

Effectiveness of Self-Directed Learning for Teaching Gross Anatomy to 1st MBBS Students Compared to Didactic Lecture

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Abstract:

Introduction: Medical education is currently undergoing experimentation with newer learning methods such as Self-Directed Learning (SDL). SDL has been promoted as a highly effective learning approach for medical students to attain competency. The purpose of this study is to introduce self-directed learning as new teaching learning method in gross anatomy for 1st MBBS students and to compare the score of students of SDL with that of traditional didactic lectures.

Material and Methods: The present analytical study was conducted at Department of Anatomy, Malla Reddy Medical College for Women, Hyderabad among 150 first year MBBS students during the study period of one year (2020-2021). Selected students were divided into two batches A & B, with 75 students in each batch. A topic and a faculty was allotted to each batch. Learning outcomes and knowledge were assessed in both the methods. At the end of SDL session and didactic lectures, feedback was taken from the students on Likert scale. The data were analyzed using the SPSS software version 25.0.

Results: It was found that the mean score of students in Batch A on self-directed learning was 8.41 ± 1.83 and of Batch B in didactic lecture was 7.5 ± 1.44 for the topic "Posterior triangle" and results were statistically significant with p value 0.0025. Mean score of Batch A on didactic lecture was 7.8 ± 0.9 and of Batch B in self-directed learning was 8.9 ± 1.9 for the topic "Muscles of mastication" and the results were statistically significant. Most of the students were neutral or agreed to the questions asked in the feedback form.

Conclusion: Self-directed learning is new to medical students. Students liked this innovative learning strategy. Early medical education should include self-directed learning. This will boost the cognitive and psychomotor development of the student. Self-directed learning outperformed didactic teaching in assessment.

Keywords: Anatomy, Didactic Lectures, Effective, Self-Directed Learning, Medical Students, Teaching.

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Introduction

Medical students must dedicate a significant amount of time to obtain study materials, which is constantly being updated at a fast pace. They also need to acquire the essential life-saving abilities on their own. The speed at which the change occurs, the constant acquisition of new knowledge, and the wide availability of the latest information need such acquisitions. A significant portion of this acquisition of knowledge must be driven by the learner's own motivation, even if it is accessible in formal educational environments.[1]

In medical education, the traditional didactic lecture often consists of a solitary speaker imparting knowledge to a large group of students, often utilizing multimedia devices like a chalkboard or power point presentation. In the recent decades, problem-based learning (PBL) and self-directed learning (SDL) have been introduced into the medical curriculum, with a focus on encouraging students to take lead in their learning.[2] Furthermore, hybrid instructional approaches that combine elements of traditional

lectures and self-directed learning are also implemented, with a decreased emphasis on lecturing.[3,4] SDL, or self-directed learning, is characterized by individuals taking initiative and responsibility for their own learning. SDL facilitates the ongoing professional development and knowledge enhancement of healthcare practitioners.[5,6]

SDL has been implemented using several methodologies. It is preferable for the objectives to be specific so that learners do not encounter difficulty in achieving them when they are required to learn independently. [7]

An example of an SDL exercise involves presenting learners with case-based scenarios and guiding them through a series of questions. These questions prompt the learners to find answers utilizing the approved learning resources. SDL has been recommended for the successful and efficient education of medical students. [8,9]

Anatomy provides the basic knowledge of the human body and has applied significance. Numerous attempts have been made to compare the didactic lecture method with self-directed learning. Therefore, the purpose of this study is to introduce

self-directed learning as a new teaching learning method in gross anatomy for 1st professional year MBBS students and to compare the achievement of students in SDL with that of traditional didactic lectures.

Material and Methods

The present analytical study was conducted at the Department of Anatomy, Malla Reddy Medical College for Women, Hyderabad among the first year MBBS students during the study period of one year (2020-2021). Ethical permission for conducting the research was taken from the institutional ethics committee before the commencement of the study. Students were asked to sign an informed consent form after explaining to them the complete process involved in the study.

Through convenient sampling, a total of 150 first year MBBS students of batch 2020-2021 who were present on the day of study and signed the consent form were included in the study. Students who were absent on that day were excluded from the study. Selected students were divided into two batches A & B batches, with 75 students in each batch. A topic and faculty was allotted to each batch. (Table 1)

Table 1: Schedule of SDL and Didactic lectures as teaching methods

Teaching Method	SDL	Didactic Lectures
Posterior triangle	A	B
Muscles of mastication	B	A

On the first day, Batch A was having a self-directed learning session on the topic “posterior triangle”, in the usual format, while batch B was taught by didactic lecture method for a duration of one hour. The students were requested to bring their textbooks and reference material. Handouts of power-point presentation were provided. On the second day, the batches were crossed over and the topic “muscles of mastication” was dealt with a didactic lecture for Batch A and self-directed learning for Batch B. Learning outcomes and knowledge were assessed in both the methods. At the end of SDL session and didactic lectures, feedback was taken from the students on Likert scale.

