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Original Research Article

Evaluation of self-directed learning readiness among undergraduates in a medical college in Tumakuru

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ABSTRACT

Background: Self-directed learning (SDL) enables medical students to take charge of their own learning objectives, process, methods and self-evaluation thereby prepares them as lifelong learners. SDL readiness (SDLR) is the measure of capabilities and attitudes of students individually towards involvement in SDL. This helps teachers to understand and take proper measures to improve students' SDLR.
Methods: A cross-sectional study was carried out among 120 medical undergraduate students in Sri Siddhartha medical college selected through multistage sampling. SDLR was assessed using validated Fisher's scale administered through Google form after obtaining informed consent. Data was analysed using statistical package for social sciences (SPSS) v 21.
Results: The mean age of students was 20.9±1.52 years, around 53% were males, 47% were females and 83% belonged to the Hindu religion. The mean SDLR score was 132±12.61. Taking the standard cut off score of 150, it was found that around 32% of the study participants showed high readiness and 68% showed low readiness. Statistically significant association was found between SDLR scores and percentage of marks scored in 12th class.
Conclusions: SDLR among medical undergraduates in the present study is low. There was no significant association with other socio-demographic except for percentage in 12th class. Introduction of different strategies of SDL like use of online courses, digital libraries, e-books, pre-recorded lectures and game-based learning might be necessary to motivate students to improve their SDLR.

Keywords: Self-directed learning readiness, Undergraduate students, Self directed learning, Medical college, Tumakuru

INTRODUCTION

Medical education expects students to imbibe and retain vast knowledge and its practical application under tense situations. While some concepts can be explained by the teachers, most of the medical curriculum has to be learnt solely by the efforts of the students. This has fostered the development of student-centered teaching-learning methods (TL methods). Also, the everchanging medical knowledge has made it inevitable for the medical professionals to be life-long learners. In this regard, the introduction of student-centered teaching methods in the Indian medical education through competency based medical education (CBME) from 2019 is a much needed and welcome addition.

The traditional didactic lectures have been upgraded to interactive lectures and various student-centered teaching-learning methods like small group teaching (SGT), SDL, demonstrate-observe-assist-perform (DOAP), student-doctor method have been introduced in CBME curriculum. These techniques will help the students to

effectively learn the concepts in appropriate domains like knowledge, skill, attitude and communication.

Among the newer teaching methods, SDL is a novel method to which the most of the Indian students are not exposed in their lower classes. Hence, there is a need to introduce and acquaint the students to the concept of SDL, its process, methods and the technique of making use of this TL method. SDL as defined by Knowles is "the process in which individuals take the initiative themselves with or without taking help of others for diagnosing their learning needs, formulating learning goals, identifying resources both human and material, selecting and implementing appropriate learning strategies and evaluating learning outcomes".[1]

SDL is still a novel and evolving type of learning method among Indian medical graduates, and with its implementation, students can develop an ability to effectively write assignments, access more information, understand new concepts and mould themselves as lifelong learners.[2,3] In SDL, the learner should be proactive and involve in all the steps of learning process such as acquiring knowledge, its assimilation and application and self-evaluation.[4]

CBME curriculum has proposed around 440 hours of SDL in the undergraduate medical course-30 hours in phase I, 88 hours in phase II, 137 hours in phase III part1 and 188 hours in phase III part 2 teaching schedules.[5] There is a gradual increase from the number of hours from phase I to phase III part 2, so that the students can learn and get used to SDL as they move to the higher phases. Hence, both the facilitators and learners have to familiarize themselves in conducting and participating on SDL respectively.

