

Self-Directed Learning Readiness Among First-Year MBBS Students in the Era of Competency-Based Medical Education

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ABSTRACT

Background: Self-directed learning (SDL) is a fundamental component of competency-based medical education (CBME), enabling students to develop lifelong learning skills, critical thinking, and professional autonomy. Successful implementation of SDL depends largely on learners' readiness to engage in independent learning. This study aimed to assess self-directed learning readiness among first-year MBBS students using the Self-Rating Scale for Self-Directed Learning (SRSSDL).

Materials and Methods: A descriptive cross-sectional study was conducted among 103 first-year MBBS students at a rural medical college in Bengaluru, Karnataka, India, over a three-month period. Universal sampling was employed. Data were collected using the validated 60-item SRSSDL questionnaire, which evaluates five domains: awareness, learning strategies, learning activities, evaluation, and interpersonal skills. Descriptive statistics were expressed as mean, standard deviation, median, interquartile range, frequencies, and percentages. The association between gender and SDL readiness was assessed using the Chi-square test, with statistical significance set at $p < 0.05$.

Results: The mean overall SRSSDL score was 231.2 ± 21.8 , indicating high readiness for self-directed learning. Overall, 76 (73.8%) students demonstrated high SDL readiness, while 27 (26.2%) exhibited moderate readiness; none had low readiness. Female students had a marginally higher mean SRSSDL score than male students (231.9 ± 21.7 vs. 230.4 ± 22.1), although the association between gender and SDL readiness was not statistically significant ($p = 0.47$). Among the five domains, interpersonal skills demonstrated the highest mean score (47.0 ± 5.6), whereas evaluation recorded the lowest (45.6 ± 5.9).

Conclusion: First-year MBBS students demonstrated predominantly high readiness for self-directed learning, supporting the implementation of CBME. Targeted educational interventions focusing on reflective practice and self-evaluation may further strengthen SDL competencies and promote lifelong learning among future medical professionals.

Keywords: Education, Medical, Undergraduate; Self-Directed Learning; Students, Medical; Competency-Based Education; Educational Measurement; Learning.

INTRODUCTION

Self-directed learning (SDL) has emerged and gained greater importance in contemporary medical education. There has been an exponential growth of medical knowledge and there is need for continuous professional development. Self-Directed Learning (SDL) is a process, which involves the learners to take initiative in identifying their own learning needs, setting up goals, sourcing the appropriate learning resources, implementing their own strategies and evaluating the outcomes independently. [1] This happens to be a novel approach where the responsibility for learning shifts from the teacher to the learner. Therefore; it fosters autonomy, critical thinking, and the adaptability-skills which are very essential for effective clinical practice in this rapidly evolving healthcare setting. [2]

Medical education has been predominantly teacher-centred, emphasizing the passive acquisition of knowledge through traditional methods like lectures and didactic teaching. This traditional model is now increasingly being replaced by learner-centred approaches that promote active engagement, reflection, and self-regulation. [3] This transition is in line with the principles of competency-based medical education (CBME), which mainly focuses on outcomes in terms of competencies rather than time-based training. CBME emphasizes on the active participation of the learners in their learning process, continuous assessment of their progress, and address gaps in their knowledge. [4]

The National Medical Commission (NMC) in India has reinforced the importance of SDL in undergraduate medical training by introducing it as a part of CBME. The revised curriculum makes it mandatory to have structured SDL sessions throughout the MBBS course, aiming at Producing lifelong learners capable of adapting to advances in medical science. [5] It is important to understand that the successful implementation of Self- directed learning largely depends on the readiness of students to engage in such learning processes. SDL

readiness depends on multiple factors, which include intrinsic motivation, self-discipline, time management, resource utilization and reflective ability. [6]

Various instruments have been developed to assess SDL readiness, of which the Self-Rating Scale for Self-Directed Learning (SRSSDL) is widely used in Professional education. The SRSSDL evaluates five key domains: awareness, learning strategies, learning activities, evaluation, and interpersonal skills, thereby providing a multidimensional assessment of a learner's preparedness for SDL. [7] Literature from international studies shows that SDL readiness varies across different educational contexts and is influenced by various factors like curriculum design, teaching methodologies, and cultural background. [8]

Indian studies have shown moderate to high levels of readiness for SDL among medical students; however, deficiencies have been consistently noted in domains such as self-evaluation and reflective learning. [9] These limitations may hinder the effective implementation of SDL and become an obstacle in the development of lifelong learning competencies.

