 20. Kolmogorov–Smirnov test was applied to check the normality of the data. Parametric test was applied for knowledge as the data werenormally distributed whilenonparametric test was applied for skills and satisfaction as the data werenot distributed normally distributed. Data analysis was done using both descriptive and inferential statistics, i.e. frequency

and percentage distribution, mean, median, and standard deviation (SD), and inferential statistics such as Chi-square test, independent *t*-test, paired *t*-test, analysis of variance, Spearmen correlation, Mann–Whitney, Wilcoxon signed-ranked test, and Kruskal–Wallis H-test.

Results

A total of 51 students completed the study. The computed Chi-square value was found to be statistically nonsignificant regarding age, gender, any additional qualification before the nursing course, exposure related to antenatal assessment, any training on antenatal assessment, and ever performed antenatal assessment. Majority (63.3%) and less than half (56.7%) of nursing students in PL and CT groups were in the age group of 18–20 years, respectively. Half (50%) and more than three-fourth (76.7%) of the nursing students in PL and CT groups were female, respectively. All (100%) of the nursing students in PL and CT groups did not have any complete qualification before the nursing course and had not attended any training on antenatal assessment.

Before the intervention, majority (90.0%) and less than three-fourth (73.4%) of nursing students had below-average level of knowledge score in PL and CT group, respectively.

Results of paired *t*-test showed significant difference ($P < 0.05$) in mean knowledge score ($t = 14.05$, $P = 0.01$ [significant ($P \leq 0.05$)]) in PL group after intervention, but there was no significant difference ($t = 15.08$, $P = 0.65$) in the CT group ($P > 0.05$) [Table 1].

Results of independent *t*-test revealed no significant difference ($t = 2.05$, $P = 0.45$) between the groups with regard to knowledge score before intervention ($P < 0.05$). The mean posttest knowledge score was significantly low ($t = 1.05$, $P = 0.66$) in the PL group as compared to the CT group at 0.05 level of significance [Table 1].

Less than two-thirds (63.3%) and all (100%) of nursing students were incompetent in performing antenatal assessment in PL and CT before intervention, whereas less than half (47.6%) and only 3.3% of nursing students were competent in performing antenatal assessment after intervention.

Results of Wilcoxon signed-ranked test showed significant difference ($P < 0.05$) in mean skill score in PL and CT groups after the intervention [Table 2].

Results of Mann–Whitney test showed significant difference ($U = 87.0$, $Z = 5.36$) between the groups with regard to skill score before intervention ($P < 0.01$). The mean posttest skill score was significant in PL group ($U = 94.6$, $Z = 5.00$) as compared to the CT group which was highly significant at 0.01 level of significance [Table 2].

Nearly two-thirds (66.6%) had low satisfaction and less than three-fourth (73.3%) of nursing students had higher satisfaction regarding antenatal assessment in PL and CT groups after intervention [Table 3].

There was mild positive relationship found between posttest knowledge and posttest skill score among nursing students ($r = 0.38$, $P = 0.08$) in PL group. Similarly, mild positive relationship was found between posttest knowledge and posttest skill score among nursing students ($r = 0.21$, $P = 0.25$) in CT group.

Results of one-way ANOVA and Kruskal–Wallis test showed no significant association of knowledge and skill scores with sample characteristics among nursing students in PL and CT groups.

Discussion

In the present study, nursing students in PL and CT groups were between the age group of 18–23 years. These findings were consistent with the study conducted

Table 1: *T*-test showing difference in pre- and post-test knowledge score regarding antenatal assessment (*n*=51)

Group	PL (*n*=21)	CT (*n*=30)	*t*§	*P*
Before intervention	13.97±3.09	15.80±3.79	2.05	0.45
After intervention	19.19±0.75	17.93±0.74	1.08	0.66
t†	14.05	15.80		
P	0.01**	0.65		

Values are presented as mean±SD. **Significant ($P \leq 0.05$), †Paired *t*-test, §Independent *t*-test, SD=Standard deviation, PL=Peer learning, CT=Conventional teaching

Table 2: Mann-Whitney *U*-test showing difference in pre- and post-test skill score among nursing students regarding antenatal assessment (*n*=51)

Group	PL (*n*=21)	CT (*n*=30)	*Z*§	*P*
Before intervention	42.60	18.40	5.36	0.001*
After intervention	44.90	20.30	5.00	0.01**
Z†	4.01	3.80		
P	0.01**	0.01**		

Values are presented as mean. **Significant ($P \leq 0.05$), §Mann–Whitney U-test, †Wilcoxon signed Ranked Test. PL=Peer learning, CT=Conventional teaching

Table 3: Frequency and percentage distribution of level of satisfaction regarding peer learning and conventional teaching (*n*=51)

Level of satisfaction	Range of score	Frequency, *n* (%)	
		PL group (*n*=21)	CT group (*n*=30)
Low satisfaction	>25	14 (66.6)	3 (10.0)
Moderate satisfaction	26-30	7 (33.3)	5 (16.7)
High satisfaction	31-50	-	22 (73.3)

PL=Peer learning, CT=Conventional teaching

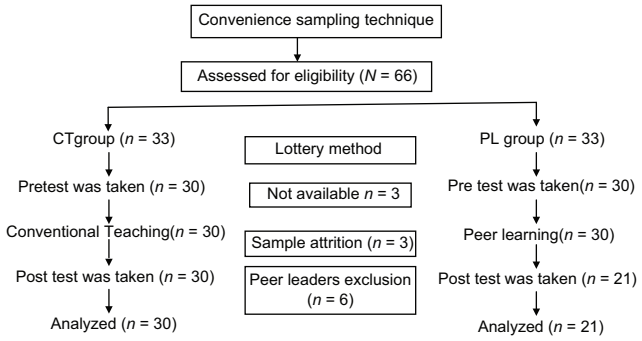

Figure 1: Sample size

by Ahmad and Mohamed[6] to assess the effect of PL versus traditional learning on knowledge and clinical performance of critical care on nursing students, which shows that all nursing students were in the age group of 17–24 years [Figure 1].