The role of SDL is to motivate students and generate interest in various topics, thereby enabling them to internalize the concepts and apply the resulting knowledge in problem-solving or decision making during their evaluation and assessment. Medical knowledge is advancing at a fast pace with developments in molecular biology to development of new drugs to updated treatment guidelines. So, the learners need to keep track with the expanding knowledge which help them develop into such as self-confident, enthusiastic, critical thinking medical professional with decision-making abilities.[6]

Research on SDL has found that self-directed learners are those who responsible for their own learning, and are willing to learn different strategies, involving the use of new technologies and applications.[7]

The use of SDL by students depends on various factors. To understand the various factors affecting the ability to develop SDL, the concept of SDLR has been introduced. "The extent to which an individual has the attitude, ability, skill and personality characteristics essential for SDL is known as SDL readiness". SDLR is an innate capacity and skill seen in all individuals. The individual aptitude for SDLR varies from person to person.[8] Not all students possess the same level of SDLR. Hence, it becomes important to assess the level of SDLR among students and to sensitize them before implementing SDL in the curriculum.[4]

Most of the medical boards throughout the world have introduced SDL so that medical students acquire the skills to continuously equip themselves with relevant knowledge in the ever-evolving world of medicine.[9] Similarly, SDL has been included in the CBME curriculum in India, but initially it was interpreted as lone-reading or instructing the students to refer to the books in an unattended manner. It was incorporated in the teaching schedule as an unusual learning session.[10] As mentioned earlier, 5-15% of allocated teaching hours across various subjects throughout the curriculum has been dedicated to SDL.[11] The national medical council (NMC) guidelines has specified the number of SDLs to be conducted in every subject.[12] SDL should be introduced from the first year of undergraduate programs with appropriate training so that students can adopt the approach of exploring their learning needs, resources to enhance their learning, and ability to work as a group as well as independently and evaluate themselves.[13]

Most of the studies on the level of SDLR among Indian medical students have been conducted on undergraduates of only one phase, hence the present study was conducted with the objective to find the SDL readiness among undergraduate students of all the phases and its association with their socio demographic characteristics.

METHODS

A cross-sectional study was carried out among medical undergraduate students of all phases in Sri Siddhartha medical college for 6 months from 2023 July to January 2024. The sample size required to conduct the study was calculated by taking the SDLR among undergraduates as 40% for high readiness in SDL observed in a previous study by Mufti et al.[3] Considering an absolute precision of 10%, and a confidence interval of 95%, the sample size was calculated using the formula $n=4pq/L^2$. Considering non-response rate of 20%, n=116 was obtained, which was rounded off to 120. The students were selected by multi stage sampling. First, number of students required from each phase was calculated using stratified sampling method (Table 1) and then students in each phase were selected by simple random sampling by generating required number of random numbers for each phase using MS excel.

The study tool used to assess SDLR was the Fisher's scale, which has been validated in India.[14] The scale consists of three domains-self-management, desire for learning and self control. It has 36 items divided as 10 items for self-management, 11 items for desire for learning and 15 for self-control. It is a five-point Likert

scale ranging from strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). The maximum attainable score was 180 and a score of 36 was the minimum. A cut-off score of 150 was taken to determine the level of SDLR based on previous studies. The score of ≥150 was taken as high readiness and <150 was taken as low readiness to SDL.

At the end of the theory class, the randomly selected students were requested to stay back. Those who were not willing to participate in the study were excluded. After obtaining informed consent, all participants who were present at the time of study were briefed about the study and administered semi-structured questionnaire to collect socio-demographic data and validated standard Fisher questionnaire on SDLR scale through Google forms. Information sheet was projected in the classroom. Any queries during filling the forms were addressed. The selected students who were absent on that day were listed and contacted through phone.

Data was downloaded from Google forms in MS excel spreadsheets. Continuous variables like age, total score and the scores of 3 SDLR domains were represented as mean and standard deviation, the categorical variables like gender, religion were represented as frequency and percentage. The Chi-square test was used to test any statistically significant association between sociodemographic variables and the SDLR scores. The p≤0.05 was taken as statistical significance. Data was analysed in SPSS v 21. Institutional ethical committee approval was obtained before the start of the study.