This period transition from secondary education to medical training represents a critical period for the first-year MBBS students. This period marks a shift from structured, teacher-driven learning environment to a more autonomous and demanding academic setting. Many students may initially lack the skills necessary for effective SDL which makes an early assessment of readiness essential. [10] Such assessment is very crucial as it enables the educators to design targeted interventions, including mentorship, feedback mechanisms, and structured SDL sessions. This helps in a smoother transition and enhances the learning outcomes.

There are a very few studies which are done on SDL readiness among first-year MBBS students in medical colleges in India. There may be a considerable difference in factors such as resource availability and learning environment between urban and rural

institutions. Hence understanding the SDL readiness in such settings is crucial for developing Specific educational strategies aligned with goals of CBME curriculum.

Therefore, this particular study was undertaken to assess self-directed learning readiness among first-year MBBS students in a medical college in Bengaluru rural district using the SRSSDL tool and also to examine variations across its key domains.

MATERIALS & METHODS

A descriptive cross-sectional study was conducted among first-year undergraduate medical students at a medical college Bengaluru Rural, Karnataka. The study was carried out over a period of 3 months, following approval from the Institutional Ethics Committee of Sri Siddhartha Academy of Higher Education.

The study population included all first-year MBBS students present on the day of data collection. A universal sampling technique was employed to ensure maximum participation and to minimize selection bias. Students who were absent during data collection or who declined to provide consent were excluded from the study. A total of 103 students participated, constituting the final sample size.

Data were collected using the Self-Rating Scale for Self-Directed Learning (SRSSDL), a validated and widely accepted tool developed to assess SDL readiness among health profession students. [11] The SRSSDL consists of 60 items categorized into five domains: awareness, learning strategies, learning activities, evaluation, and interpersonal skills. Each item is rated on a five-point Likert scale ranging from “never” (score 1) to “always” (score 5), yielding a total possible score between 60 and 300. Higher scores indicate greater readiness for self-directed learning. The scale has demonstrated good reliability and construct validity across different educational settings.

For the purpose of interpretation, total SRSSDL scores were categorized into three levels: low readiness (scores 60–140),

moderate readiness (141–220), and high readiness (221–300), as per standard classification. In addition to the overall score, domain-specific scores were computed to assess variations across different components of SDL.

Prior to the main study, the questionnaire was pre-tested among a small group of students to ensure clarity, feasibility, and comprehension. Necessary modifications were made based on their feedback. Data collection was conducted in a classroom setting under the supervision of the investigators. Participants were briefed about the objectives of the study and were assured of confidentiality and anonymity. Written informed consent was obtained before administration of the questionnaire. Students were instructed to complete the questionnaire independently without discussion, and adequate time was provided to minimize response bias.

Completed questionnaires were checked for completeness and consistency before data entry. Data were entered into Microsoft Excel and subsequently analyzed using Statistical Package for the Social Sciences (SPSS) version 21.

Statistical Analysis

Descriptive statistics such as mean, standard deviation, median, and interquartile range were calculated for overall scores as well as domain-wise SRSSDL scores. Categorical variables were summarized using frequencies and percentages. Inferential statistical analysis was carried out to determine the association between SDL readiness categories and gender using the Chi-square test. A p-value of less than 0.05 was considered statistically significant.

RESULT

A total of 103 first-year MBBS students participated in the study. Of these, 49 (47.6%) were male and 54 (52.4%) were female, indicating a nearly equal gender distribution among the study participants.

The overall Self-Rating Scale for Self-Directed Learning (SRSSDL) scores

demonstrated that students had generally high readiness for self-directed learning. The mean SRSSDL score was 231.2 ± 21.8 , with a median score of 232 and an

interquartile range (IQR) of 220–247.5, suggesting a relatively symmetrical distribution of scores with moderate variability.

