

Teaching Learning Method Preferences among Medical Students of a Medical College: A Descriptive Cross-Sectional Study

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ABSTRACT

Introduction: The most common method of traditional teaching and learning practice is didactic lectures, which have been considered the gold standard. Modern techniques of teaching and learning methodologies include case-based learning, evidence-based medicine, problem-based learning, simulation-based learning, e-learning, peer-assisted learning, and observational learning. The aim of the study is to assess specific teaching and learning methods preferred by selected medical students of a medical college.

Methods: A descriptive cross-sectional study was conducted among selected medical students from 01 March 2024 to 01 December 2024 after obtaining ethical approval from the Institutional Review Committee. Students who were not willing or did not give consent to participate in the study were excluded. The students were enrolled in the study after written informed consent. Convenience sampling method was used. Point estimate and 95% confidence interval were calculated.

Results: Among 400 students, 399 (99.75%) (99.43-100, 95% confidence interval) medical students preferred specific teaching learning methods and 1 (0.25%) medical student preferred blended teaching learning method. Evidence-based medicine was recognised as a method for teaching and learning by 350 (87.50%), problem-based learning by 393 (98.25%) and case based learning by 396 (99%). However, 202 (50.50%) preferred problem-based learning for theory teaching as 233 (58.25%) believed problem-based learning helps in better clinical correlation and 153 (38.25%) believed it allows better students interaction followed by 240 (60%) student-teacher interaction.

Conclusions: Majority students preferred specific teaching learning methods also were aware of different teaching learning methods and most preferred methods were problem-based learning, followed by socratic lectures. However, most practiced in their institution were didactic lectures while the preferred aids by students were powerpoint presentations.

Keywords: *learning, medical students, problem-based learning.*

INTRODUCTION

Learning is a never-ending process. For a teacher, learning is a cardinal factor one must consider while teaching students. A transformation process of knowledge from teachers to students is a teaching and learning process.¹ And most common method of traditional teaching and learning practice is didactic lectures (DL), which have been considered the gold standard.²

There are different modern techniques of teaching and learning methodologies such as case-based learning, evidence-based medicine, problem-based learning, simulation-based learning, e-learning, peer-assisted learning, observational learning, flipped classroom and team based learning, however most preferred teaching method was problem based learning (71.4%) and among clinical medical students bedside teaching was most preferred 76.4% followed by lectures 14.6%, tutorials 7.9%.^{3,4,5}

This study aimed to assess specific teaching and learning methods preferred by medical students, their general knowledge, perception, practice and attitudes towards the preferred methods.

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METHODS

This descriptive cross-sectional study was conducted among 400 medical students from first year to the final year of Nepalgunj Medical College Teaching Hospital (NGMCTH), Banke, Nepal, from 01 Mar 2024 till 01 Dec 2024 after getting ethical approval from the Institutional Review Committee of NGMCTH (Reference Number: 41/080-081). The students who were not willing or did not give consent to participate in the study were excluded. All the students willing were enrolled in the study after written informed consent and details about the research were explained. The convenience sampling method was used. The sample size was calculated using the following formula:

$$n = Z^2 \times p \times q / e^2$$

$$= 384$$

Where,

n= minimum required sample size

p= prevalence taken as 50% for maximum sample size calculation

q= 1-p

e= Margin of error, 5%

Z= 1.96 at 95% Confidence Interval

The final sample size calculated was 384. However, a total sample of 400 was taken.

Semi-structured questionnaires were used to collect data which has been made after multiple literature reviews.^{2,5,6} It consists of demographic details of the participants followed by main questionnaires that consist of semi-structured questionnaires designed to assess the knowledge, perception, attitude, and practice, preference regarding different teaching learning methods. After obtaining ethical approval, a permit and permission from the principal of the medical college were taken. The data collection was started after questionnaire revision after pretest at another college. The study objectives were explained to the participants and informed consent was taken. Participants who provided informed consent were distributed with the semi structured questionnaires and asked to fill out those questionnaires. The principal investigator was

responsible for data collection. The students selecting any one method among the nine methods were considered as medical students with specific teaching learning method and students who chose the blended teaching method were considered in the blended teaching learning method.

Data collected were entered in Microsoft Excel and analyzed by Statistical Package For Social Sciences (SPSS) version 22.0. Point estimate and 95% confidence interval were calculated.

