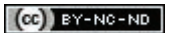


Readiness for Self-directed Learning amongst First-year Medical Undergraduates in the Northern Part of Kerala, India: A Quasi-experimental Study

SPARSHA DEEP E MANJUNATH¹, KAVANA G VENKATAPPA², GN GEETHA³

ABSTRACT

Introduction: The ability for independent learning is considered a critical component for university graduates to engage in continuous learning. Self-directed Learning (SDL) is necessary for learners to transition from passive to active learners. With the implementation of competency-based education, the concept of SDL is becoming increasingly important in undergraduate teaching. However, many students find the concept of self-learning unfamiliar, causing them undue anxiety. The improvement of lifelong learning thus depends critically on having an effective understanding of SDL skills.

Aim: To assess the readiness for SDL and emphasise the need for assessing students' readiness towards SDL.

Materials and Methods: This quasi-experimental study involved 100 first-year medical students who provided informed consent. Readiness for SDL was determined using the Fisher SDL Readiness Scale (SDLRS). An SDLRS score of >150 is considered

an acceptable level of SDL readiness. Six SDL sessions were conducted, and participants were assessed based on their performance in SDL. The study participants were grouped as high, mid, and low achievers, and their SDLRS scores were correlated. The data obtained were statistically analysed using descriptive and inferential statistics.

Results: The median SDLRS score was 149, with 54 (54%) of students scoring below the acceptable level of 150. The median scores for the subscale of self-management were statistically high (p -value <0.001) among the high achievers. The SDLRS scores and SDL session test scores of the three groups of students showed a significant moderate positive correlation (r -value=0.356, p -value <0.001).

Conclusion: The present study concluded that 54% of medical students scored below the acceptable level on the SDLRS, and there was a moderate positive correlation between SDLRS scores and SDL session test performance.

Keywords: Competency-based education, Medical students, Self-directed learning readiness scale

INTRODUCTION

Success in the medical field requires the ability to plan, coordinate, and oversee one's own learning experience [1]. Throughout their professional careers, medical students are expected to work in various contexts. Therefore, to maintain competence in the medical profession, doctors must continue learning and participate in continuing education. Being self-directed in learning is considered a critical component for university graduates to engage in continuous learning [2]. Self-directed learners willingly take on challenging assignments, practice what they've learned, acquire in-depth knowledge, and invest extra effort, all contributing to academic achievement [3,4]. According to Knowles MS, SDL is a process in which learners take responsibility for identifying their learning needs, creating learning objectives, finding learning resources, selecting and implementing learning strategies, and assessing their learning outcomes, either individually or with guidance from others [5]. The degree to which an individual possesses the attitude, skills, and personality traits required for SDL is known as SDL readiness [6]. The SDLRS, initially designed for nursing students by Fisher MJ et al., has been validated for use among medical students [3,4,7].

SDL is necessary for learners to transition from passive to active learners. However, many students find the concept of SDL unfamiliar, leading to anxiety. They have been conditioned to rely on teachers for guidance on what and how to learn, so when they are given the responsibility of determining their own learning goals and strategies, they often feel confused and worried [2]. Developing individual SDL abilities requires exposing learners to real challenges, encouraging self-reflection on their performance, and creating an educational

environment that supports SDL in clinical training scenarios [8]. SDL can be implemented through methods such as providing case-based scenarios, guiding learners with questions, and directing them to recommended learning resources for finding answers [9]. With the implementation of competency-based education, SDL is increasingly being incorporated into undergraduate teaching, highlighting its importance. Therefore, fostering lifelong learning greatly benefits from an effective understanding of SDL skills [10]. While everyone possesses some level of self-direction in learning, learners differ in their readiness for SDL [8]. It is crucial to assess the skills and attitudes associated with SDL before its implementation. Based on this background, the present study aimed to assess the readiness for SDL among first-year medical undergraduates using Fisher's SDLRS and emphasise the need for assessing students' readiness for SDL [3,4]. This need was assessed by correlating the scores obtained from conducting SDL sessions and tests with the readiness scale. The positive correlation in the results underscores the importance of assessing students' readiness towards SDL.

