Student's Journal of Health Research Africa
Vol. 4 No. 12 (2023): December 2023 Issue
https://doi.org/10.51168/sjhrafrica.v4i12.869
Original article

INTEGRATING PROBLEM-BASED LEARNING SESSIONS WITH DIDACTIC LECTURES IN ANATOMY: A CROSS-SECTIONAL STUDY.

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ABSTRACT.

Background:
Anatomy is a very essential science. Knowledge of anatomy is significantly associated in situations with nearly every characteristic of medical modules. Therefore, it is required to be educated and mastered competently by medical students.
Aim: The chief objective of this research is to note and examine the outcome of teaching methods for example problem-based learning and seminars when integrated with educational lectures by first-year UG students.

Materials and Methods:
This is a cross-sectional study carried out at Andhra Medical College, Visakhapatnam, Andhra Pradesh, India in which 150 students from the first year were included. They were divided into 2 categories, 75 students in each category. Categories 1 and 2 are again subdivided into three categories. Both of the categories undergo seminar and problem-based learning in four chosen topics in the anatomy of the abdomen. An autonomous assessment was done to acknowledge the desired methods.

Results:
In topic 1 the average difference between the case-based learning and lecture in both categories is 4 ± 1.18 and 3.4 ± 1.4 respectively. In topic 2, the average difference between the case-based learning and lecture in both categories is 3.9 ± 1.7 and 1.8 ± 1.3 respectively.

Conclusion:
In this study, it was evaluated that problem-based learning is more efficacious in relating to critical thinking. However, problem-based learning and seminars both are required with didactic lectures.

Recommendation:
Problem-based learning and tuition classes along with conventional lecture sessions are very effective in helping students understand anatomy in a better manner.

Keywords: *Problem-based learning, Seminars, Didactic lecture*
Submitted: 2023-11-28 ***Accepted: 2023-12-01***

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INTRODUCTION.

There has always been a huge concern in recognizing the finest teaching methodologies. Traditional teaching has been in application even before the books were started to print and yet marked to be the chosen option of learning [1, 2]. Students are submissive listeners in traditional teaching and may not help sufficiently with the teaching procedure [3]. To promote a finer studying procedure, medical colleges have inculcated many approaches to teaching that will provide independent learning for a long time [2]. Anatomy has been recognized as the foundation of medical studies.

Anatomy is a principle for any other branch of study in the medical syllabus to comprehend. However, for many years anatomy has been taught but the debate is carried on related to proper learning and teaching methods of anatomy [4]. To become a prosperous medical practitioner, one has to be a lifetime learner. PBL was found by Barrows and Tablyn [5] in the year 1960 at McMaster University in Canada. PBL encourages the students to search many queries that are present in the record of the examination. Problem-based learning is observed as an effectual method that ascribes lifetime learning.
Tuition classes are carried out by tutors for one student or a small group of students [6]. Tuition seminars assist the students in acknowledging the common idea, clearing up

queries to recognize problems, and finding solutions. Most of the students suggested that the collaboration of PBL and the didactic study was certainly more advantageous than any other form of learning [4].

PBL has been explained as an educative methodology that utilizes precisely formed clinical issues as a factor for students to acquire knowledge of issue-resolving abilities and gain awareness regarding the fundamental and clinical sciences [6]. Problem-based learning is also defined as the academic form that is centralized on the debate and teaching that emerge from clinical problems [7]. It encourages students to recognize and put the analysis and data into practical situations, combine work, and make contact efficaciously [8-10]. Problem-based learning is now a well-approved methodology for simplifying primary medical education and is planned for clinical implementation.

Problem-based learning puts stress on not only the subject of what is to be taught but also the studying procedure [5]. There are crucial elements of problem-based learning which include the issue that reacts as a trigger for the discussion, Subjects having a session in small batches for a certain time, lectures decreasing and only making a proportion of syllabus, self-study is a vital component of the procedure. A crucial characteristic of problem-based learning educating fundamental science in the setting of a clinical problem, even if it is actual or theoretical. This works for two objectives to make comprehension pertinent and recoverable, and to promote the growth of particular judgment. The chief objective of this research is to note and examine the outcome of teaching methods like problem-based learning and seminars when integrated with educational lectures by first-year UG students.

MATERIALS AND METHODS.

Study design and population.

It is a cross-sectional study of 150 participants carried out in a college attached to the hospital. Subjects were first-year undergraduate students who were divided into two categories, category 1 and category 2. Both the categories are again subdivided into three categories. Both of the categories undergo seminar and problem-based learning in four chosen topics in the anatomy of the abdomen. An autonomous assessment was done to acknowledge the desired methods.

Study location and duration.

This research was carried out in Andhra Medical College Visakhapatnam, Andhra Pradesh. This study was carried out from 25 March 2022 to 16 October 2023.

Inclusion criteria.

Participants from the first year of the college and those who gave consent.

Bias.

There was a chance that bias would arise when the study first started, but we avoided it by giving all participants identical information and hiding the group allocation from the nurses who collected the data.

Statistical analysis.

SPSS version 21 was used for the statistical analysis. A paired T-test was carried out for the collation of tuition classes and problem-based learning discussions. An unpaired T-test was conducted to differentiate the scores obtained by two methods.

RESULTS.

Table 1: Comparison of mean difference between pre-session test and post-session test marks in two categories.