RESULTS

Among the 400 medical students, 399 (99.75%) medical students preferred specific learning methods and only 1 (0.25%) medical student preferred blended teaching learning method. Majority of them, 231 (57.75%) preferred the problem based learning method (Table 1).

Table 1. Teaching learning methods preferred by students (n=400)

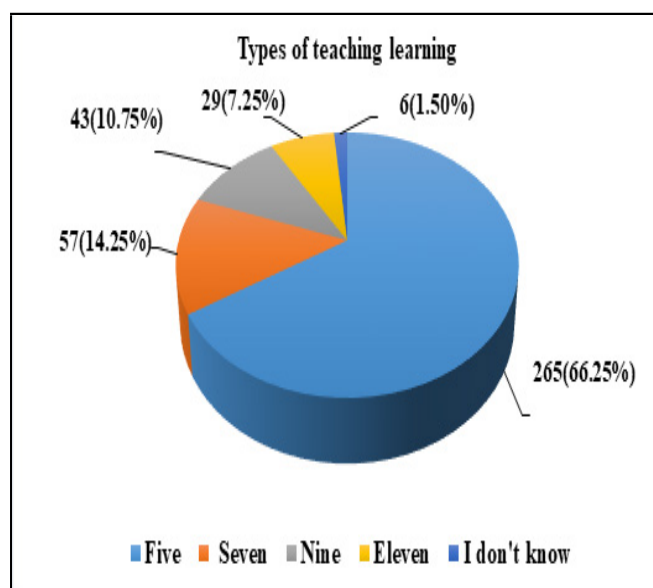
Variables	n (%)
Problem based learning	231 (57.75)
Audio visual learning	66 (16.50)
Lecturer based learning	48 (12)
Cooperative learning	17 (4.25)
Peer-assisted learning	12 (3)
Inquiry based learning	10 (2.50)
Experimental learning	7 (1.75)
Flipped classroom	4 (1)
Project based learning	4 (1)
Blended learning	1 (0.25)

The sociodemographic details of students enrolled in this study, among them 243 (60.75%) were male and 157 (39.25%) were female. The majority 226 (56.50%) of participants were in the age group 21-23 years followed by 86 (21.50%) in age group 18-20 years, 83 (20.75%) in 24-26 years and 27 years and above 5 (1.25%), with mean age and standard deviation (S.D) 22.13±1.82. The median age was 22 years with an interquartile range ±2, minimum age 18, and maximum age 27 years. Similarly, the majority of participants, 304 (76%), were Hindu by religion, followed by 78 (19.50%) were Islam, 8 (2%) were Christian, and 10 (2.50%) were Buddhist. Likewise, 312 (78%) medical students were of Nepalese origin and 88 (22%) were of Indian origin. However, according to their semester equal number of students were in each semester, 100 (25%). While in 2019, higher number 95 (23.75%) of students were enrolled in MBBS, followed by 92 (23%) in 2022 (Table 2).

Table 2. Students' enrollment and years of experience of teaching and learning (n=400).

Years of enrollment	n (%)
2016	5 (1.25)
2017	3 (0.75)
2018	6 (1.50)
2019	95 (23.75)
2021	54 (13.50)
2022	92 (23)
2023	83 (20.75)
2024	62 (15.50)

Medical students were aware about teaching learning methods as according to them there are five types of teaching learning as majority, 265 (66.25%) of them, replied it, followed by seven types, 57 (14.25%), (Figure 1).

**Figure 1. Types of teaching learning method (n=400).**

Students recognised evidence-based medicine 350 (87.50%), problem-based learning 393 (98.25%) and case based learning 396 (99%) as methods for theory teaching.

Table 3. Methods recognised by medical students as one of methods of teaching and learning (n=400).

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Variables	n (%)
Evidence-based Medicine (EBM)	350 (87.50%)
Problem-based learning (PBL)	393 (98.25)
Case-based learning (CBL)	396 (99)

Medical students preferred methods for theory teaching and reason listed below in (Table 4).

Table 4. Preference and reason for preference for theory teaching (n=400).

Variables	n (%)	Reason for preference n (%)*
Problem-based learning method	202 (50.50)	233 (58.25) believed that PBL helps in better clinical correlation
		153 (38.25) believed it allows better student interactions
		240 (60) believed it allows better student-teacher interaction
Socratic lecture (two way)	106 (26.25)	184 (46) believed that it allow freedom to voice opinion
		166 (41.50) believed that it broadens thinking
		72 (18) believed that it creates positive competitive spirit

Jigsaw method (type of group study)	72 (18)	346 (86.50) believed that it helps effective and proper utilization of time for better understanding of the subject
Didactic lecturer (one way)	21 (5.25)	247 (61.75) believed that its monotonous and boring 153 (38.25) believed that it lacked student teacher interactions

However, the methods practiced in their institute and their preference were different as the most practiced 279 (69.75%) were didactic learning and most preferred methods for their clinical teaching were bedside teaching as 185(46.25%) (Table 5).