Table 1: Self Rating Scale for Self-Directed Learning (SRSSDL) scores among study subjects

Categories	Male	Female	Total
Moderate (141-220)	13(12.6%)	14(13.6%)	27(26.2%)
High (221-300)	36(34.9%)	40(38.9%)	76(73.8%)
Total	49(47.6%)	54(52.4%)	103(100%)

When categorized based on standard SRSSDL score ranges, the majority of students (73.8%) exhibited high SDL readiness, while 26.2% demonstrated moderate readiness. Notably, none of the participants fell into the low readiness category. Gender-wise distribution revealed that among male students, 36 (34.9%) had high SDL readiness and 13 (12.6%) had

moderate readiness. Similarly, among female students, 40 (38.9%) demonstrated high readiness and 14 (13.6%) had moderate readiness. This indicates that a greater proportion of both male and female students exhibited high SDL readiness, with comparable distribution across genders (Table 1).

Table 2: Mean and Median of Self Rating Scale for Self-Directed Learning scores among study subjects

Final SRSSDL Score	Mean $\pm$ SD	Inter-quartile Range	Median Score	Minimum score	Maximum score
Male	230.4 $\pm$ 22.1	220-246	231	163	272
Female	231.9 $\pm$ 21.7	220.25- 250.25	233	156	268
Total	231.2 $\pm$ 21.8	220-247.5	232	156	272

Further analysis of SRSSDL scores by gender showed that female students had a slightly higher mean score (231.9 ± 21.7) compared to male students (230.4 ± 22.1). The median scores were also marginally higher among females (233) than males (231). The interquartile ranges were similar

between the two groups, indicating comparable variability in scores. The minimum and maximum scores observed were 156 and 272 for the total sample, reflecting a broad distribution of SDL readiness levels (Table 2).

Table 3: Sub-dimensions scores of Self Rating Scale for Self-Directed Learning among study subjects

Sub-dimensions	Number of items	Mean $\pm$ SD	Inter-quartile Range	Median	Minimum	Maximum
Awareness	12	46.4 $\pm$ 5.1	43-49.5	46	32	59
Learning strategies	12	46.4 $\pm$ 5.2	43-50	47	27	56
Learning activities	12	45.8 $\pm$ 6.2	42-49	46	27	71
Evaluation	12	45.6 $\pm$ 5.9	42-49	46	31	60
Interpersonal skills	12	47.0 $\pm$ 5.6	43-51	47	32	60

Domain-wise analysis of SRSSDL scores revealed relatively uniform performance across all five sub-dimensions. The highest mean score was observed in the interpersonal skills domain (47.0 ± 5.6),

indicating strong abilities in communication, collaboration, and interaction among students. Awareness (46.4 ± 5.1) and learning strategies (46.4 ± 5.2) domains also demonstrated high mean

scores, suggesting that students were generally aware of their learning needs and employed appropriate strategies to achieve their learning goals. Learning activities showed a slightly lower mean score (45.8 ± 6.2), while the evaluation domain had the lowest mean score (45.6 ± 5.9), indicating

comparatively weaker performance in self-assessment and reflective learning skills. The median scores across all domains ranged from 46 to 47, with similar interquartile ranges, suggesting consistency in performance across different components of SDL (Table 3).

Table 4: Association of Self Rating Scale for Self-Directed Learning score (SRSSDL) with gender of students

Variable		SRSSDL Scores		P- Value
		Moderate	High	
Gender	Male	13	36	0.47
	Female	14	40	

The association between SDL readiness and gender was assessed using the Chi-square test. Among male students, 13 had moderate readiness and 36 had high readiness, while among female students, 14 had moderate readiness and 40 had high readiness. The difference in SDL readiness between male and female students was not statistically significant (χ^2 test, $p = 0.47$), indicating that gender did not have a significant influence on SDL readiness in this study population (Table 4).