MATERIALS AND METHODS

The present study was a quasi-experimental study conducted on 100 first-year medical undergraduates from Government Medical College Kannur (previously called Academy of Medical Sciences, Pariyaram, Kannur) in Kerala, India. The study was conducted from September to November 2021, and all participants willingly agreed to take part. The study was conducted in accordance with ethical regulations, with study clearance obtained from the Institutional Ethics Committee (IEC) (No. G1.2747/12/ACME), and written informed consent was obtained.

The first-year batch at Government Medical College consisted of 100 MBBS students, and all 100 students were included in the study. No students were excluded because the aim was to analyse the readiness for SDL among the entire batch before its implementation. All participants were well-informed about the purpose of the study and the roles of both students and teachers in the study.

The SDLRS, designed by Fisher MJ et al., was used to assess the extent to which individuals perceive themselves as possessing the skills and attitudes associated with SDL [3,4]. The SDLRS consists of 40 items divided into three subscales: self-management (13 items), desire for learning (12 items), and self-control (15 items). Participants responded to each item on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Four items were negatively phrased and were reverse-scored for data analysis. The minimum score on the scale is 40, and the maximum score is 200. A score above 150 is considered an acceptable level of SDL readiness [3,4]. The SDLRS was administered to participants before the SDL session on the first day of the study.

To assess students' readiness for SDL, SDL sessions were conducted for core competencies in Physiology through small group discussions and written tests. The batch of students was divided into groups of 10 students each based on their marks in internals to ensure a combination of fast and slow learners in each group. The topics for SDL in Physiology were provided in advance on day 1 and day 16 of every month for a period of three months, with a total of six SDL sessions were conducted.

The assigned topics were not discussed in the classroom and belonged to core competencies. Students were instructed to prepare on their own and could seek help from their teachers if needed. On day 15 and day 28, small group discussions were conducted, where students studied the given topics (case-based scenarios) in their groups. Group members could share ideas or difficulties, and the facilitator could guide the group if needed. Each SDL session lasted one hour and required individual effort from students, as well as assistance from peers and facilitators during group discussions.

After each SDL session on day 15 and day 28, students individually answered written tests consisting of Multiple Choice Questions (MCQs) and Short Answer Questions (SAQs). The questions were validated by subject experts, and each SDL session was worth a total of 30 marks (20 marks for MCQs and 10 marks for SAQs). The average marks obtained from the six SDL sessions were considered the students' total final score, known as the SDL session test performance score (academic performance). Based on the average scores, the students were divided into three groups: high achievers (65% and above), medium achievers (between 36% and 65%), and low achievers (below 35%). The cut-off values were determined based on reference marks considered during unit tests and internals. All 100 students were encouraged to actively participate in the SDL sessions and attend all tests, emphasising the significance and benefits of SDL. Participation was monitored throughout the sessions.

The mean item scores for the three subscales of the SDLRS were estimated based on the Likert scale. The number of students in the high, medium, and low achiever groups was observed. The median scores of all SDLRS subscales were compared among the three groups. The average marks obtained in the six SDL sessions were then correlated with the SDLRS scores. The data obtained were statistically analysed.

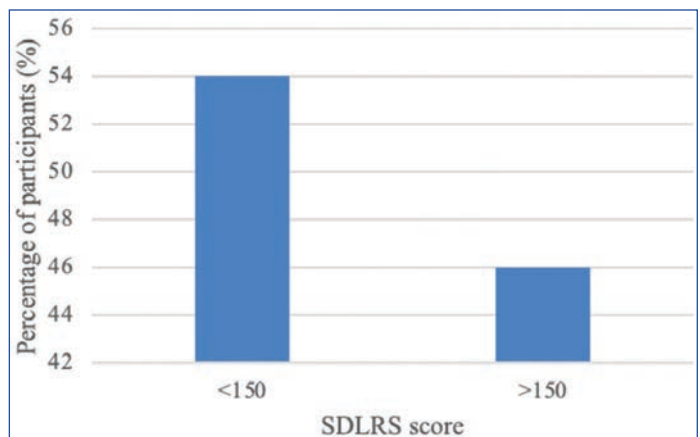
STATISTICAL ANALYSIS

The statistical analysis was conducted using Statistical Package for Social Sciences (SPSS) version 16.0. Descriptive statistics including the mean, standard deviation, median, and interquartile range were calculated. A p-value of <0.05 was considered statistically significant. The Kruskal-Wallis test was used to examine the association between the median scores of all subscales of the SDLRS among