Findings of the present study revealed that all (100%) of the nursing students did not havean exposure related to antenatal assessment in PL and CT groups. This finding of the present study was contradictory to the study conducted by Devi *et al*.[5] to assess the knowledge of nursing students regarding abdominal palpation where more than half (56%) of the students had no exposure regarding antenatal assessment culture and less than one-third (3.4%) had exposure regarding antenatal assessment.

The findings of the present study revealed that the level of knowledge of nursing students after administration of PL and CT shows that more than one-third (36.7%) and less than half (46.7%) had good and below-average knowledge, respectively. Thesefindings werecontradictory with the study, conducted by Ahmad andMohamed,[6] to assess the effect of PL versus traditional learning on knowledge and clinical performance of critical care, which stated that both the groups, peer and traditional, had very good level of knowledge (70% and 92%, respectively).

The findings of the present study revealed that the mean pretest and post test knowledge score of PL and CT group was 13.9 and 19.1 respectively which was found to be statistically nonsignificant ($P > 0.05$) regarding antenatal assessment among nursing students which was concordance with the study conducted by Hals *et al*.[7] to examine the effect of peer education on adolescent students' knowledge regarding breast self-examination among students which stated that there was a significant increase in the percentage of students' knowledge in posttest (33.1%) as compared to pretest (41.5%). Checked and corrected, made it short also.

The findings of the present study revealed that mean posttest knowledge score in the PL group was 19.19 and the mean posttest knowledge score in the CT group was 17.93 with the mean difference of 1.26 which was found to be statistically significant ($t = 1.08$, $P = 0.66$, nonsignificant) at the 0.05 level of significance. These findings of the present study are contradictory to the study conducted by Daud*et al*.[8] to compare the knowledge and skills gain of students in lecture-based learning versus peer-assisted learning on nursing students, who stated that the students in both PL ($P = 0.01$) and lecture-based learning group ($P = 0.01$) demonstrated a statistically significant improvement in knowledge.

The findings of the present study revealed that the level of skills score among nursing students after administration of PL and CT shows that majority (96.7%) were incompetent in performing antenatal assessment in CT group and more than one-third (33.3%) were highly competent in PL group performing antenatal assessment. This result was concordance with the study, conducted by Ahmad andMohamed[6] to examine the effect of peer education on adolescent students'knowledge and performance regarding breast self-examination which stated that conventional group had inadequate skills as (41.5%) compared to the peer group who had adequate skill (58.5%).

The findings of the present study revealed that the mean of skills scores in pretest among nursingstudents of PL group was 42.60 and mean of skills scores in pretest among nursing students of CT group was 18.40. This result was concordance with the study conducted byEl-Sayed*et al*.[9] to assess the effect of peer teaching in a nursing administration course which stated that the mean pretest skills score of peer teaching group was higher (170.0) than mean pretest skill score (128.6) of comparison group.

The findings of the present study revealed that the mean of skills scores in posttest among nursingstudents in PL group was 44.90 and mean of skills scores in pretest among nursing students in CT group was 20.30. This result was concordance with the study conducted by Essa *et al*.[10] to assess the effect of application of PL strategy on obstetric and gynecological nursing students clinical performance, which stated that the mean skills score of peer teaching group was higher (46.5) than mean skill score (35.1) of comparison group.

The findings of the present study revealed that less than half and majority (46.7% and73.3%) of students have high satisfaction in PL and CT groups, respectively. This result was contradictory with the study conducted by Ahmad and Mohamed[6] to examine the effect of peer education on adolescent students' knowledge and performance regarding breast self-examination which stated that majority of

students have high satisfaction in PL (86%) and control group (74%), respectively.

Similar findings had beenshown by the study conducted by Riaz[11] to compare the effectiveness of peer-assisted learning versus expert-assisted learning in terms of academic scores which stated that majority (70.4%) of students have higher satisfaction and agreed that it was easy to communicate with a peer in peer-assisted group and less than one-fourth (24.1%) of students have satisfaction with the expert-assisted learning.

Limitations

A control group could have included in the study along with alternative interventions which might have resulted in better understanding of the effectiveness of the teaching strategies.

Suggestions

A study can be replicated on a large sample of nursing students for wider generalization of the findings.

A study can be carried out on nursing staff to assess their knowledge and skills regarding antenatal assessment.

A study can be carried out using various teaching strategies such asself-instructional module, program instructional module, and simulation.

Conclusion

Based on the findings of the study, it can be concluded that both PL and CT groups were found to be equally effective in improving knowledge and skills of nursing students regarding antenatal assessment.

The main limitation of the study was that interrater reliability of peer leaders could have assessed for errors made by the peer leaders. A control group could have included in the study along with alternative interventions, which might have resulted in better understanding of the effectiveness of the teaching strategies. The author recommends that the study can be replicated on a large sample of nursing students for wider generalization of the findings. It can be carried out on nursing staff to assess their knowledge and skills regarding antenatal assessment. A study can be carried out using various teaching strategies such asself-instructional module, program instructional module, and simulation.

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Conflicts of interest

There are no conflicts of interest.

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