



PERCEPTION AND COMPARISON OF SELF-DIRECTED LEARNING WITH DIDACTIC LECTURES AMONG FIRST YEAR MBBS STUDENTS.

Medical Education

Dr Sreelakshmi Mohanan

Assistant Professor, Department of Physiology, Government Medical college Manjeri.

Dr Meenu Gopalakrishnan

Associate Professor, Department of Physiology, Malabar Medical College Hospital and Research centre, Modakkallur, Kozhikode.

Dr Shilpa Karir

Associate Professor, Department of Community Medicine, Malabar Medical College Hospital and Research centre, Modakkallur, Kozhikode.

Dr Smrti Salim

Assistant Professor, Department of Physiology, Malabar Medical College Hospital and Research centre, Modakkallur, Kozhikode.

Dr Vipin Roy

Assistant Professor, Department of Physiology, Malabar Medical College Hospital and Research centre, Modakkallur, Kozhikode.

Dr Muhsina CP

Assistant Professor, Department of Physiology, Malabar Medical College Hospital and Research centre, Modakkallur, Kozhikode.

ABSTRACT

Background: The introduction of the CBME curriculum in India has brought new concepts like the foundation course, early clinical exposure, SDL, and integration, addressing drawbacks of the previous system such as repetition and a disjointed approach. SDL fosters independent learning, responsibility, and accountability-essential traits for medical professionals-while traditional didactic lectures are being replaced by more interactive, engaging methods. This study was conducted to analyse students' perceptions of SDL and didactic lectures in the current medical education context. **Methodology:** This cross-sectional study was conducted among 189 first-year MBBS students in South India, following ethical approval and informed consent. Students were divided into two groups-one receiving SDL and the other didactic lectures on the same topic, with pre- and post-tests used to assess learning outcomes, and perceptions evaluated using the SDLI and a lecture questionnaire. Data were analyzed using SPSS v27.0, applying appropriate statistical tests with a significance level of $P < 0.05$. **Results:** Students' mean post-test scores were significantly higher after the SDL session (7.91 ± 1.27) compared to the didactic lecture (6.46 ± 1.38 , $p < 0.001$). This finding was consistent even after the teaching methods were switched between the groups. Additionally, the survey revealed that the majority of students (over 60%) felt they understood their learning needs, enjoyed finding answers independently, and were confident in their ability to locate resources and adhere to their learning plans. **Conclusion:** SDL sessions are superior to traditional lectures for teaching physiology to first-year MBBS students, as they enhance academic performance and help students develop crucial skills like independence and self-discipline. This approach is highly effective for medical education, where students must learn to manage vast amounts of information independently.

KEYWORDS

INTRODUCTION

The introduction of competency-based medical education (CBME) curriculum in India has endorsed many new concepts, like foundation course, early clinical exposure, self-directed learning (SDL) and integration.(1) Studies have revealed drawbacks with previous system of learning in undergraduate medical curriculum that includes unnecessary repetition, disjointed approach to teaching. This discourages students from learning, and they get disinterested in applying the knowledge achieved into clinical practice.(2) Emphasis is being given to active teaching-learning approaches such as SDL and integration. SDL is generally defined as learning on one's own initiative, with the learner having primary responsibility for planning, implementing, and evaluating the effort.(1)

SDL is important to enable medical students to develop independent learning skills, increased responsibility, assertiveness and accountability which are key attributes to a medical professional's career.(3) Didactic lectures have now evolved into interactive sessions along with delivery of core conceptual understanding of physiological mechanisms. When lectures are properly structured, teachers are in a better position to keep students engaged and motivated in the classroom.(4)

The current context of medical education in accordance with the current curriculum demand proves that traditional didactic lectures in large groups are of less significance. Didactic lectures are now increasingly being replaced by active learning methods. The research was undertaken to analyse students' perceptions of self-directed learning and didactic lectures.

METHODOLOGY

This cross-sectional study was conducted among first year MBBS students at a medical college in South India. The study was initiated

following approval from the institutional ethical committee and after obtaining the informed written consent from the students included in the study. The study was conducted among 189 MBBS phase I students. The participants were divided into two groups—Group A and Group B. One SDL topic as per the CBME curriculum was selected. A pretest questionnaire on the selected topic was distributed among the students. Group A ($n=94$) was administered self-directed learning sessions, while didactic lecture sessions were scheduled for Group B ($n=95$) on the same topics. The content and objectives were the same for both SDL and lecture sessions. Following the sessions, assessments were done using a post-test questionnaire. Group A then received the lecture, while Group B received the SDL session. Another post test was conducted a week later. No prior information was given to the students regarding the post-test assessments.