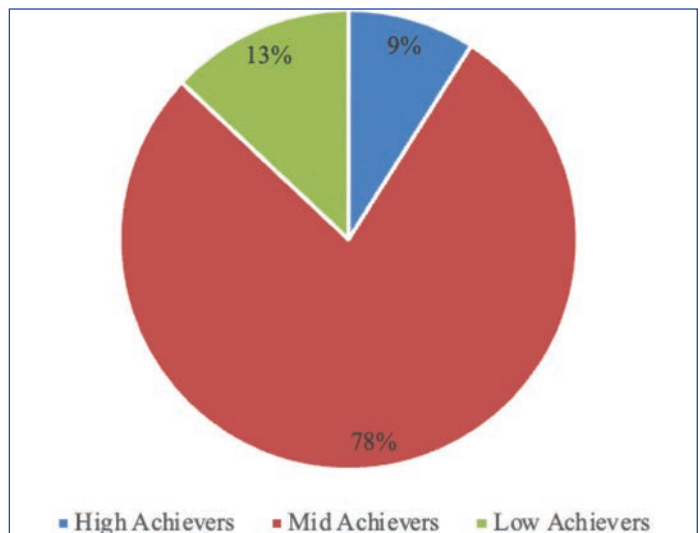
the three groups of students (high achievers, medium achievers, and low achievers). The SDLRS scores of these students were then correlated with their marks (SDL session test performance score) using Spearman's rho correlation coefficient.

RESULTS

A total of 100 students participated in the study, including 28 male and 72 female students. The mean SDLRS score was 147.02 ± 6.88 , and the median score was 149. Among the students, 46 (46%) scored above 150, while 54 (54%) had a score below 150 [Table/Fig-1]. The mean item scores for the subscales of self-management, desire for learning, and self-control were 3.32 ± 1.07 , 3.76 ± 0.97 , and 3.62 ± 0.16 , respectively. There were nine high achievers, 78 medium achievers, and 13 low achievers [Table/Fig-2]. The average SDL session test performance scores for high, medium, and low achievers were 20.25 ± 0.93 , 14.22 ± 2.90 , and 9.75 ± 1.76 , respectively.



[Table/Fig-1]: Bar diagram showing the distribution of participants (n=100) based on SDLRS scores.
SDLRS: Self-directed learning readiness scale



[Table/Fig-2]: Pie-chart showing the distribution of participants (n=100) based on marks obtained in SDL session test performance.
SDL: Self-directed learning; %: percentage of study participants

The median scores for self-control were higher than those for desire for learning and self-management in all three groups of students (high, medium, and low achievers). The mean and median scores of the SDLRS subscales showed significant differences in the self-management subscale for high achievers compared to medium and low achievers (p-value <0.001). However, there was no statistical significance observed for the desire for learning and self-control subscales [Table/Fig-3].

There was a moderate positive correlation between SDLRS scores and academic performance (SDL session test performance) among the three groups of students, which was statistically significant ($r=0.356$, p-value <0.001) [Table/Fig-4].

Variables	Self-management				Desire for learning				Self-control			
	HA	MA	LA	p-value	HA	MA	LA	p-value	HA	MA	LA	p-value
Mean±SD	49.11±3.55	43.6±4.32	41.84±3.23	<0.001**	48.33±2.73	47.47±4.37	46.76±4.73	0.7*	60.22±3.15	58.61±5.17	57.66±3.47	0.3*
Median	50	43	41	0.001**	49	48	48	0.59*	60	59	57	0.36*
Total median	44				48				59			

[Table/Fig-3]: Scores of subscales of SDLRS for high, mid, and low achievers.

