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Efficacy of Lecture cum demonstration versus video-based teaching regarding active management of third stage of labor in terms of knowledge and skills of GNM students: An interventional study

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Abstract:

INTRODUCTION: Educational interventions have been associated with improved performance and significant changes, especially in perinatal outcomes. Teaching is one of the main components in educational planning which is a key factor in conducting educational plans through various teaching strategies such as simulation, demonstration and video teaching.

AIM: The study aimed to assess lecture cum demonstration (LCD) versus video-based teaching (VBT) regarding active management of the third stage of labor (AMTSL) in terms of knowledge and skills of General Nursing Midwifery (GNM) students.

METHODS: This was a quasi-experimental study conducted on 100 GNM third-year students selected by purposive sampling and randomly assigned to LCD ($n = 50$) and VBT ($n = 50$) groups. Sample characteristics performa, Structured Knowledge Questionnaire, and observational checklist were used to collect data from GNM students through self-report and observational technique.

RESULTS: The study results showed that the mean posttest knowledge scores of LCD (17.32 ± 2.14) and VBT group (16.90 ± 2.41) were nearly equal and mean rank posttest skills score of LCD group (54.40) was slightly higher than VBT group (49.51), but computed “ t ” value of mean posttest knowledge and computed “ Z ” value of skill score of both LCD and VBT group (0.47, 0.54) were found to be statistically non-significant at 0.05 level of significance.

CONCLUSION: It can be concluded that both LCD and VBT were found to be effective in improving knowledge and skills of GNM students regarding AMTSL.

Keywords:

Efficacy, lecture cum demonstration, video-based teaching, knowledge, skills, Active management of third stage of labour

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Introduction

Education is closely bound with the intellectual, economic, cultural, emotional, and social life of the human race.^[1]

Lecture cum demonstration (LCD) is also known as chalk and talk method, in which

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teachers are active and students are passive. This method is simple, clear, and completed within sufficient given time in the nature of properties of matter, explanation of the structure, or steps of a procedure.^[2,3]

Video-assisted teaching is the most unique and dramatic media devised by man for

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communication and is a form of self-instruction, in which material can be presented via text, visual, sound, and motion digital files, providing a multimedia approach to learning.^[4,5]

Maternity nurses are the frontline health-care providers multifaceted with responsibilities to improve women health, decrease morbidity, and save the mother's life. This can be achieved through improving knowledge and technical skills, besides clinical decision-making and judgment. International Confederation of Midwives and International Federation of Gynecology and Obstetrics further state: "Every attendant at birth needs to have the knowledge, skills and critical judgment needed to carry out active management of the third stage of labour for preventing postpartum haemorrhage".^[5]

With this background, the study was carried out to assess the efficacy of LCD versus video-based teaching (VBT) regarding active management of the third stage of labor (AMTSL) among GNM students.

Methods

The present study was a quasi-experimental study conducted on 100 GNM third-year students of M. M School of Nursing, Mullana, and School of Nursing, Christian Hospital, Jagadhri, from October to December 2017. Power analysis was carried out by Cohen's d formula $db = \frac{\alpha_1 - \alpha_2}{\sigma}$ based on the mean score of previous studies where the calculated sample size was 45 for each group (effect size 0.70) and (power 0.50). Hence considering the probability of sample loss, 50 samples for each group were decided.

The ethical approval (IEC: 976) for the study was obtained from the institutional ethical committee. Formal administrative approval was obtained from the Principal (M. M School of Nursing, Mullana, Ambala, and School of Nursing, Christian Hospital, Jagadhri). The study included those who were pursuing GNM third year and were not taught AMTSL in their curriculum. Students who were not available at the time of data collection were excluded from the study.

Purposive sampling technique was used to select the sample, and lottery method was used to randomly allocate the nursing students in LCD and VBT groups [Figure 1]. Data were collected by using four tools. Selected sample characteristics that were prepared by researcher comprised age in years, any additional qualification before the GNM course (if yes, specify), any previous knowledge related to AMTSL (if yes specify), the source of knowledge (specify), and have you attended any training on AMTSL (if yes, specify).