Topic	Session	Category	Average difference
Topic 1	Case-based learning	1	4±1.18
	Lecture	2	3.4±1.4
Topic 2	Case-based learning	2	3.9±1.7
	Lecture	1	1.8±1.3

A comparison of the mean difference between pre-session test and post-session test marks in two categories is shown in Table 1, in topic 1 the average difference in the case-based learning and lecture in both the categories are 4±1.18 and 3.4±1.4 respectively. In topic 2, the average difference in the case-based learning and lecture in both the categories are 3.9±1.7 and 1.8±1.3 respectively.

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Table 2: Comparison of mean difference between pre-session test and post-session test marks in the two categories.

Topic	Session	Category	Average difference
Topic 1	Case-based learning	1	0.3±1.03
	Lecture	2	0.017±0.96
Topic 2	Case-based learning	2	0.19±1.05
	Lecture	1	0.10±0.9

As shown in Table 2, the average difference in the case-based learning and lecture in both the categories are 0.3±1.03 and 0.017±0.96 respectively. In topic 2, the average difference in the case-based learning and lecture in the two categories are 0.19±1.05 and 0.10±0.9 respectively.

Table 3: Comparison of percentage of students with marks above and below 50% for topic 1.

	Performance	*Category 1 (Case-based learning)*	*Category 2 (lecture)*
Pre-session test	Below 50%	59	60
	Above 50%	16	15
Post-session test	Below 50%	15	13
	Above 50%	60	62
Retention test	Below 50%	9	13
	Above 50%	66	62

In Table 3, a comparison of the percentage of students with marks above and below 50% for topic 1 is shown. In the pre-session test below and above 50%, 59 and 16 students were there in Category 1 whereas in Category 2, 60 and 15 students were there. In post-session tests below and above 50%, 15 and 60 students were present and in category 2, 62 and 13 students were there. In the retention test below and above 50%, 9 and 66 students were there in category 1, and in category 2, 13 and 62 students were present.

Table 4: Comparison of percentage of students with marks above and below 50% for the topic 2.

	Performance	*Category 1 (lecture)*	*Category 2 (case-based learning)*
Pre-session test	Below 50%	53	63
	Above 50%	22	12
Post-session test	Below 50%	8	6
	Above 50%	67	69
Retention test	Below 50%	13	15
	Above 50%	62	60

As shown in Table 4, for topic 2 in the pre-session test below and above 50% in category 1, 53 and 22 students were present whereas in category 2, 63 and 12 students were present. In the post-session test below and above 50% in categories 1, 8, and 67 students were there respectively, and in categories 2, 6, and 69 students were present. In the retention test, below and above 50%, 13 and 62 students were present in category 1, and 15 and 60 students were present in category 2.

DISCUSSION.

In the current study, it was observed that students obtained a noteworthy understanding when introduced to problem-based learning and tuition classes along with conventional lectures. The understanding obtained from problem-based learning is higher in comparison to tuition classes. A study conducted by Amir et al [11], evaluate that PBL is an efficacious way of assisting students in learning and scoring good marks.

In the present study, most of the students go for problem-based learning and tuition classes along with conventional lectures, therefore indicating small batch study helps greater educational accomplishment. A study carried out by Zuzana et al [12], observed that small-batch teaching can lead to better learning expectations which correlates with the present study. In research done by Rathnakar et al [13], small-batch learning was enough for a better experience. However, most of the students in the current study interacted with the faculty in PBL sessions. It encourages analytical

thinking in students which permits them to have finer apprehension and maintenance of the subject [14]. In the present study, the students revealed that analytical thinking and maintenance of the subjects were finer with problem-based learning sessions.

A study conducted by Shetty et al [15], it was evaluated that students opt for problem-based learning along with general lectures. According to a study by Gino and Geethadevi [16], students preferred small-batch tuition classes along with lectures. The current research was conducted to strengthen the plan of joining smaller batches of PBL and tuition classes to the common lectures. According to the present study, Problem-based learning is a sufficient method for the preparation of upcoming doctors.

GENERALIZABILITY.

The observation of this research cannot be generalized for a greater sampling of people.

CONCLUSION.

In the present study, it was concluded that problem-based learning sessions are needed to understand ideas in anatomy entertainingly. It encourages students for better interaction and self-indulgent learning. Still, problem-based learning sessions and tuition classes along with conventional lecture sessions will assist the students in getting a better learning of anatomy.

LIMITATIONS.

The limitation of the present research includes a small sampling of people who were involved in this study. Furthermore, the deficiency of the collation group also acts as a limitation for this study finding.

RECOMMENDATION.

Problem-based learning and tuition classes along with conventional lecture sessions are very effective in helping students understand anatomy in a better manner.

ACKNOWLEDGMENT.

We are thankful to the first-year students at the college, due to them this research has been possible. We are also grateful to the assisting faculty of our college who were helped in this research.

LIST OF ABBREVIATIONS.

PBL- Problem-based learning
SPSS- Statistical Package for Social Sciences
UG: Undergraduate

SOURCE OF FUNDING.

The study was not funded.

CONFLICT OF INTEREST.

No conflict of interest declared.

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Publisher details.

Publishing Journal: Student's Journal of Health Research Africa.
Email: studentsjournal2020@gmail.com or admin@sjhresearchafrica.org

(ISSN: 2709-9997)

Publisher: SJC Publishers Company Limited
Category: Non-Government & Non-profit Organisation
Contact: +256775434261(WhatsApp)
Email: admin@sjpublisher.org
Website: https://sjpublisher.org
Location: Wisdom Centre Annex, P.O. BOX. 701432 Entebbe, Uganda, East Africa.