HA: High achievers; MA: Mid achievers; LA: Low achievers; SD: Standard deviation

*p-value >0.05, not significant; **p-value <0.001, highly significant (Median scores; Kruskal Wallis test, Mean scores; one-way ANOVA analysis)

		SDLRS score	SDL session test score
SDLRS	Correlation coefficient	1.000	0.356**
	Sig. (2-tailed)	-	<0.001
	N	100	100
SDL test score	Correlation coefficient	0.356**	1.000
	Sig. (2-tailed)	<0.001	-
	N	100	100

[Table/Fig-4]: Spearman's correlation between SDLRS scores and academic performance (SDL session test score) of three groups of students.

**Correlation is significant at the 0.01 level (2-tailed)

SDLRS: Self-directed learning readiness scale; SDL: Self-directed learning

N=number of participants

DISCUSSION

The aim of this study was to highlight the importance of assessing students' readiness for SDL. The median SDLRS score in present study was found to be 149, with 46% of participants scoring above 150 and 54% below the acceptable level for SDL readiness. These findings were consistent with similar studies conducted by Devi V et al., and Kar SS et al., which reported median SDLRS scores of 132 and a mean score of 140.4±24.4, respectively, with 30% scoring above 150 [11,12]. Other studies, such as Abraham RR et al., and Shankar PR et al., reported slightly higher scores of 151.54 and 152.7, respectively, in first-year MBBS students [13,14]. Balamurugan S and Kumar H, found that medical students across all phases had a median SDLRS score of 146, with first-year and final-year students scoring higher than those in other years of study [15]. These variations in SDLRS scores may be attributed to differences in learning behaviour, personal qualities, teaching methods, and curricular design among the study participants.

The mean and median scores of SDLRS subscales in present study were higher for high achievers, followed by medium and low achievers. This finding was in line with the study by Abraham RR et al., [13]. The subscale of self-control exhibited a higher score compared to other subscales of SDLRS for all three groups of students, which aligns with findings from other studies [13,15] that also reported a high total median score for self-control. These results suggest the need to encourage students in their self-management abilities and motivate them to have a strong desire to learn. Students should be assisted in effectively managing their time, resources, and plans. The findings of this study support the recommendations of Devi V et al., Abraham RR et al., and Balamurugan S and Kumar H, who suggest that medical students require guidance in their self-management skills [11,13,15]. Mentoring can play a crucial role in fulfilling this need, providing support and guidance to students in achieving their learning objectives [16,17].

Furthermore, present study revealed a moderate positive correlation between SDLRS scores and academic performance, particularly SDL test performance scores. Higher SDLRS scores were associated with better SDL session test performance. This finding was consistent with previous research showing a positive relationship between academic achievement and SDLRS scores [11,15]. However, a study by Balamurugan S and Kumar H, found no statistically significant difference in mean scores between high and low SDLRS scorers, indicating that SDLRS evaluates the learning process while university examinations primarily assess subject knowledge [15]. Similar results were observed by Deyo ZM et al., and Premkumar K et al., [18,19].

In present study, authors conducted six SDL sessions and assessed the learning process through tests that accounted for academic performance. This approach allowed for a more comprehensive evaluation and correlation between SDLRS scores and academic performance, which was a strength of present study findings.

Limitation(s)

This study had several limitations. Firstly, it did not consider gender differences in the SDLRS score, which could have provided valuable insights into any potential variations in SDL readiness. Secondly, the study only included first-year medical students, which may limit the generalisability of the findings to students in other phases of their medical education. Additionally, the sample sizes across the three student groups (high achievers, medium achievers, and low achievers) were unequal, which may have influenced the observed variations in SDLRS scores.

CONCLUSION(S)

In conclusion, this study found that 54% of medical students had SDLRS scores below the acceptable level of readiness for SDL. There was also a moderate positive correlation between SDLRS scores and SDL session test performance. These findings highlight the importance of assessing students' readiness for SDL and implementing strategies to improve their readiness scores. By promoting SDL skills and fostering a culture of lifelong learning, students can enhance their academic performance and achieve success in their medical education.

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