Table 5. Preference for clinical teaching and reason (n=400)

Variables	n (%) **	Reason for preference
Bedside teaching	185 (46.25)	It helps to develop clinical knowledge as well as communication skills for clinical teaching
Social media and video lecturer or e-learning	158 (39.50)	Easily accessible from anywhere
Mannequins(dummy or model of human body)	124 (31)	Helps in clinical teaching as they practice skills and gain more practical experience
Observational learning and Team based learning	78 (19.50)	Teaches patience and equal contribution
Video lectures	67 (16.75)	Clear and audible

Stimulated based learning	36 (9)	Helps in critical thinking
Peer assisted learning	26 (6.50)	Creates co-operative surrounding
Role play	24 (6)	Creates interest to learn
Flipped class-room	24 (6)	Helps in learning numerical problem
Variables	Most practiced	Reason for practiced at their institute
Didactic learning method	279 (69.75)	Traditional method
Problem based learning	80 (20)	Availability of facilities
Case based learning	30 (7.50)	Depends on teacher teaching style
Flipped class-room	18 (4.50)	Helps them to understand unsolved query
Peer assisted learning	12 (3)	Creates healthy support
Stimulated based learning	10 (2.50)	Helps them in thinking more

The major reason/factors for distraction in half 200 (50%) of medical students was due to social media, followed by lack of communication between teacher and students 120 (30%) and lack of guidance by teachers causing lack of concentration 80 (20%).

The teaching aids preferred for theory classes by students were powerpoint 186 (46.50%), followed by video lecture 142 (35.50%), also black as well as smart board 72 (18%).

Table 6. Attitude of medical students towards different preferred teaching and learning methods (n=400).

Statement	n (%)				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Is Problem based learning(PBL) one of most effective methods of teaching and learning?					
	76 (19)	12 (3)	23 (5.75)	161 (40.25)	161 (32)
Case based learning(CBL) as one of most liked and preferred methods of teaching and learning by students					
	1 (0.25)	4 (1)	27 (6.75)	192 (48)	176 (44)
Video lectures are useful when patients is not available for teaching					
	11 (2.75)	15 (3.75)	63 (15.75)	308 (77)	3 (0.75)
Community diagnosis program (CDP) is one of means for teaching and learning					
	3 (0.75)	4 (1)	15 (3.75)	262 (65.50)	116 (29)
Research should be part of MBBS curriculum					
	1 (0.25)	5 (1.25)	21 (5.25)	167 (41.75)	206 (51.50)

The major reason/factors for distraction in half 200 (50%) of medical students was due to social media, followed by lack of communication between teacher and students 120(30%) and lack of guidance by teachers causing lack of concentration 80 (20%).

DISCUSSION

Present study participants also recognised these techniques as they mentioned there are mainly five types of teaching learning methods such problem based learning (PBL), lecturer based learning, case based learning, evidence based medicine, audio video lecturer or e-learning, observational learning, team based learning, stimulated based learning, peer assisted learning and flipped classroom etc.^{2,6}

A total of 233 (58.25%) students thought PBL helps them in better clinical correlation, 153 (38.25%) thought it allows them for better student interactions and 240 (60%) believed it allows them for better student teacher interaction. This finding were similar with other studies as they reported 40.2% felt that it helps in better clinical correlation and better student interactions (17.1%) and better student teacher interaction (14.3%).⁵ However, in the present study more male students 243 (60.75%) were involved and only 157(39.25%) female students. Majority 226 (56.50%) of them lie in the age group 21-23 years old.