RESULTS

In this study, using SDLR scale, mean score was 132.15 with SD±12.61. Minimum score was 102 and maximum score was 159. Taking standard cut off score of 150, it was found that only 31.6% of showed high readiness and 68.4% showed low readiness (Figure 1). The mean scores for different domains were found as follows-for self-management 32.88±5.14, for desire for learning-41.53±5.01 and for self-control-56.62±6.44 (Table 2).

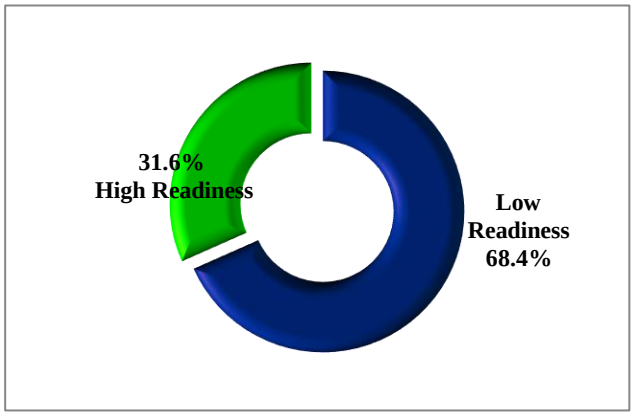

Figure 1: Doughnut graph showing distribution of students based on level of SDLR.

In this study, the mean age of students was 20.9 years with standard deviation of 1.52 years. Minimum age was 18 years and maximum age was 26 years. Among the 120 study participants, majority, 52.5% were females, 47.5% were males. A wide majority, 83.1% of the study participants belonged to the Hindu religion, 8.8% were Muslims and 5.6% were Christians and 2.4% belonged to other religions. 95.2% were aware of their curriculum. 96.8% of them were aware of SDL. The 18.3% had previously participated in quiz, 11.7% in debate, 5.8% in essay and 62.1% in other academic competitions. Around 8.3% had won in quiz, 3.3% in debate, 9.2% in essay and 79.2% in other competitions. The 22.5% of the students were involved in previous research activities (Table 3).

Around 85.0% had scored more than 80% in SSLC and II PUC and 31.5% had studied in state syllabus, 46.0% in CBSE and 18.5% in ICSE syllabus. 29.2% of them had scored >80% in previous academic year, 52.5% scored between 60-80%, 18.3% had scored between 50-60%.

In the present study, among phase I MBBS students, the mean SDLR score was 131.93±12.42, the lowest score being 108 and the highest score 155. Among phase II MBBS students, the mean SDLR score was 132.71±12.88, the lowest score was 108 and the highest score was 159. Phase III part 1 MBBS students showed a mean score of 130.27±12.62, the lowest score was 102 and the highest score was 159 and phase III part 2 MBBS students showed a mean score of 134.55±11.62, the lowest score was 109 and the highest score was 159. The results were almost uniform across the different phases of the undergraduate course (Figure 2).

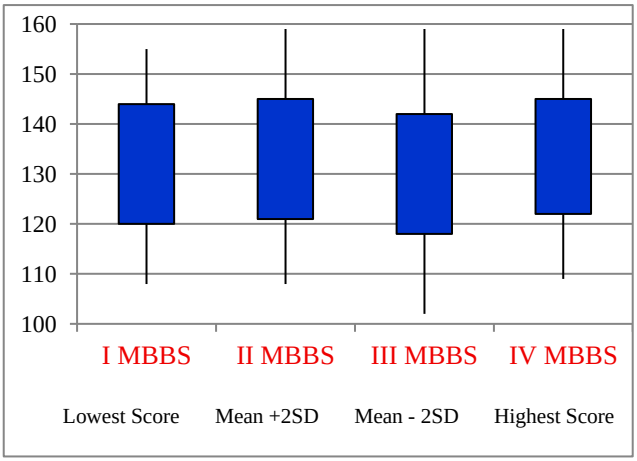

Figure 2: Box plot showing year-wise range of SDLR score.

