Integrated Lecturing within Clerkship Course: A New Learning Method in Nurse Anesthesia Teaching

Mahmood Akhlaghi, MD[1]

[1] Department of Anesthesiology, Shahrekord University of Medical Sciences, Shahrekord, Iran

Abstract

Background and purpose: *The conventional lecture-based teaching method that has been used to transit theoretical knowledge to the participants is inadequate. Due to some issues with this didactic approach, it is believed that integration of this approach with an active method may be more valuable in nursing education. In this study, we hypothesized that integrating lecture-based teaching within clerkship course would enhance the knowledge of nurse-anesthesia students.*

Methods: *This prospective randomized study was conducted on 24 students of second-year nurse-anesthesia course. All students received either didactic lectures or integrated lectures within the clerkship course during a 4-month semester of their educational curriculum. Their knowledge of anesthesia course was assessed at the end of the course using the Wilcoxon Rank test.*

Results: *The adopted integrated method improved the students' final scores at the end of the semester (p=0.004). Moreover, their scores were much improved in taxonomy-2 questions (p=0.001).*

Conclusions: *Incorporating a didactic lecture approach within anesthesia clerkship course improves the knowledge of the participants in the anesthesia course.*

Keywords: ANESTHESIA, LECTURE, KNOWLEDGE, NURSE-ANESTHESIA COURSE, CLERKSHIP COURSE

Introduction

Establishment of an appropriate teaching method in a large-group setting has been long debated (1). Conventionally, a lecture-based approach has been used to transit theoretical knowledge (2). It is believed that a lecture-based approach is a staple of medical education, which is why it is widely employed in several venues, including medical and paramedical education (3, 4). The lecture method has several advantages in a nursing course, such as the enhanced ability of a teacher to synthesize information from varied sources, provide a means of delivering updated information to students, presenting novel ideas, and presenting the most important content based on the curriculum designed by the educator (5). Moreover, easing the process of explaining difficult concepts and using them in patient care as well as that of reviewing complex concepts and points by the teacher are among important merits of lecture-based teaching (6, 7). However, the lecture-based teaching method has some demerits, such as simply memorizing of information rather than understanding of the medical concepts, passive acceptance of knowledge, a passive approach to medical practices, and no urge to invent problem solution (8).

An efficient nurse anesthesia course requires a significant skill level for the improvement of the students' anesthesia practice. Unfortunately, there exists a huge gap between the theory and practice in medical and paramedical education. Presumably, anesthesia practice may worsen due to the traditional lecture-based teaching method (9).

∗**Corresponding author:** Mahmood Akhlaghi, MD; Associate Professor of Anesthesiology, Department of Anesthesiology, Shahrekord University of Medical Sciences, Shahrekord, Iran.
Email: akhlaghi@skums.ac.ir

Since mid-sixties, when the problem-based learning method (PBL) was developed, newer methods of active learning have been suggested to overcome the demerits of lecture-based teaching (10). Among these, is the "active learning incorporated within lecture" method, which involves the students and simultaneously supports the teaching method (5). Along with the improvement in medical and paramedical technology and practice, newer methods of active learning are necessary to omit this crucial gap.

This study was performed to compare the outcomes of an innovative lecturing method in which the lecture-based teaching was incorporated within a clerkship course for nurse anesthesia students to the traditional didactic lecturing method.

Methods

The study was conducted in the second term of the academic year 2008–2009 at the Shahrekord University of Medical Sciences, Iran. A total of 24 second-year nurse anesthesia course students (male: 7, female 17) were included in the study. The course contents of the "Anesthesia 2 course" were divided into eight parts and subdivided into a total 23 topics based on the course curriculum. Four topics (Group 1: "The control group") were randomly assigned for lecture-base teaching (LBT) and the remaining 19 topics (Group 2: "The case group") were incorporated in lecture coupled with the clerkship course for the nurse anesthesia clerkship program (ILCC).

The LBT group members were primarily organized on a discipline basis and four topics were retained to be delivered by the educator within 90 min at the date and time programmed at the beginning of the course.

Apart from the course sessions, the students were divided into 4 groups of 6 students each. Two days before each session, all groups were supervised to discuss about the problems of the patients scheduled for elective operation in the operating room at the Kashani Hospital (affiliated to the Shahrekord University of Medical Sciences,

Iran), emphasizing that all student groups were incorporated in the problem-based learning (PBL) discussion for the same patient at his/her bedside during the same-day shift of their clerkship. Simultaneously, the educator was informed about the topic related to the patient's disease and the operation toward the preparation of an adaptive lecture in the classroom.

Before commencing the LBT, a 10-minduration was allotted for a questioning session, followed by a lecture presented by the same method via power point presentation during the remaining time of the class.

The students' knowledge was tested through a final exam at the end of the semester. The exam consisted of 64 multiple choice questions with Bloom Taxonomy of 1, 2, and 3 in both the groups of the topics. The score of each question was considered as "one point" for each right answer and "zero point" for each wrong answer. Finally, the scores were adjusted between 0 and 20 points, and the students' grade points (out of 20.00) were statistically analyzed and compared between the two teaching methods. As variables were not normally distributed, a non-parametric test (Wilcoxon signed-rank of sum test) was performed by using the SPSS 17.0 package software and the statistical significant was set at $p < 0.05$.