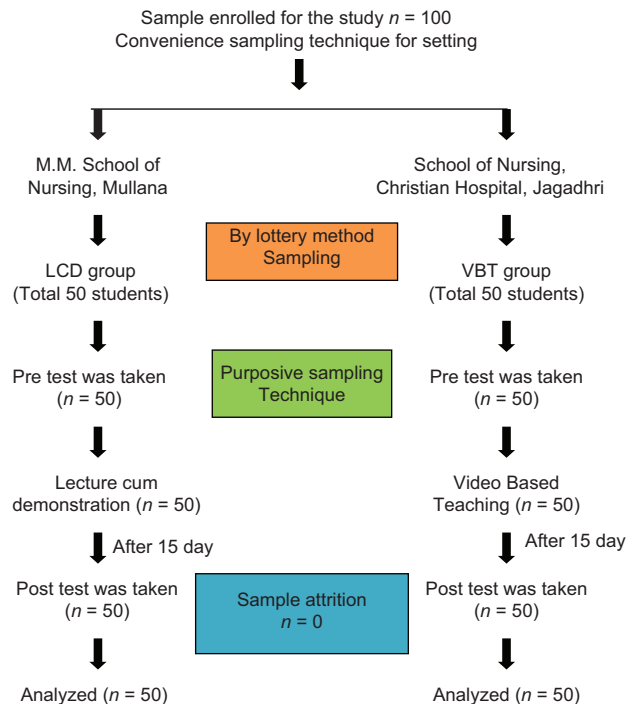


Figure 1: Study consort showing sample size

Structured knowledge questionnaire (Kuder Richardson (KR) 20 = 0.8) comprised 24 multiple choice questions that were categorized into the concept of the third stage of labor, the importance of AMTSL, and components of AMTSL. Each item had a single correct answer and awarded as "one" and for an incorrect answer as a "zero." Standardized observational checklist ($\kappa = 0.9$) of John Hopkins Program for International Education in Gynecology and Obstetrics was used after seeking permission that consisted of 35 items which was further categorized into following subdomains initiation of AMTSL, administration of uterotonic drug, controlled cord traction, uterine massage, examination of perineum and vagina, examination of placenta, and decontamination and disposal of waste. For each correct step, score of 1 was awarded and for every wrong step and not done was awarded as a score of 0. Video on AMTSL was prepared by the researcher itself and got validated by seven experts of obstetrics and gynecological nursing department. The content validity of both the tool was established by nine experts. The percentage of agreement was found to be 0.8 by Cohen's Kappa.

After establishing the rapport with nursing students, informed written consent was obtained and assured about the confidentiality of their responses. Before the intervention, pretest of knowledge through structured knowledge questionnaire and skills through observational checklist was taken from LCD and VBT groups. Intervention comprising lecture and demonstration to LCD group through audio-visual aids (chalkboard and charts) for lecture and birthing

simulator “Mama’s Natalie” for demonstration and to VBT group by showing the video prepared by the researcher on the next day of the pretest. Posttest was carried out after the 15 days to assess the post level of knowledge and skills of LCD and VBT regarding AMTSL by structured knowledge questionnaire and observational checklist, respectively. The researcher rectified the mistakes in the form of reinforcement given to each student while they were giving the demonstration and it were done until they attained 80% competency in performing it.

Statistical analysis

The study was completed on 100 GNM students. Data were analyzed using SPSS (Armonk, NY, USA: IBM Corp) version 20. Kolmogorov–Smirnov test was applied to check the normality of the data. Parametric test were applied for knowledge as the data was normally distributed and nonparametric test were applied for skills as the data was not normally distributed.

Results

The computed Chi-square value was found to be statistically nonsignificant regarding age in years, any additional qualification before the GNM course, any previous knowledge related to AMTSL, the source of knowledge, and have you attended any training on AMTSL.

Majority (86%) and (98%) of GNM students had below average level of knowledge score in LCD and VBT group, respectively.

The results of paired *t*-test showed significant difference ($P < 0.05$) in mean knowledge score ($t = 34.5, P = 0. < 001^*$) in LCD group and in VBT group ($t = 36.3, P = 0. < 001^*$) [Table 1].

The results of independent “*t*”-test revealed no significant difference between the groups with regard to knowledge score before and after intervention ($P < 0.05$) [Table 1].

All (100%) of nursing students were incompetent in performing AMTSL in LCD and VBT group before intervention, whereas only (8%) in LCD group and (6%) of GNM students were competent in performing AMTSL after intervention in first attempt but 80% competency is achieved in repeated attempts.

The results of Wilcoxon signed-ranked test showed a statistically significant difference ($P = 0. < 001^*$) in the mean skill score in LCD (6.20) and VBT (6.17) group after intervention [Table 2]. The results of Mann–Whitney U-test showed no statistically significant difference between the groups with regard to skill score before intervention ($P < 0.05$) [Table 2].

