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PERCEPTION REGARDING SELF-DIRECTED LEARNING AMONG FIRST-YEAR MEDICAL STUDENTS: A CROSS-SECTIONAL STUDY FROM NORTHEAST INDIA

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ABSTRACT

Background: With the Application of Competency-Based Medical Education (CBME) in India, Self-Directed Learning (SDL) has developed as a key pedagogical approach to enhance medical students' autonomy, critical thinking, and lifelong learning skills. However, research on first-year MBBS students' perceptions of SDL, particularly in Northeast India, remains limited. The aim is to assess first-year MBBS students' perceptions regarding self-directed learning (SDL) and evaluate its effectiveness in enhancing their learning skills at Churachandpur Medical College, Manipur.

Materials and Methods: A cross-sectional study was conducted between December 2024 and March 2025 at Churachandpur Medical College, Manipur, among 86 Phase I MBBS students of the 2024–2025 batch. The study included three SDL sessions on "Physiology of the Autonomic Nervous System," with pre-test and post-test evaluations. A validated self-administered questionnaire was used to measure SDL capabilities across four domains. Data were analysed using SPSS Version 21, and Wilcoxon Signed-Rank tests were employed for pre and post-test comparisons.

Results: The study included 86 Phase I MBBS students with a mean age of 20.14 ± 1.42 years; 51(59.3%) were female and 35(40.7%) were male. The mean pre-test score was 7.59 ± 2.63, while the mean post-test score was 11.40 ± 1.39 ($p < 0.001$), demonstrating a significant improvement in knowledge of the SDL topic. SDL scores ranged from 58 to 96, with 75% of students demonstrating high SDL ability. Students expressed strong intrinsic motivation (Mean = 4.58 ± 0.49) but reported challenges in self-monitoring and written communication.

Conclusion: SDL significantly enhanced students' knowledge acquisition and promoted self-regulated learning. While students demonstrated high motivation, targeted interventions are necessary to improve self-monitoring and communication skills. There is a need for integrating structured SDL strategies into medical curricula, particularly in resource-limited settings like Manipur.

Keywords: Lifelong learning, Medical Education, Active learning strategies, Self-regulation, Learner autonomy.

INTRODUCTION

With the adoption of Competency-Based Medical Education (CBME) by the National Medical Commission (NMC) for Indian medical graduates (IMGs), the expectations for medical students have become more structured. The NMC outlines that an IMG must take on multiple roles, including those of a clinician, leader, communicator, lifelong learner, and professional. To achieve such competencies,

Self-directed learning (SDL) has been highlighted as a fundamental skill essential for the comprehensive development of medical students.[1]

Self-directed learning is a process where individuals take the initiative in their learning journey in evaluating their knowledge needs, setting objectives, identifying resources, selecting learning strategies, and assessing their progress. SDL can be undertaken independently or with guidance, where educators act as enablers, encouraging students to engage in collaborative discussions, group learning, and problem-solving exercises. This method aims to foster autonomy, reflection, and competence among future healthcare professionals.[2-4]

SDL encompasses various skills, including critical thinking, social interaction, communication, analytical reasoning, and research abilities. Students proficient in SDL actively seek learning resources, integrate new knowledge with prior understanding, assess their learning progress, ask relevant questions, and apply acquired knowledge to practical scenarios. These skills extend beyond any single subject and play a crucial role in both academic and professional growth.[5,6]

Unlike passive learning, SDL emphasizes student-driven learning guided by an instructor. Simply assigning reading materials does not qualify as SDL. A key aspect distinguishing SDL is the concept of the "locus of control"—the degree to which learners believe they can influence their own learning. Individuals with an internal locus of control believe they are accountable for their own learning achievements. In contrast, those with an external locus of control tend to credit outside factors, such as luck or destiny, for their academic outcomes.[7,8]

Transitioning from high school to the first year of medical school presents a significant shift in learning styles, moving from structured classroom instruction to a more independent learning environment. SDL is designed to enhance critical thinking, deepen understanding, and facilitate interdisciplinary knowledge integration. However, students' readiness for SDL varies based on factors such as prior educational experiences, personal learning styles, and institutional support.[9,10]

Examining students' perceptions of SDL is crucial, as a positive outlook can enhance engagement and learning outcomes. Students who perceive SDL as beneficial are more likely to embrace it, leading to improved academic performance and self-regulation. Conversely, students who find SDL challenging may struggle with motivation, experience increased stress, and achieve suboptimal learning outcomes Although SDL is increasingly emphasized in medical education, research on first-year MBBS students' perspectives on SDL remains limited.[11] To the best of our knowledge, published research on SDL perspectives among first-year MBBS students from Northeast India remains scarce. The insights gained can assist educators and curriculum developers in designing SDL strategies that are contextually relevant, enhance student engagement, and ultimately improve the quality of medical education in the region.