Results

Table 1 depicts that all the questions related to the two teaching methods were built on Bloom Taxonomy (Taxonomy 1, 2, 3) and that the differences between the two methods were not statistically significant as per Chi-square test ($X^2 = 1.524$, df=2, p=0.467).

Table 2 indicates the results of final students' evaluation based on taxonomy of questions, and their final scores when the Wilcoxon signed-rank of sum test was conducted. As shown in table 1, the total scores of the students' final exam in the LBT method was significantly low in comparison with those of students in the ILCC method. The taxonomy-2 related score was higher in the ILCC

Table 1. Taxonomic distribution of questions

Type of Question	Group I	Group II
Taxonomy 1	7 (50%)	17 (34%)
Taxonomy 2	5 (35.71%)	27 (54%)
Taxonomy 3	2 (14.29%)	6 (12%)
Total	14 (100%)	50 (100%)

method than in the LBT method, although no differences were noted in the other taxonomy-related scores between the two methods.

Discussion

In the present study, we compared the knowledge about nurse anesthesia toward a 90-min didactic lecture versus an active lecture-based learning approach, in which the lecture was indirectly incorporated within the clerkship course. We hypothesized that a PBL discussion about the topic related to the patient's disease in the operating room before commencing the class would enable the students to perceive the lecture content more than that through a didactic lecture. Spending a few minutes at the bedside PBL in the operating room may aid familiarity with the real problems related to three steps of anesthesia, including preoperative, induction, and maintenance as well as postoperative management of the patient. This would identify important points and engage the participants that are more interested in the lecture session. Moreover, considering a 15-min time at the beginning of a lecture for answering the students' questions could indirectly affect the engagement of their perception during lecturing within their clerkship course, indirectly. To engage

learners to the lecture contents and increase their interest, a case-based lecture would greatly increase the clinical relevance of materials and enhance the participants' interest in the topics (3). We believe that, once the students are engaged with the topic, particularly when the topic had been already discussed based on a PBL discussion on bedside in the operating room, the participants' perception about the contents would unexpectedly increase.

PBL has been introduced in anesthesiology training programs, especially in undergraduate medical education and has received good acceptance (11, 12). Despite the interest shown in PBL, there exists no consistent evidence that this teaching method is superior to LBT method in increasing participants' knowledge (13, 14). Chang et al. (11) demonstrated that their students regarded PBL as a means of improving their power of creativity and critical thinking skills. They also noted that the traditional LBT approach adversely restricted the development of the students' abilities (11). In contrast, some studies support that integrating the traditional LBT curriculum within an active method can provide well-organized content with clear goals that enable easy learning to students about anesthesia (15-17). Considering the mentioned disadvantages of traditional LBT (8-18), we believe that a "pure" method of teaching cannot achieve all the teaching goals. Our study partially agree with the results of previous studies (11,15-17) with respect to incorporating traditional LBT method within an active one to bridge the gap between nurse education and anesthesia practice.

To the best of our knowledge, the integration

Table 2. Differences in students' scores between the two teaching methods

Type of Question	Scores in LBT method Median (Range)	Scores in ILCC method Median (Range)	*P* value
Taxonomy-1 Score	8.57 (14.29)	10.58 (9.41)	0.587
Taxonomy-2 Score	8.00 (12.00)	11.11 (5.93)	0.001
Taxonomy-3 Score	10.00 (10.00)	6.66 (16.67)	0.060
Total Score	8.57 (8.61)	9.80 (10.00)	0.004

of clerkship course within the LBT has not been studied yet, particularly in the field of nurse anesthesia education. Our study revealed a potential possibility toward bridging the gap between a didactic lecture and clerkship program in the course curriculum of nurse anesthesia education.

The clarity of a lecture could be enhanced via technology aid in education, for example, power point presentations. These presentations are useful for students, but should not be substituted as reference book from which the final exam questions are extracted. Based on the course curriculum, we introduced the "Anesthesia and Co-Existing Disease" book as the reference book at the beginning of the course, with plans to extract the final questions from the related topics of the reference book for both LBT and ILCC methods of teaching.

To avoid wrong scores and misjudgment about students' knowledge, we considered the same taxonomy during test building for both LBT and ILCC topics. As the taxonomy of questions was not different between the two teaching methods, we relied solely on the final exam as an appropriate knowledge assessment route of our students.

Several limitations of our study warrant comment. Although the study confirmed that incorporating the lecture course within an active learning method may increase the participants' knowledge, it was not accessed how it would affect development of an attitude toward learning and provide knowledge satisfaction. Moreover, the effect of this new method on clerkship course was not evaluated at the end of clerkship rotation. Another limitation of our method is that it limits the educator to teach in strict adherence to the date scheduled for a special topic. In ILCC method, the educator should accord himself/herself to the topic that has been discussed, based on the PBL discussion by participants at bedside, within a short period of time.

In summary, the present study validates the importance of incorporating lecturing within an active method and suggests development of a new integrating method for increasing students' knowledge or bridging the gap between the conventional education system and the paramedical nurse practice. Further studies are required to validate the proposed teaching method toward developing an ideal integrating method in nurse anesthesia education.

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