The data were analyzed using the SPSS software version 25.0. The mean and standard deviation

were calculated. The results of didactic lecture and SDL were analyzed using the paired t-test. A p value of less than 0.05 was considered significant.

Results

It was found that the mean score of students in Batch A on self-directed learning was 8.41 ± 1.83 and that of Batch B in didactic lecture was 7.5 ± 1.44 for the topic “Posterior triangle” and the results were statistically significant with a p value of 0.0025. The mean score of Batch A on didactic lecture was 7.8 ± 0.9 and that of Batch B in SDL was 8.9 ± 1.9 for the topic “Muscles of mastication” and the results were significant as shown in table 2 and figure1.

Table 2: Comparison between SDL and Didactic Lecture - Methods of learning

Batch	Topic name	SDL	Didactic Lecture	Mean	SD	P value	t value
A(1-75)	Posterior triangle	□	---	8.41	1.83	.0025	3.080
B(76-150)		----	□	7.5	1.44		
A(1-75)	Muscles of mastication	----	□	7.8	0.9	0.0001	3.9
B(76-150)		□	---	8.9	1.9		

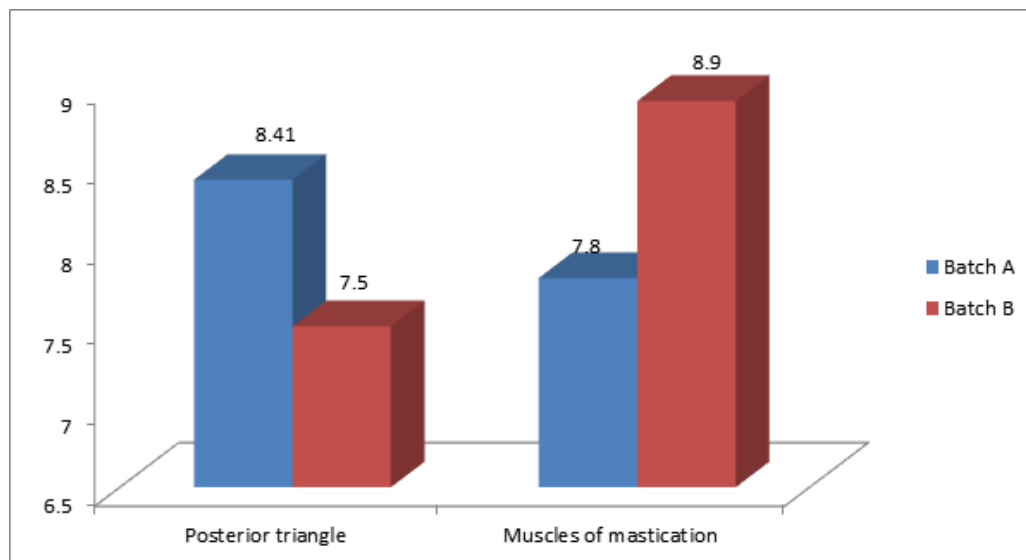


Figure 1: Comparison between the two groups on the basis of learning methods

Students were asked to give a feedback after both the sessions. The answers were in the form of Likert scale with five options, starting from strongly disagree to strongly agree. Most of the students either agreed or were neutral on the maximum questions as shown in figure 2.