The pre- and post-test questionnaires had 10 objective-type questions, which were distributed through an online platform with the questions shuffled to discourage malpractice.

The perception of students on SDL was assessed using the SDL instrument (SDLI). The perception of lectures was assessed using a separate questionnaire. Confidentiality regarding participant responses was ensured.

The data was collected using Microsoft 365 Excel and analyzed using SPSS v27.0. The results were expressed as frequency with percentage and mean with standard deviation. Association between categorical variables was assessed using Chi-square test or Fisher's exact test. Association between quantitative variables was assessed using independent t test. All the statistical analyses were carried out at a 5% level of significance, and results with the P value < 0.05 were considered statistically significant.

RESULTS

This study was conducted among 189 MBBS students studying in the

first year MBBS of a private medical college in South India. Majority of the students were females (73.0%) and most of them came from an urban locality (57.7%). Most students' parents were well educated in this study (Table 1).

Table 1: Socio Demographic Characteristics Of The Study Population

Variable	Categories	Frequency	Percentage
Age	18-20	113	59.8
	21-23	76	40.2
Gender	Males	51	27.0
	Females	138	73.0
Residence	Abroad	4	2.1
	Town or city	109	57.7
	Village	76	40.2
Medium of study	English	183	96.8
	Malayalam	6	3.2
Fathers' education	High school	33	17.5
	Postgraduate	72	38.1
	Undergraduate	84	44.4
Mothers' education	High school	39	20.6
	Postgraduate	72	38.1
	Undergraduate	78	41.3

The mean pretest scores before the initiation of teaching learning methods were 3.86 ± 1.57 in group A comprising of 94 students and 4.49 ± 1.67 in group B comprising of 95 students (Table 2).

Table 2: Mean Pretest Scores Of The Study Population

Group	N	Mean pretest scores	P value
-------	---	---------------------	---------

Table 5: Perception Of Students On SDL And Their Learning Abilities.

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
I know what I need to learn	27 (14.3)	87 (46.0)	60 (31.7)	15 (7.9)	0 (0.0)
Regardless of the results or effectiveness of my learning, I still like learning	27 (14.3)	73 (38.6)	74 (39.2)	14 (7.4)	1 (0.5)
I strongly hope to constantly improve and excel in my learning	97 (51.3)	81 (42.9)	10 (5.3)	1 (0.5)	0 (0.0)
My successes and failures inspire me to continue learning	61 (32.3)	92 (48.7)	30 (15.9)	6 (3.2)	0 (0.0)
I enjoy finding answers to questions	54 (28.6)	86 (45.5)	44 (23.3)	5 (2.6)	0 (0.0)
I will not give up learning because I face some difficulties	58 (30.7)	86 (45.5)	37 (19.6)	6 (3.2)	2 (1.1)
I can proactively establish my learning goals	32 (16.9)	82 (43.4)	62 (32.8)	12 (6.3)	1 (0.5)
I know what learning strategies are appropriate for me in reaching my learning goals	36 (19.0)	66 (34.9)	70 (37.0)	16 (8.5)	1 (0.5)
I set the priorities of my learning	35 (18.5)	99 (52.4)	48 (25.4)	5 (2.6)	2 (1.1)
Whether in the clinical practice, classroom or on my own, I am able to follow my own plan of learning	22 (11.6)	78 (41.3)	59 (31.2)	29 (15.3)	1 (0.5)
I am good at arranging and controlling my own learning time	16 (8.5)	52 (27.5)	63 (33.3)	48 (25.4)	10 (5.3)
I know how to find resources for my learning	24 (12.7)	93 (49.2)	56 (29.6)	16 (8.5)	0 (0.0)
I can connect new knowledge with with my own experiences	32 (16.9)	102 (54.0)	45 (23.8)	9 (4.8)	1 (0.5)
I understand the strengths and weakness of my learning	55 (29.1)	106 (56.1)	25 (13.2)	3 (1.6)	0 (0.0)
I can monitor my learning progress	25 (13.2)	57 (30.2)	9 (4.8)	0 (0.0)	0 (0.0)
I can evaluate on my own my learning outcomes	25 (13.2)	112 (59.3)	42 (22.2)	10 (5.3)	0 (0.0)
My interactions with others helps me plan for further learning	53 (28.0)	96 (50.8)	30 (15.9)	6 (3.2)	4 (2.1)
I would like to learn the language and culture of those whom I frequently interact with	54 (28.6)	94 (49.7)	35 (18.5)	4 (2.1)	2 (1.1)
I am able to express messages effectively in oral presentations	28 (14.8)	69 (36.5)	61 (32.3)	21 (11.1)	10 (5.3)
I am able to communicate messages effectively in writing	44 (23.3)	100 (52.9)	40 (21.2)	5 (2.6)	0 (0.0)