There was a significant moderate positive correlation between pretest and posttest knowledge and skills score of GNM students of LCD group ($r = 0.78, P = 0.001$) ($r = 0.60, P = 0.001$) [Figure 2]; similarly, in VBT group, positive correlation was found between pretest of knowledge and skill score ($r = 0.56, P = 0.00$) [Figure 3], but there was no significant correlation between posttest of skill and knowledge score ($r = 0.14, P = 0.31$) which was nonsignificant at 0.05 level of significance.

There was no association of knowledge and skills scores of GNM students with their sample characteristics in LCD and VBT group.

Discussion

The LCD was effective in enhancing the knowledge and skills of GNM students. In the present study, the

Table 1: T-test shows difference in pre- and post-test knowledge score regarding active management of third stage of labour (n=100)

	LCD (n=50)	VBT (n=50)	<i>t</i> [§]	<i>P</i>
Before intervention	8.32±1.89	8.40±1.70	2.05	0.45
After intervention	17.56±2.14	17.18±2.41	0.08	0.42
<i>t</i>	34.5	36.39		
<i>P</i>	0.001**	0.001**		

Values are presented as mean±SD. **Significant ($P \leq 0.05$), [†]paired *t*-test, [§]Independent *t*-test. SD=Standard deviation, LCD=Lecture cum demonstration, VBT=Video-based teaching

Table 2: Mann-Whitney U-test and Wilcoxon signed-rank test shows difference in pre- and posttest skill score among GNM students regarding active management of the third stage of labor (n=100)

Group	LCD (n=50)	VBT (n=50)	<i>Z</i> [§]	<i>P</i>
Before intervention	52.57	48.43	0.72	0.47
After intervention	54.50	49.51	0.54	0.58
<i>Z</i>	6.20	6.17		
<i>P</i>	0.001**	0.001**		

Values are presented as **Significant ($P \leq 0.05$), [†]Wilcoxon signed-rank test, [§]Mann-Whitney U-test. LCD=Lecture cum demonstration, VBT=Video-based teaching

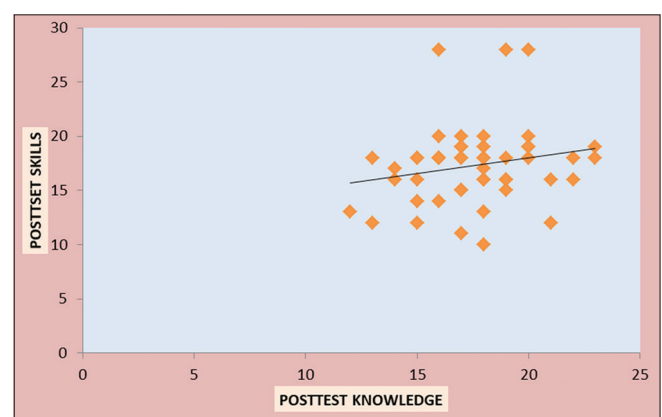


Figure 2: Scatter diagram showing the relationship of knowledge and skills of GNM students in lecture cum demonstration group

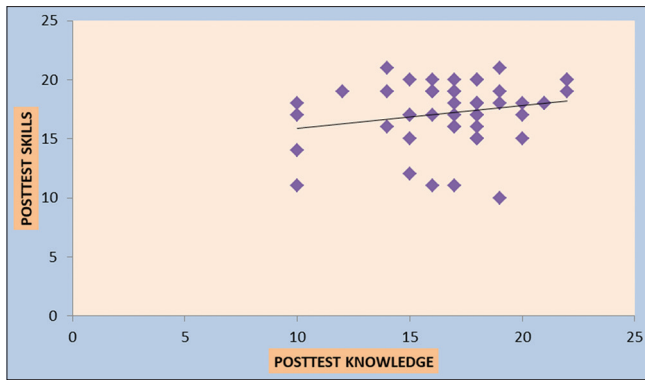


Figure 3: Scatter diagram showing the relationship of knowledge and skills of GNM students in video-based teaching group

mean posttest knowledge (17.56 ± 2.14 , 17.18 ± 2.41) was significantly higher than the mean pretest knowledge (8.32 ± 2.53 , 8.40 ± 1.92) score regarding AMTSL. This finding was consistent with the interventional study conducted by Khalid *et al.*^[2] to evaluate the efficacy of LCD method on nursing students in terms of knowledge and skills of using partograph where the overall mean pre and posttest knowledge score was found to be 7.87 and 16.63 respectively.