Additionally, there is a lack of region-specific research from Northeast India, particularly Manipur, where socio-cultural factors may impact learning approaches. Hence; present study was conducted to assess first-year MBBS students' perceptions regarding self-directed learning (SDL) and evaluate its perceived effectiveness in enhancing their learning at Churachandpur Medical College, Manipur.

MATERIALS AND METHODS

A cross-sectional study was carried out by the Department of Physiology at Churachandpur Medical College between December 2024 and March 2025. The study received ethical clearance from the Institutional Ethical Committee (Approval No. 5/2/CMC-ETHICS COMM/2024/01/01/24) before participant recruitment.

Inclusion criteria

The inclusion criteria comprised first year medical students enrolled in the 2024–2025 academic year, who were willing to attend all SDL sessions, completed both pre- and post-tests, and provide informed consent.

Exclusion criteria

Students were excluded if they were absent from any SDL session, failed to complete the assessments, or declined to participate.

Sample size: A total of 100 first-year MBBS students (Phase I) from Churachandpur Medical College were invited to participate in the study. The objectives and procedures were clearly explained to them, and written informed consent was obtained from all willing participants. Of the 100 students, 86 consented and actively participated, while 14 students declined and were excluded. A purposive sampling method was adopted to ensure that only students who were actively engaged and compliant with the study protocol were included.

Data collection: The study was done in 3 sessions of 1 hour each where in the first session the Facilitator/Faculty gave an orientation regarding the study. The facilitator then conducted 2 SDL sessions with 2 weeks in between each session wherein a potential team-based SDL Topic (Physiology of Autonomic Nervous System) based on the curriculum of Physiology was allotted to the students.

A pre-test consisting of 15 multiple-choice questions (MCQs) was conducted during the first SDL session to assess the baseline knowledge of students on the topic "Physiology of the Autonomic Nervous System." The same set of questions was used again in the post-test conducted during the final session to evaluate knowledge gained through SDL. The MCQs were devised by faculty members of the Department of Physiology based on standard textbooks and CBME-aligned curriculum content. The test was peer-reviewed and pre-validated by senior faculty

members for content relevance and difficulty level. Each question carried one mark, with no negative marking, resulting in a total possible score of 15. Students were given 20 minutes to complete the test under supervised classroom conditions. The scoring criteria were straightforward: the number of correct answers constituted the total score. Improvement in learning outcomes was measured by comparing the mean pre-test and post-test scores.

Intervention: The students were divided into 9 groups consisting of 10 students each in 7 groups and 8 students in 2 groups each and asked to present a seminar of 5-minute duration on the assigned topic on the last session. Faculties were in continuous contact with the students and guiding them and helping them whenever there were any doubts and also facilitating them throughout the whole process.

Assessment was done in final session in the form a post-test similar to the pre-test. Lastly at the end, a structured, validated, self-administered questionnaire was used, to measure students' self-directed learning (SDL) capabilities. This well-structured and validated tool was tailored for assessing SDL skills among medical students.[12] It was comprised of 20 items divided into four key domains -Learning Motivation, Planning and Implementation, Self-Monitoring, Interpersonal Communication. Each item is measured on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), enabling participants to express their level of agreement with the statements. Validation of the study questionnaire has been done on 10 First year MBBS students who were subsequently excluded from the study. The reliability of the Questionnaire was assessed using Cronbach's alpha for each of the four domains in the Questionnaire. Cronbach's alpha values for each domain were found to be above 0.70, indicating acceptable internal consistency for the SDL Questionnaire. Specifically, the overall Cronbach's alpha for the full questionnaire was 0.85, which suggests strong reliability which is similar to other studies by Siraja AA et al.[3]

The SDL scores were determined by summing the scores from all four domains, with a total possible score ranging from 20 to 100. Higher scores reflected greater SDL ability. Based on the total score, students scoring ≥53 were categorized as having high SDL ability, while those scoring ≤53 were considered to have low SDL ability. This cutoff was determined using the median split method, consistent with a similar previous study.[12]

Statistical analysis: Data collection and statistical analysis were conducted using SPSS (Statistical Package for the Social Sciences) Version 21. Wilcoxon signed-rank test (data were non-normally distributed) was performed to compare pre-test and post-test scores. A p-value < 0.05 was considered statistically significant. Descriptive statistics were utilized to express the frequency distribution, mean, median, standard deviation for demographic data and SDL perceptions.