DISCUSSION

This study was conducted to analyze the effectiveness of two methods of teaching learning methods namely didactic lectures and self directed learning and to assess the students' perception on these methods. A total of 189 students were studied. Students scored well for the post tests compared to the pre tests after both the types of teaching learning methods. This implies that there will be gain in knowledge following any type of learning method. On comparing both the groups, it was found that SDL was more effective compared to didactic lectures in understanding certain topics in MBBS curriculum. This is in accordance with previous studies conducted around the globe.(5–8)

In a study conducted by Chaudhuri et al., student scored well following SDL sessions compared to the lecture classes. Even though SDL fared better than lectures the authors pointed out the need for greater number of teachers for conducting a single session of SDL.(9) Research conducted by Deci et al. has also demonstrated that SDL sessions enhance the enjoyment, significance, and internalization of learning,

A	94	3.86 ± 1.57	0.008
B	95	4.49 ± 1.67	
Total	189	4.18 ± 1.65	

The mean post test scores were found to be higher among the group (7.91 ± 1.27) that had undergone SDL session compared to the group that had the didactic lecture (6.46 ± 1.38). This difference was found to be statistically significant (Table 3).

Table 3: Mean Post Test Scores After Session 1

Group	N	Mean post test scores	P value
A (SDL)	94	7.91 ± 1.27	<0.001
B (Lecture)	95	6.46 ± 1.38	
Total	189	7.19 ± 1.51	

Following the second session when the teaching learning methods were switched, it was found that the mean post test scores were still higher among the SDL session (7.59 ± 1.54) compared to the lecture sessions (6.80 ± 1.49). This difference was found to be statistically significant as well (Table 4).

Table 4: Mean Post Test Scores After Session 2

Group	N	Mean post test scores	P value
A (Lecture)	94	6.80 ± 1.49	<0.001
B (SDL)	95	7.59 ± 1.54	
Total	189	7.19 ± 1.56	

This survey revealed that approximately 60.0% of students felt they understood their learning requirements, while about 75.0% expressed enjoyment in independently seeking answers to questions. Approximately 52.0% of students assert their capability to adhere to their personal learning plans, while 60.0% express confidence in their ability to locate resources for their education (Table 5).

while fostering self-regulation.(10) Our study results align with the observations made by Parekh et al., who got affirmative feedback from students indicating that the adoption of active learning approaches, such as self-directed learning, can facilitate improved comprehension, boost communication skills, and bolster memory retention. Studies conducted by Benware et al., Grolnick et al., and Vansteenkiste et al has highlighted the significance of autonomous regulation and intrinsic goals for students' learning, performance, and psychological well-being, thereby emphasizing the critical role of autonomy-supportive teachers and classrooms.(11–13)

In a study conducted by Williams et al., it was determined that medical students' evaluations of the autonomy support offered by their preceptors during medical rotations influenced their selection of their specialties.(14) For instance, if a student saw the preceptor in surgery as significantly autonomy supportive, it enhanced the likelihood that the student would choose surgery for advanced training. Encouraging pupils to engage in self-directed learning will undoubtedly foster

motivation for selecting that specific subject for pursuing advanced degrees.

In a study examining self-directed learning in the context of anatomy and gross dissection, Arroyo-Jimenez et al. discovered that an objective-oriented self-learning methodology affords students optimal autonomy and freedom in achieving their goals, in close collaboration with academic personnel. The study's data revealed that students participating in self-directed learning within small groups alongside teachers are capable of enhancing their anatomical skills.(15)

In this study it was found that, around 60.0% of the students believed that they know what they need to learn and around 75.0% of the students enjoys finding answers to questions by themselves. Around 52.0% of students believe that they are able to follow their own plan of learning and 60.0% believe that they can find the resources for their own learning.

Study by Anil et al. indicated that around 97.7% of participants believed that SDL enabled them to learn at their own speed, enhanced their comprehension of the subjects, and facilitated preparation for competitive examinations.(16) In a separate study conducted by Patra et al., it was demonstrated that 67.0% of students expressed satisfaction, while 66.0% indicated motivation to continue explore the assigned topic.(17) In a study conducted by Premkumar et al., a significant decline in SDL preparedness was noted when comparing students at admission with those in later years of training.(18) A comparative study conducted by Pai et al. aimed to ascertain the efficacy of supplementing SDL activities with traditional lectures. The findings revealed no statistically significant difference in the mean test scores between the group that participated in the SDL session and the group that attended the lecture.(19)

CONCLUSION

SDL sessions are superior to lecture-based sessions in instructing physiology to first-year MBBS students. SDL sessions can assist students in developing independence, self-discipline, monitoring their learning activities, and enhancing their academic performance. Students understand the importance of autonomy in learning especially in medical education where vast amounts of topics are needed to covered in short amount of time.