DISCUSSION

The present study assessed self-directed learning (SDL) readiness among 103 first-year MBBS students using the Self-Rating Scale for Self-Directed Learning (SRSSDL). The mean total score was 231.2 ± 21.8 , with 73.8% of students demonstrating high readiness and 26.2% demonstrating moderate readiness; none were categorized as having low readiness. These findings indicate that most students in the present study demonstrated a favourable orientation towards independent learning at the beginning of their undergraduate medical education.

SDL readiness has been investigated among Indian medical students across different stages of undergraduate training, with considerable variation reported between institutions. Kar et al. assessed SDL readiness among fifth-semester MBBS students in South India and found a mean score of 140.4 ± 24.4 , with 19 (30%) of the

64 students assessed. The study also demonstrated a significant difference in SDL readiness by gender, with male students showing higher readiness than female students. [9] In a study of Phase I undergraduate medical students, Kausar and Berad reported a mean SDL readiness score of 146.18 ± 19.81 , with the majority of students demonstrating readiness for SDL. [12] Abraham et al. similarly examined SDL readiness among first-year undergraduate medical students in Karnataka and explored its relationship with academic performance in physiology, underscoring the relevance of assessing SDL readiness early in medical training. [13]

Evidence from studies involving students across different stages of medical education further emphasizes that SDL readiness may change during the course of undergraduate training. Premkumar et al. assessed 452 Indian medical students across different stages of the MBBS programme and reported an overall mean SDL readiness score of 212.91. The study found no significant effect of age or gender on SDL readiness but identified a significant decline in SDL readiness when students at admission were compared with students in subsequent years of training. The qualitative findings further highlighted the influence of curriculum, institutional culture, and the learning environment on SDL readiness. [14]

The importance of the measurement characteristics of SDL readiness instruments has also been demonstrated in Indian medical education research. Prabu Kumar et al. evaluated the internal structure of Fisher's Self-Directed Learning Readiness Scale among 750 recruited medical students, of whom 690 provided analyzable responses. Exploratory and confirmatory factor analyses supported a refined 36-item instrument comprising the domains of self-management, desire for learning, and self-control. [15] This work highlights the importance of using validated assessment tools when evaluating SDL readiness and provides further evidence that SDL is a multidimensional construct.

Recent studies have also demonstrated considerable heterogeneity in SDL readiness among Indian medical undergraduates. Naik et al. studied 295 medical undergraduates in Eastern India and found that 175 (59.3%) had low readiness for SDL. High SDL readiness was independently associated with good time-management skills. [16] Similarly, Palve and Palve evaluated SDL approaches among 1200 MBBS students from three Indian medical universities and identified low-, moderate-, and high-SDL profiles in 34.7%, 48.4%, and 16.9% of students, respectively. Higher SDL was associated with greater curriculum satisfaction, better understanding of SDL, and fewer perceived learning difficulties. [17] Taken together, these studies demonstrate that SDL readiness among Indian medical students is not uniform and may vary according to the stage of training, institutional environment, curriculum, and learner-related factors.

In the present study, female students had a slightly higher mean SRSSDL score than male students (231.9 ± 21.7 versus 230.4 ± 22.1); however, the association between gender and SDL readiness was not statistically significant ($p = 0.47$). This finding is consistent with the study by Premkumar et al., which found no significant effect of gender on SDL readiness. [14] However, it differs from the

findings of Kar et al., who reported significantly higher SDL readiness among male students. [9] These contrasting findings suggest that the relationship between gender and SDL readiness is not consistent across study populations and may be influenced by differences in the educational setting, learner characteristics, and study methodology. Therefore, gender alone is unlikely to adequately explain variation in SDL readiness.

The high overall level of SDL readiness observed in the present study is encouraging; however, readiness should be viewed as a foundation for the development of effective self-directed learning rather than as an endpoint.

CONCLUSION

The present study demonstrates that first-year MBBS students exhibit predominantly high self-directed learning readiness, reflecting their ability to adapt to competency-based medical education. While strengths were observed in interpersonal skills, awareness, and learning strategies, comparatively lower performance in the evaluation domain highlights the need to enhance reflective and self-assessment abilities. Structured interventions such as formative assessments, mentorship, and reflective exercises should be integrated early in the curriculum to strengthen these competencies and promote lifelong learning among future medical professionals.

Declaration by Authors

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