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BIOCHEMISTRY LEARNING PROCESS: EVALUATION AND PERCEPTION AMONG FIRST YEAR MEDICAL STUDENTS BY USING TRADITIONAL CHALK AND BOARD TEACHING

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ABSTRACT

Background and objectives: To assess the undergraduate students' learning process using the chalk-and-board method. To evaluate the efficiency of the chalk-and-board method of instruction and the perspective of the students towards the technique.

Methods: At the Mallareddy Institute of Medical Sciences, Suraram, 107 first-year medical students participated in the study on December-2019 (2019-2020 MBBS batch).Ten multiple-choice questions (MCQ) were administered as a pre-test and post-test with a 10-minute time limit. Traditional teaching by chalk and board instruction was employed. A response survey was used to evaluate perception.

Results: 68 out of the 107 students who took the pre-test and post-test and finished both assessments had higher post-test scores than pre-test scores, which accounted for a 63.55% rise in post-test marks. The pre-test and post-test scores were 5.48$\pm$1.61 (0.001) and 6.28$\pm$1.25 (0.001), respectively. These results revealed extreme statistical significant output. 91% of the students thought all the learning goals were covered, and 83% thought the session content was informative. According to 82% of the learners, power point presentations should not be the standard T/L method and chalk and board instruction should be used rather.

Conclusion: Compared to a power point presentation, chalk and board instruction is more effective in improving subject comprehension. If included in the normal curriculum, this might be a more effective T/L strategy.

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Keywords: Chalk board learning, Traditional teaching, Biochemistry learning, Evaluation.

INTRODUCTION:

It is crucial for a teacher to be aware of how much their students can comprehend. Now there are numerous teaching approaches available, compared to the past when the sole option for instruction was chalk and board, including audio-visual aids, slide projectors, PowerPoint presentations, computer animation, and movies [1].

The field of biochemistry is concerned with the biological functions of life. Even though it is a component in basic science and medicine, less may be kept when the student is not in constant contact with the material because it is volatile. How well we use the information we have learned in the topic, and its practical implementation with relation to the disease states, has a big impact on how easily we can comprehend biochemistry and how long we can remember it. The teaching of biochemistry seems to be among the more difficult subjects covered in the first year of a medical graduate programme, subjecting the students to tedious seminars. Students have trouble grasping and remembering the material because biochemistry is an offshoot field of organic chemistry and involves a careful investigation of chemical structures, lengthy metabolic cycles, bio-energetics, etc [1,2,3] . Making brief notes on concepts that have already been understood on a regular basis and connecting biochemistry to biological processes that occur naturally and those associated with disease may help to pique students' interest. Teachers must therefore begin by building on the students' prior knowledge and emphasise the importance of the subject's medical applications. The importance of basic sciences in healthcare education has increased recently because passing competitive and exit/licensure exams depends on having a solid understanding of these disciplines. It is difficult to teach medical/clinical biochemistry and get the student to comprehend the ideas and use them when practising medicine [3,4]. The teacher's attitude, commitment, and devotion to the subject matter determine whether or not lessons are successful. The awareness of the students is improved by the teacher's pleasant attitude. Future generations of learners may be motivated by a teacher's accessibility and behaviour that serves as an example.

Audio-visual (AV) aids are one of the many instructional techniques used in medical colleges. There are many different teaching methods accessible, such as the chalk and board (CB), transparency, overhead projector (OHP), and power point presentation, among others (PPT). The mindsets of both the instructor and the learner have undergone a fundamental change in the era of improved information technology and increasing instrumentation. The

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usage of cutting-edge educational tools is becoming more widely recognised [4,5]. As part of the upgrade, the medical council of India (MCI)/ Nationl medical Council (NMC) also made it essential for medical teachers to complete a basic training course in medical education technology. Teachers are now required to employ cutting-edge teaching tools because traditional CB instruction is thought to be the least effective. Many teachers, the majority of whom are nearing the end of their careers, have had a tough time adjusting to the new teaching tools [5,6].

The goal of the current study is to determine the efficacy of teaching biochemistry using the conventional CB technique in the era of cutting-edge instructional technologies.

MATERIAL AND METHODS:

The study involved 107 1st year medical (MBBS) students and was carried out at the Mallareddy Institute of Medical Sciences in Suraram on December-2019 (2019-2020 MBBS batch)from .Verbal consent was obtained from every subject who participated in the study. The institutional ethical committee gave its approval to the project. All of the learners in the classroom took a 10-minute pre-test that consisted of a set of ten multiple-choice questions (MCQ) [6,7]. The exam was valued, and the results were recorded. All of the participants in the class received the very same collection of ten MCQs. The data was prepared and analysed using Microsoft Word and Excel. Using the student t test, the pre-test and post-test findings were analysed. A feedback survey was used to gauge perception.

RESULTS:

Table no. 1. Responses of pre and post- test on chalk and board learning.

	Chalk & Board **(Favorable responses)**
Questions	**Number and & % of students**
Lecture content informative	78 (83%)
Learning objective was covered	85 (91 %)
Lecture simulated interest	77 (82 %)
Lecture is clear and understandable	76 (81%)

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I can take my notes	65 (69.55%)
Lecture is audible	74 (79 %)
Lecture is organised	79 (84 %)
I can take diagrams	68 (74%)

83% students were in favour of informative lecture content while 81% responded positively for lectures understandability. 79% students answered that lecture is audible.