Whereas, a similar study by VM Holambe et. al. reported (58.7%) females and (41.3%) males which is in contest to the findings in our study. The mean age of the students was 19.38 ± 0.69 years in their study compared to 22.13 ± 1.82 in our study.⁷ So the result vary from their studies as in their finding, more female students are enrolled. It could be because of the higher number of female student enrollment in that University in certain years. Similar socratic lecturers allow freedom to voice opinions according to 184 (46%) of students, while Papanna KM et al. reported only 29 % students felt so. The reason for this difference could be the small sample size, rules and regulation of their Institute and availability of facilities. However, 166 (41.50%) thought it broadens thinking and 72 (18%) thought it creates positive competitive spirit which was found to be similar to the findings reported from India, (41.2%) and (11.9%) respectively.⁵ Similarly, the Jigsaw method helps them in effective and proper utilization of time for better understand-

ing of subjects in 346 (86.50%), while according to Papanna KM et al. it was considered to give better understanding of the subject in 25.2% and an opportunity for active learning 21.7%. The finding of present study is higher. The reason could be due to individual perception of students and the method teaching and learning conducted in their institute.⁵

The most common methods for theory teaching by students were PBL 202 (50.50%), socratic lecturer 106 (26.25%), jigsaw 72 (18%) and 21 (5.25%) didactic lecturer. This is in contrast to the finding reported by Papanna KM et al. as it was found that (71.4%) chose PBL as the most preferred method for theory teaching, followed by Socratic lectures (56%), Jigsaw method (43.4%) and didactic lectures (32.8%) as the least preferred.⁵ However, the method preferred by students for clinical teaching were bedside teaching 185 (46.25%) followed by 124 (31%) mannequins, video lectures 67 (16.75%), role play 24 (6%), which are found to be similar with other studies reported from Mangalore India and V. Holamble (81.5%), (61.6%) students preferred bedside teaching followed by mannequins (75.9%), (45.6%) video lecturers (67.9%) and least preferred was role play (36.1%), (34.8%) respectively.^{5,7} However, V. Holamble et al. also reported demonstration method (41.3%) students preferred but as he used multiple options and did not include video lecture, although there is difference in percentage, in both these studies the finding and methods are similar. However, Pathak P et al. reported self-study as most preferred as 29.5% responded, followed by interactive learning 25% and small group discussion, 13.5% their finding were not consistent with the present study.⁸

Bedside teaching helps to develop clinical knowledge as well as communication skills for clinical teaching, that is the reason it is more emphasize in their college as majority responded (60.50%) this method was practiced, however bedside teaching was the best method to develop clinical skills (52%) and communication skills (49.6%) the finding is nearly same.⁵

Mannequins helps in clinical teaching as they help to practice skills and gain more experience of practical and are more often practiced in their college (72.25%) almost similar with finding from Papanna KM et al. as according to them mannequins help them in practicing skills (57.7%) and gain more practical experience (32%).⁵ The teaching aids preferred for theory classes by students were powerpoint presentation 186 (46.50%), followed by video lecture 142 (35.50%), also black as well as smart board 72 (18%). The finding is not in alignment with Papanna KM et al. Black-

board (51.4%), powerpoint presentation (PPT) (40.9%).⁵ The reason to preferred PPT was students can take reference and study from it anytime they wish in near future.⁵ In another study from Chitwan, Nepal also reported that blackboard (51%) was reported as more preferred method of teaching and (65.6%) students had never experienced powerpoint teaching. The finding is not similar to present study, reason could be due to the availability of teaching aids and the clarity of language used.⁹

The case based learning were one of most liked and preferred methods of teaching and learning by students as (48%) agreed to it and video lectures are useful when patients are not available for teaching as (77%) agreed to it in other similar study it was reported 36.4% from Mangalore India, the reason could be the study which has been compared was done when social media was not so popular.⁵ Similarly, according to medical student research should be part of MBBS curriculum as (65.50%) strongly agreed, similar finding was reported by Pathak P et al. as 60% strongly agreed to include research in undergraduate curriculum.⁸

However, there are certain limitations of this study as it was conducted in only one medical college of Nepal, thus the result cannot be generalized in the context of the whole country.

CONCLUSIONS

This study concludes that the majority of students preferred specific teaching learning methods and also were aware of different teaching and learning methods, while the most preferred methods were problem based learning followed by socratic lectures. However, most practiced in their institution were didactic lectures. While the preferred aids by students were PowerPoint presentations.

From this study, we concluded that the most preferred methods should be practiced as they would help the educators to modify the curriculum according to the needs and preferences of medical students for better medical student outcomes and also improvement of the quality of medical education. The medical students are burdened with a vast medical curriculum, and most students are under high pressure of learning; however, if their preferences are being taken care of, their mental health will be better. So, it will definitely bring a better outcome in the future, after all, they are the future doctors who will be dealing with the lives of many.

Conflict of Interest: None.

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