REFERENCES

1. Premkumar K, Pahwa P, Banerjee A, Baptiste K, Bhatt H, Lim HJ. Does Medical Training Promote or Deter Self-Directed Learning? A Longitudinal Mixed-Methods Study. *Academic Medicine*. 2013 Nov;88(11):1754-64.
2. Fan JC, Sherwin T, McGhee CN. Teaching of ophthalmology in undergraduate curricula: a survey of Australasian and Asian medical schools. *Clin Exp Ophthalmol*. 2007 May 30;35(4):310-7.
3. Gyawali S, Jauhari AC, Shankar PR, Saha A, Ahmad M. Readiness for self directed learning among first semester students of a medical school in Nepal. *Journal of Clinical and Diagnostic Research [Internet]*. 2011 Feb;5(1):20-3. Available from: <https://www.researchgate.net/publication/271529743>
4. Rehan R, Ahmed K, Khan H, Rehman R. A way forward for teaching and learning of Physiology: Students' perception of the effectiveness of teaching methodologies. *Pak J Med Sci*. 2016;32(6):1468-73.
5. Pai K, Rao KR, Punja D, Kamath A. The effectiveness of self-directed learning (SDL) for teaching physiology to first-year medical students. *Australasian Medical Journal*. 2014 Nov 30;448-53.
6. Anderson SM, Helberg SB. Chart-based, case-based learning. *S D Med*. 2007 Oct;60(10):391, 393, 395, 397, 399.
7. Devi S, Bhat Ks, Ramya S, Ravichandran K, Kanungo R. Self-directed learning to enhance active learning among the 2nd - year undergraduate medical students in Microbiology: An experimental study. *Journal of Current Research in Scientific Medicine*. 2016;2(2):80.
8. Abraham RR, Upadhyay S, Ramnarayan K. Self-directed learning. *Adv Physiol Educ*. 2005 Jun;29(2):135-6.
9. Chaudhuri A, Paul S, Goswami A. A Comparative Study to Evaluate the Role of Interactive Lecture Classes and Self-Directed Learning Sessions among First MBBS Students in the Department of Physiology during Implementation of Competency Based Medical Education. *Journal of Evidence Based Medicine and Healthcare*. 2020 Nov 16;7(46):2714-8.
10. Deci EL, Ryan RM. Facilitating optimal motivation and psychological well-being across life's domains. *Can Psychol*. 2008 Feb;49(1):14-23.
11. Benware CA, Deci EL. Quality of learning with an active versus passive motivational set. *Am Educ Res J*. 1984;21(4):755-65.
12. Grolnick WS, Ryan RM. Autonomy in children's learning: an experimental and individual difference investigation. *J Pers Soc Psychol*. 1987;52(5):890.
13. Vansteenkiste M, Simons J, Soenens B, Lens W. How to become a persevering exerciser? Providing a clear, future intrinsic goal in an autonomy-supportive way. *J Sport Exerc Psychol*. 2004;26(2):232-49.
14. Williams GC, Saizow R, Ross L, Deci EL. Motivation underlying career choice for internal medicine and surgery. *Soc Sci Med*. 1997;45(11):1705-13.
15. Arroyo-Jimenez MDM, Marcos P, Martinez-Marcos A, Artacho-Péruela E, Blaizot X, Muñoz M, et al. Gross anatomy dissections and self-directed learning in medicine. *Clinical Anatomy*. 2005 Jul;18(5):385-91.
16. Anil D, Kumar D S, Murthy MRN. Self-directed learning: The impact among medical students. *Journal of Medical Education Development*. 2023 Feb 20;21-7.
17. Patra S, Khan A, Upadhyay M, Sharma R, Rajoura O, Bhasin S. Module to facilitate self-directed learning among medical undergraduates: Development and implementation. *J*

Educ Health Promot. 2020;9(1):231.

18. Premkumar K, Vinod E, Sathishkumar S, Pulimood AB, Umaefulum V, Prasanna Samuel P, et al. Self-directed learning readiness of Indian medical students: a mixed method study. *BMC Med Educ*. 2018 Dec 8;18(1):134.
19. Pai K, Rao KR, Punja D, Kamath A. The effectiveness of self-directed learning (SDL) for teaching physiology to first-year medical students. *Australasian Medical Journal*. 2014 Nov 30;448-53.