The mean score of sub-domains among phase I MBBS were for self-management 32.36±5.01, desire for learning 41.87±5.44 and self-control 57.69±6.82, among phase II MBBS were for self-management 34.31±4.83, desire for learning 40.42±4.86 and self-control 55.42±7.01, among phase III part 1 MBBS were for self-management 32.27±5.31, desire for learning 41.67±4.88 and self-

control 56.32±6.01, among phase III part 2 MBBS were for self-management 34.11±4.65, desire for learning 46.66±4.65 and self-control 53.77±5.01 (Table 4). There is no statistically significant difference in the scores of sub-domains among different phases of study (Chi-square statistic was found to be 0.7135 and the p=0.99).

Statistically significant association was found between SDLR scores and percentage of marks scored in 12th class (p<0.05). There was no statistically significant association between SDLR scores and age, year of study, gender, type of schooling, participation in competitions and involvement in research projects (Table 5).

Table 1: Stratified random sampling.

Years	Total students	Calculation	Number of students
I MBBS	150	150/600×120	30
II MBBS	154	154/600×120	31
III MBBS	161	161/600×120	32
IV MBBS	135	135/600×120	27

Table 2: Socio-demographic characteristics of the study participants.

Variables		Frequency	Percentages (%)
Gender	Male	63	52.5
	Female	57	47.5
Religion	Hindu	103	85.8
	Muslim	7	5.8
	Christian	7	5.8
	Other	3	2.5
School syllabus	State syllabus	40	35.5
	CBSE	57	46.0
	ICSE	23	18.5
12th class percentage (%)	>80	97	80.8
	60-80	21	17.5
	50-60	2	1.7
Competitions	Quiz, debate and essay	51	42.5
	Other competitions	69	57.5
Research project	Yes	27	22.5
	No	93	77.5

Table 3: Distribution of study participants according to SDLR domains, (n=120).

SDLR domains	Mean±SD
SDLR score	132.15±12.61
Self-management	32.88±5.14
Desire for learning	41.53±5.01
Self-control	56.62±6.44

Table 4: Distribution of study participants according to SDLR domains, (n=120).

Year of study	Self-management	Desire for learning	Self-control
Phase I MBBS	32.36±5.01	41.87±5.44	57.69±6.85
Phase II MBBS	34.31±4.83	40.42±4.86	55.42±7.01
Phase III part 1 MBBS	32.27±5.31	41.67±4.88	56.32±6.01
Phase III part 1 MBBS	34.11±4.65	46.66±4.65	53.77±5.01

Table 5: Association of socio-demographic characteristics of study participants and SDLR scores, (n=120).

Variables		SDLR scores		Total, N (%)	Chi square statistic and p value
		<150 (n=82) (%)	≥150 (n=38) (%)		
Gender	Male	43	20	63 (52.5)	0.0004, 0.9843
	Female	39	18	57 (47.5)	
Religion	Hindu	70	33	103 (85.8)	2.4298, 0.1190
	Others	6	7	13 (5.8)	

Continued.

Variables		SDLR scores		Total, N (%)	Chi square statistic and p value
		<150 (n=82) (%)	≥150 (n=38) (%)		
Year of study	Phase I	20	10	30 (25.0)	1.4998, 0.6823
	Phase II	16	15	31 (25.8)	
	Phase III	18	14	32 (26.6)	
	Phase IV	16	11	27 (22.5	
School syllabus	State syllabus	27	13	40 (35.5)	1.6888, 0.4298
	CBSE	38	19	57 (46.0)	
	ICSE	12	11	23 (18.5)	
12th class percentage	≥80%	65	32	97 (80.8)	4.3926, 0.0360
	<80%	10	13	23 (19.1)	
Competitions	Quiz, debate and essay	33	18	51 (42.5)	1.6159, 0.2036
	Other competitions	49	20	69 (57.5)	
Research project	Yes	15	12	27 (22.5)	1.7325, 1.8840
	No	64	29	93 (77.5)	

DISCUSSION

The present study was conducted to assess the readiness of undergraduate medical students for SDL. It was seen that the majority of the students were having low readiness.