RESULTS

The study included 86 Phase I MBBS medical students, with an age range of 17 to 26 years (Mean = 20.14, SD = 1.424). Out of the 86 medical students included in the study, 51 (59.3%) were female, while 35 (40.7%) were male. A Mann-Whitney U test was conducted to compare the age distribution between male and female students. The results showed no significant difference (U = 868.000, Z = -0.224, p = 0.823). [Figure 1]

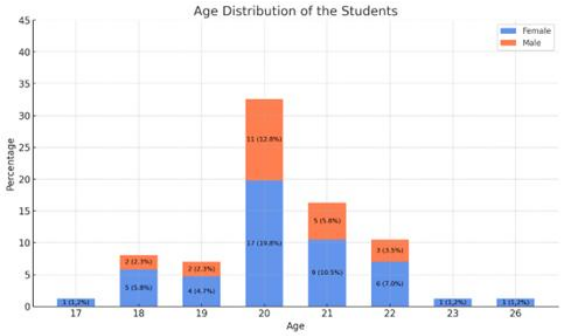

Figure 1: Age Distribution of the students

On Comparison of Pre-Test SDL and Post-Test SDl Scores, the mean pre-test score before Self-Directed Learning (SDL) was 7.59 ± 2.63, while the post-test score was 11.39 ± 1.39. Since the data was not normally distributed, the Wilcoxon Signed-Rank Test was used to compare pre-test and post-test scores. scores with a p-value < 0.001, indicating a statistically significant improvement following the SDL intervention. The results suggest a significant increase in knowledge about the topic among Phase I MBBS students after the SDL intervention. [Table 1]. Out of 86 participants, 74 students (86.0%) had higher post-test scores compared to their pre-test scores.

Table 1: Comparison of pre-test SDL and Post-test SDL Scores

	Total students	Mean	SD	Minimum	Maximum	P-value	Difference of Mean
Pre-test score (15)	86	7.59	2.63	1	13		
Post test (15)	86	11.39	1.39	7	14	<0.001	+3.80

On calculation of SDL scores, it was revealed that minimum score was 58 and maximum score was 96 with a median score of 78. Students scoring ≥ 73 were categorized as having high SDL ability, while those scoring ≤ 72 were classified as low SDL ability. 75% of the students exhibited a high level of SDL ability while 25% of the total students showed allow level of SDL ability. [Table 2].

Table 2: Distribution of total SDL ability scores of the students

Variable	Total Students	Mean	Median	Maximum	Minimum	Range	Standard Deviation
Total SDL Ability Scores	86	77.70	78.00	96.00	58.00	38.00	7.42
Learning Motivation	86	4.32	4.44	4.58	3.93	0.65	0.34
Planning and Implementation	86	3.82	3.83	3.88	3.76	0.12	0.06
Self-Monitoring	86	3.87	3.87	3.91	3.83	0.08	0.06
Interpersonal Communication	86	3.56	3.66	3.78	3.16	0.62	0.28

[Table 3] shows the perceptions of Phase I MBBS students about SDL based on the Questionnaire. A total of 76.2% of the students agreed that they were aware of what they needed to learn, and all students (100%) expressed a strong desire to continuously improve and excel in their learning.

Table 3: Some Perceptions of Phase I MBBS students about SDL

No.	Question	Strongly Agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly Disagree N (%)	Mean ± SD
1	I am aware of what I need to learn	13 (15.1)	56 (61.1)	15 (17.4)	2 (2.3)	0	3.93 ± 0.64
2	I am highly motivated to continuously improve and excel in my learning	50 (58.1)	36 (41.9)	0	0	0	4.58 ± 0.49
3	I will continue learning despite the challenges I encounter	44 (51.2)	36 (41.9)	6 (7.0)	0	0	4.44 ± 0.62
4	I am capable of proactively setting my learning goals	14 (16.3)	46 (53.5)	23 (26.7)	3 (3.5)	0	3.83 ± 0.73
5	I understand which learning strategies are best suited to help me achieve my goals	14 (16.3)	43 (50.0)	23 (26.7)	6 (7.0)	0	3.76 ± 0.81
6	I prioritize my learning effectively	16 (18.6)	46 (53.5)	22 (25.6)	2 (2.3)	0	3.88 ± 0.72
7	I am skilled at locating resources for my learning	12 (14.0)	47 (54.7)	27 (31.4)	0	0	3.83 ± 0.65
8	I have a clear understanding of my learning strengths and weaknesses	15 (17.4)	53 (61.6)	13 (15.1)	5 (5.8)	0	3.91 ± 0.74
9	I am able to track and evaluate my learning progress	8 (9.3)	46 (53.5)	22 (25.6)	9 (10.5)	1 (1.2)	3.59 ± 0.84
10	I can independently assess my learning outcomes	11 (12.8)	46 (53.5)	24 (27.9)	5 (5.8)	0	3.73 ± 0.75
11	I can confidently and clearly convey messages in oral presentations	10 (11.6)	52 (60.5)	20 (23.3)	3 (3.5)	1 (1.2)	3.78 ± 0.74
12	I can effectively convey messages through writing	5 (5.8)	28 (32.6)	34 (39.5)	14 (16.3)	5 (5.8)	3.16 ± 0.96