The LCD and VBT were effective in enhancing the knowledge and skills of GNM students. In the present study, the mean score of LCD group (17.56 ± 2.14) is slightly higher than the mean rank of VBT group (17.18 ± 2.41), but computed “*t*” value of mean pretest knowledge score of both LCD and VBT group 0.42 and mean posttest knowledge score 0.47 were found to be statistically non-significant at 0.05 level of significance. These findings were consistent with the interventional study conducted by Sushmaprabhu in 2013^[6] to compare the traditional lecture method with VBT in improving the knowledge and skill of undergraduate nursing students on neurological assessment. The findings revealed that in both the groups the posttest scores were significantly higher than the pretest scores, but there was no statistically significant difference between Group A and B.

The LCD and VBT were effective in enhancing the skills of GNM students. In the present study, the mean difference of skills of the LCD group was 54.40 slightly higher than the mean difference of VBT group 49.51, but the difference was not significantly different between groups. These findings were consistent with the study conducted by Kaur *et al.* in 2014^[7] to assess the effectiveness of live demonstration and video-assisted teaching on nasogastric tube feeding on the skill development of nursing students. The results showed that comparison mean score in live demonstration group (14.46 ± 2.79) was more as compared to video-assisted teaching group (13.40 ± 2.11), though the difference was not

statistically significant ($P = 0.06$ as per *t*-test) in the performance score.

The VBT was effective in enhancing the knowledge and skills of GNM students. In the present study, the mean posttest knowledge was significantly higher than the mean pretest knowledge score regarding AMTSL. These findings are consistent with the interventional study conducted by Sreelekha Rajesh *et al.*^[8] to assess the effectiveness of video-assisted teaching program on knowledge regarding nonpharmacological pain-relieving intervention for children among staff nurses in the selected hospital. The results suggest that in the pretest more than half (53.3%) of the staff nurses had average knowledge, 40% of them had poor knowledge, and 6.7% had good knowledge regarding nonpharmacological pain-relieving interventions before the video-assisted teaching program, but in the posttest, there was a significant improvement in the knowledge scores; 80% of the nurses had good knowledge. None of the demographic variables were found to have a significant association with the knowledge of the staff nurses.

The LCD and VBT were effective in enhancing the knowledge of GNM students. In the present study, the level of knowledge after administration of LCD and VBT assessed by structured knowledge questionnaire shows that majority ([58% and 66%]) had a very good level of knowledge, respectively. The findings were consistent with the study conducted by Oyetunde *et al.*^[9] in 2015 to assess the knowledge and utilization of AMTSL by midwives in primary health centers. The results of the study indicated that the majority of the respondents have high (66.7%) knowledge regarding AMTSL.

In the present study, the findings showed that in the level of knowledge of GNM students’ majority ([86% and 98%]) of GNM students had below average of knowledge before administration of LCD and VBT, respectively. The findings were contradictory to the findings of the study conducted by Chandrika^[10] who evaluated the effectiveness of structured teaching program regarding the knowledge on AMTSL among staff nurses working in Chigateri district hospital at Davanagere. The findings of the study showed that more than one-third (38% and 40%) of staff nurses had average and poor level of knowledge, respectively, before administration of structured teaching program. The results of the study revealed that the combination of both LCD and VBT were effective in enhancing the knowledge and skills of GNM students.

A similar study conducted by Alqahtani *et al.*^[11] to measure the effectiveness of procedural video compared to live demonstration in transferring skills for fabricating orthodontic Adam’s clasp and

their result showed that mean students' scores were 6.69 and 6.78 for the live demonstration (Group A) and the procedural video (Group B), respectively. No statistically significant difference was detected between the two groups ($P = 0.864$). Both the methods should be considered in teaching undergraduate orthodontic courses to improve the learning experience and to match different learning preferences of student.

Limitations

1. A control group could have included in the study along with alternative interventions which might have resulted in a better understanding of the effectiveness of the teaching strategies
2. Students were left up to 80% competency, whereas a complete one correct demonstration was not taken.

Recommendations

- 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 AMTSL
- Students preferred method of teaching and learning style should be kept into consideration
- A study can be carried out using other teaching strategies such as self-instructional module, program instructional module, team-based learning, peer-based learning, and simulation.

Conclusion

Based on the findings of the study, it can be concluded that both LCD and VBT group were found to be equally effective in improving the knowledge and skills of GNM students regarding AMTSL.

Various research studies done on different teaching strategies and their useful findings can be inculcated in nursing education and practice. Continuing education programs should be conducted for nurses with the aim of updating their knowledge and skills regarding AMTSL.

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Conflicts of interest

There are no conflicts of interest.

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