In this study, using SDLR scale, the mean score was 132.15 with SD±12.61. The minimum score was 102 and the maximum score was 159. Taking the standard cut off score of 150, it was found that only 31.6% of the undergraduate medical students showed high readiness and 68.4% showed low readiness. The mean scores for different domains were-self-management 32.88±5.14, for desire for learning 41.53±5.01 and for self-control 56.62±6.44. Statistically significant association was found between SDLR scores and percentage of marks scored in 12th class. There was no statistically significant association between SDLR scores and age, year of study, gender, type of schooling, participation in competitions and involvement in research projects. In a similar study by Kausar in Telangana in 2022, conducted to assess SDLR among medical undergraduates using Fisher SDLR questionnaire, showed a mean SDLR score of 146.18±19.81.[1] With the cut off score of 150, 53% students were in high readiness category; and 47% were in the low readiness category. The mean scores in the three domains were-self-management 42.63±6.13, desire for learning 44.36±7.91 and self-control 56.36±7.39 respectively.

In a study by Al Radini et al it was found that among medical students, the mean readiness score was 124.[6] The mean domains' scores for self-management, desire for learning, and self-control were 38, 38, and 48, respectively. The phase I and II students differed significantly in self-management domain (p=0.03) compared to phase III part 1 and part 2 students. The domains of self-control and desire for learning had a positive correlation if self-management was controlled, and self-control and self-management had a positive correlation if desire for learning was controlled (p<0.05).

A study on SDLR among 295 undergraduate students by Mufti et al found that about 40% had high readiness scores, 52.88% had moderate score and 7.12% had low score.[3] Around 45.52% of girls had high readiness as compared to 34.67% boys which meant that girls had higher readiness for SDL than boys.

In another study, Prabhakar et al found that among undergraduate students in a medical college in Tamil Nadu, that only 29% were aware of SDL.[2] Around 55% showed high readiness for SDL (>150). Females had higher readiness (60.9%) for SDL than males (39.1%) but the mean SDLR score was similar 152.5 versus 151.6 respectively. Phase III MBBS medical students had higher score (58.2%) than phase II MBBS medical students (48.8%), and there was a statistically significant difference in the mean SDLR score 149.9 versus 154.2 (p=0.011) among phase III and phase II MBBS students respectively.

In a study conducted by Walankar et al among undergraduate students, it was found that out of 288 participants, 60.76% students had moderate level SDLR, followed by 37.5% with high level and 1.74% with low level of SDL readiness.[8]

As SDL is a relatively new modality of learning, most of the studies have shown low readiness for SDL. Hence, it is imperative to train the students and the facilitators in planning, conducting and participation of different types of SDL sessions so that the same can be implemented effectively.

Limitations

The study is conducted only among a few selected students of each phase of MBBS of a medical college. The study should have been done on all the undergraduate students of the college so that the level of readiness for SDL is elicited for each student which would serve as a baseline to check further improvement in the scores. Also, the study could have involved students from other medical colleges in the region, which would give a comparison among SDLR levels and their associated factors. Further studies will be planned on these lines to involve all undergraduates of the medical college.

CONCLUSION

SDLR among majority of the medical undergraduates in the present study is low. There was no significant difference in SDLR and its subdomains of self-management, desire for learning and self-control among the students of all four phases of MBBS. Lack of previous experience and exposure to such a modality of teaching-learning strategy among both the students and facilitators may be one of the reasons for the low readiness. Techniques followed by students with high readiness should be further explored and pointers should be taken and incorporated in future SDL sessions. Deliberate planning and introduction of different strategies of SDL like use of online courses, digital libraries, e-books, pre-recorded lectures and game-based learning are necessary to motivate students to improve their SDLR.

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