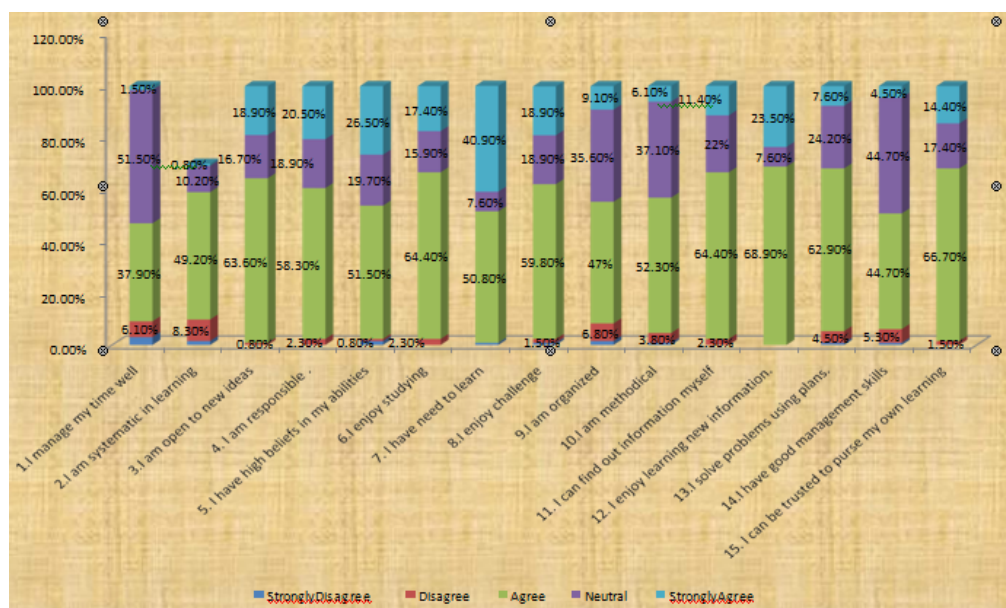


Figure 2: Perception of students towards SDL

Discussion

Anatomy instruction encompasses the study of gross anatomy, histology, and embryology. A comprehensive understanding of anatomy and the effective application of it in clinical medicine is crucial for medical students [10]. Historically, the process of teaching anatomy has typically required the pupils to commit vast quantities of factual knowledge to memory, often without fully comprehending the value of information [11].

The lecture method is a widely employed approach for conducting theoretical classes. Additionally, it might save the learner's time by presenting a

current and comprehensive overview of the issue sourced from multiple references. However, this strategy has numerous drawbacks. The student's lack of assertiveness and limited access to the resources result in a diminished interest. A large number of students attend lectures because they are required to be present and because they are afraid of the lecturers who may evaluate them. [12]

The present study shows that the gain in knowledge was significant in both groups, but it was more in the group which used the SDL method. This shows that the SDL method is more effective in understanding those particular topics. Overall, in the present study, SDL proved to be more effective

than the lecture method for understanding certain topics in medical education. This is similar to many of the previous studies, which showed a significant advantage for SDL over didactic lectures. [13-15]

SDL will facilitate a deeper comprehension of the subject matter, resolve any uncertainties, and improve the academic performance during examinations. Murad et al. determined that self-directed learning (SDL) has the potential to be an approach in medical education that promotes lifetime learning. Due to the implementation of new content and competency-based medical education, which includes self-directed learning (SDL), medical professors have shown a growing interest in the SDL method [16].

According to the study conducted by Anita et al, 57.20% of the students concur that self-directed learning (SDL) is a method of learning that requires a significant amount of time. Additionally, it was discovered that SDL promotes student engagement, resulting in active learning, improved memory retention, and development of effective communication abilities. [17]

The study conducted by Hamilton et al. found that 85% of students agreed that the clinical scenarios and questions would be beneficial for learning and applying embryology. A small number of students were of the opinion that teaching of anatomy should incorporate more participatory elements. Medical students thoroughly like the instruction on embryology, but they encounter difficulty in comprehending and using the material in real-life medical settings. [11]

Murad et al. suggested that SDL is particularly appropriate for adult learners who possess a substantial amount of information and are able to promptly apply what they have learned to their practical endeavors.^[16] In a study conducted by Abraham et al., it was found that the exam results of the students who used self-directed learning (SDL) were significantly higher than the exam scores of the students who used only the lecture technique. These findings indicate that self-directed learning has the potential to be a highly successful tool for learning. Moreover, the students' feedback indicated a primarily positive attitude towards self-directed learning (SDL). [18]

Limitations: This study was able to address a limited number of topics from the entire first year MBBS curriculum. To determine the effectiveness of conventional teaching methods over the modern ways, it is necessary to conduct a longer and more comprehensive study that covers a broader range of topics. Ideally, this study should be integrated into the regular teaching schedule.

Conclusion

Self-directed learning is a new learning methodology among the medical students. There was a positive response among the students for this new method of learning. Therefore, SDL should be incorporated in the early phases of medical curriculum which will enhance the effectiveness of improving the cognitive and psychomotor domain of the student. The self-directed learning was found to be an effective method of teaching than the traditional didactic teaching method in terms of students' performance in assessment examinations.

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