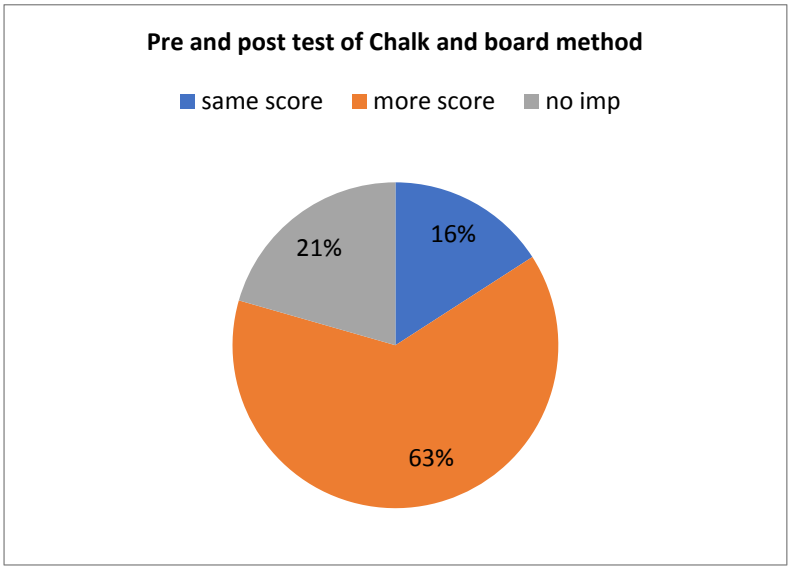

Fig. 1. Graphical respresentation of scores of Pre and post test of Chalk and board method.

DICUSSION:

The processes of teaching and learning are ongoing. Students' character development is supported and facilitated by instruction. The student develops professional and ethical principles while they are studying. Additionally, students learn the behavioural, cognitive, and psychomotor abilities needed for professional effectiveness. A learner's behaviour changes permanently as a result of the learning process. The medical education curriculum is always developing, and teachers are expected to keep up with the students' evolving educational demands. In order to make the teaching and learning process effective, the needs of the students should be taken into account [7,8].

According to a recent study, using PPTs may help students pay attention in lectures and increase their capacity to understand the material. In the same survey, it was shown that 59%

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of students preferred a CB and PPT combo with animations. Students said that CB was best for small-group instruction and PPT was best for large-group instruction, with 66% of students rejecting the idea of an all-PPT class. A 506 student study from India examined the CB, PPT, OHP, and a PPT plus CB combo. According to the study's findings, 43% of students chose CB instruction over PPT and OHP (15.6%) [8,9]. Additionally, it was seen that the student's post-test outcomes improved following CB instruction. According to a recent study by Wolf AB et al., CB instructional videos greatly increased student satisfaction throughout an online education course.

According to a study from the United Arab Emirates (UAE), there are many different teaching techniques, but each one has advantages and downsides. A teacher should carefully select an effective technique or a mix of techniques to meet learning goals. According to a Pakistani study, the flipped classroom (FCR) strategy was crucial in helping undergraduate medical students meet their learning goals. In the FCR model, there was a pre-test, then written material, video lessons, case studies, discussions, and quizzes, and finally a post-test with multiple choice questions. Previous studies evaluated the analysis of teaching strategies and their importance in teaching different undergraduate medical courses. Anatomical lectures have been transformed by the development of computer technology, according to a study from the United States of America (USA) [9,10]. Similar reports are shown in Kalyanshetti's study as well. The main benefits of teaching with a chalkboard are that power failures do not interfere with the lecture, students are motivated to keep up with the teacher's speed, and the presentation includes appropriate pauses and breaks [9,10,11].

It was recently discovered in an intriguing study by White LJ et al., who focused on teaching medical undergraduate students about human anatomy, that the method of instruction may not completely affect the learning process and that the students' attitudes and involvement in the process are more important. The same result was also reflected in a different study conducted by Chatterjee et al. in first-year MBBS students [10,11,12]. Research by Petimani et al. also reveals comparable reports. The CB method of instruction is a conventional method of instruction that doesn't call for any specific tools [12]. A competent teacher guides pupils on a voyage of learning and discovery by introducing them to fascinating things one at a time while maintaining the magical eye contact [12,13]. The only disadvantage of CB instruction could be a learner losing focus, even for a brief period of lost continuity. Microsoft Power Point (PPT) lectures have the potential to have a negative impact on the pupils. Students

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might not focus as much on the discussion portion of the subject and instead take robotic notes.

Due of the classroom's decreased visibility, another significant drawback of PPT instruction is that the teacher has less opportunity to make eye contact with the students. Only when both the teacher and the student have the right attitudes can the use of teaching aids aid in the learning process [13]. As we discuss attitudes, it is important to keep in mind that students' routine memorization habits and competition for higher test scores before entering medical schools cause them to be less educated. For a student to be a successful learner, their attitudes and ideas about learning are very important. The teacher has a busy schedule that includes making the pupils feel normal, providing a welcoming environment for them, staying current with the material, and creating activities that spark their interest in the material and facilitate successful learning [13,14].

The students in the current study believed that CB teaching greatly benefited them. In the CB method of instruction, the teacher goes to the trouble of writing names and complex structures on the board, and the breaks between lessons (for writing and cleaning the board) offer the students the opportunity to comprehend the material.

CONCLUSION:

The skill of teaching biochemistry and other fundamental medical science disciplines should concentrate on arming students with an understanding of the field's ideas and practical medical uses. To increase students' interest in learning the material, the teaching style must be more concept-oriented, and the teacher should actively involve the students. The present study's findings unambiguously show that the teaching/learning style used is not as significant as the attitudes of both learners and lecturers. We come to the conclusion that traditional chalk-and-board instruction could be just as beneficial as other cutting-edge approaches, and that what ultimately matters is the mindsets of the teachers and students to ensure that the learning process is successful.

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