The data indicate that students showed relatively high confidence in setting learning goals and prioritizing tasks, with over two-thirds expressing agreement or strong agreement. While self-monitoring and evaluation skills were moderately developed, a noticeable proportion of students remained neutral or unsure, particularly in tracking progress. Communication skills—especially written communication—emerged as the weakest domain, suggesting an area needing targeted improvement in future SDL interventions. [Table 3]

DISCUSSION

In our present study which evaluated the value of Self-Directed Learning (SDL) among Phase I MBBS students. The findings indicate a significant improvement in students' knowledge after the SDL intervention, reinforcing its potential as an effective learning strategy in medical education.

Our study found that SDL Intervention significantly improved the student scores than before SDL. The pre and post-test comparisons disclosed a considerable increase in knowledge acquisition, with mean scores rising from 7.59 ± 2.63 to 11.40 ± 1.39 ($p < 0.001$). The Wilcoxon Signed-Rank Test further confirmed that 86.0% of students demonstrated improved post-test scores. This is comparable to other studies by Jagannatha SB et al and also by Thota S et al which also found higher mean Post-test scores after SDL and reported that SDL is a very effective method for teaching and Learning for Phase I medical students. Active student participation plays a crucial role in acquiring knowledge during the implementation of self-directed learning (SDL).[13,14] Our study found that greater part of the students (75%) exhibited increased level of self- directed Learning Ability which is comparable to other studies by Siraja AA et al. which found 61% of students had high level of SDL ability,[3] and also study done by Li et al. which showed students with strong self-

directed learning (SDL) abilities were significantly more involved in planning activities, which demonstrated a notable correlation with reading performance, compared to those with lower SDL abilities.[15]

In the present study, the students gave overall positive feedback on the implementation of SDL learning, participants demonstrate a strong intrinsic motivation for learning, as shown by high mean scores for statements such as "I strongly hope to constantly improve and excel in my learning" (Mean = 4.58) and "My successes and failures inspire me to continue learning" (M = 4.43). Self-monitoring and evaluation of learning outcomes show moderate mean scores (M = 3.59 and M = 3.73 respectively), suggesting room for improvement in self-assessment skills. Furthermore, although interaction with others is considered beneficial for planning learning (M = 3.98), communication skills, particularly oral presentations, appear to be a challenge (M = 3.16, SD = 0.968). These results align with previous studies by Bhandari B et al. and Mehboob M et al. identified challenges in time managing (mean score = 3.32), speaking skills for effective presentations (mean score = 3.55), and resource identification for SDL (mean score = 3.75).[16,17] These findings highlight the need for targeted interventions to strengthen students' self-regulation, time management, and communication skills to enhance overall learning effectiveness.

There is no doubt that SDL encourages autonomy, a sense of responsibility, and a deeper connection to the learning process. It also provides flexibility and enhances students' ability to set and achieve specific learning goals effectively. Self-directed learning enables medical students to cultivate the skills necessary for lifelong learning, a key competency expected of a Competent Indian Medical Graduate. This approach fosters independent thinking, adaptability, and continuous professional development, ensuring that future doctors remain updated with evolving medical knowledge and practices.[18,19]

Challenges to SDL may include behavioural barriers, such as reluctance to provide constructive peer feedback and varying levels of readiness for independent learning, communication challenges, Cognitive and mental barriers, such as information overload and difficulty maintaining focus, may also impact learning efficiency. Additionally, environmental factors, including demanding workloads, insufficient coping strategies, and ineffective time management, can create obstacles to successful self-directed learning.[18,20,21]

Limitations

The Limitations of our study were its smaller sample size and findings may not be generalizable being a single centre study and some aspects of SDL may have been left out.

CONCLUSION

This study highlights both the perceptions and the impact of self-directed learning (SDL) among first-year MBBS students in a resource-limited setting. Students exhibited a strong intrinsic motivation and a generally positive attitude toward SDL, though areas like self-monitoring and written communication were identified as needing improvement. In terms of performance, the SDL intervention led to a statistically significant enhancement in post-test scores, underscoring its effectiveness in promoting knowledge acquisition. These findings validate SDL as an effective strategy aligned with the goals of Competency-Based Medical Education (CBME). Therefore, integrating structured SDL approaches into the medical curriculum can promote both learner engagement and academic success, particularly in under-resourced regions like Manipur.

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