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Original Research Article

Self-directed learning readiness among II and III MBBS students in a tertiary teaching hospital

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ABSTRACT

Background: Self-directed learning (SDL) is defined as an instructional stratagem where the medical students, with guidance from the teacher, choose what and how they will learn. The current study is aimed at finding the readiness for SDL among medical students and its association with their socio demographic characteristics.
Methods: An Institution based cross-sectional study was conducted among 100 II Bachelor of medicine and Bachelor of Surgery (MBBS) students and 100 III MBBS students of Theni Government Medical College. The readiness assessment of the students was found by using Fischer's 40 items SDL readiness score (SDLRS) instruments. The instrument has 40 items under three domains self-management (9 items), desire for learning (16 items) and self-control (15 items).
Results: Only 29% were aware of SDL. Around 55% showed high readiness for SDL (>150). Females had higher readiness for self-directed learning than males (60.9% versus 39.1%) but the mean SDLR score was similar 152.5 versus 151.6. III MBBS medical students had higher score than II MBBS medical students (58.2% versus 48.8%, mean SDLR score 149.9 versus 154.2, p=0.011). Demonstrating higher readiness for SDL was not associated with area of residence, stay, presence of doctor in the family, type of schooling, medium of school education, age and gender.
Conclusions: There is need of hour to address medical students' SDL skills to update their competencies. SDL readiness scales help medical faculty to assess students' learning capabilities and improve teaching learning strategies.

Keywords: Self-directed learning, Medical education, SDLRS

INTRODUCTION

Self-directed learning (SDL) is defined as a learning strategy where the students take charge of their own learning objectives, learning process, and learning methods and do self-evaluation with regard to the performance and outcomes. It is done with the guidance from the teacher or mentor.[1] It can be done independently or with group learning, but the general concept is that students take ownership of their learning. SDL is a vital form in adult learning.[2] The strategies of self-directed learning permit adult learners to survive better with their studies. SDL is widely used in the medical education and also allied health care professional education.[3] The Graduate Medical Education Regulations (GMR) 2019 encourages shared responsibility in learning with emphasis on knowledge and skill acquisition, assignment and task completion, living experiences, reflection and self-directed learning. Some of the learning skills that are mentioned in GMR 2019 are learning pedagogy, self-directed learning, learning strategies, community based learning, peer assisted learning, use of online resources, group learning, assessment driven learning, simulation based learning and learning from patients and other members of the health care team.[4] Dedicated time for SDL is provided in each subject in every phase. Around 98 hours in phase I, 85 hours in phase II, 75 hours in phase III, 76 hours in phase IV and hence a total of around 334 hours have been dedicated for SDL for a medical student in GMR 2019.[4] SDL is an evolving type of learning among Indian medical

graduates. The medical faculty should understand the students' SDL level in order to take proper action to help students to achieve their teaching objectives. Indian medical students differ from foreign medical students with respect to age, school education, learning style, entrance examination, selection into medical course and family dependence. Readiness for SDL is the measure of capabilities and attitudes of student individually towards involvement in SDL. Only very few studies have been conducted regarding SDL readiness among medical students in Tamil Nadu. The current study is aimed at finding the readiness for SDL among medical students and its association with their socio demographic characteristics.

METHODS

Study area

The study was conducted at Theni Government Medical College, Theni, Tamil Nadu.

Study population

All the 100 II MBBS and 100 III MBBS students of Theni Government Medical College.

Study duration

The study duration was for six months.

Study period

The study was conducted from May 2019 to October 2019.

Study design

The study was an Institution based cross-sectional analytical study.

Sampling design and sample size

The study follows universal sampling i.e. all the students of second and third year MBBS were considered for the study. So, the sample size was 100+100=200.

Study technique

The readiness assessment of the students was found by using Fischer's 40 items SDL Readiness score (SDLRS) instrument.[5] The instrument has 40 items under three domains. The three domains are: self-management (9 items); desire for learning (16 items) and self-control (15 items).

Each item was indicated on a 5-point Likert scale: 5=strongly agree, 4=agree, 3=unsure, 2=disagree, 1=strongly disagree.

The students were distributed the SDLRS instrument and their responses were noted.

Statistical analysis

All the data were entered to Microsoft (MS) excel 2010 and later the spread sheets were used for analysis. Statistical analysis was done using EpiInfo version 7.2 statistical software for windows.

Descriptive statistics were calculated as frequency, percentage, mean and standard deviation, median and inter-quartile range. For inferential statistics, independent sample t-test was used to compare II and III MBBS students' SDLRS. Readiness for SDL is categorized as high (>150), low (≤150). Logistic regression analysis was done to ascertain the relationship of SDLRS with other variables. Shapiro-Wilk test and Kolmogorov Smirnov tests was used to test whether the data follow normal distributions or not. For all the statistical tests of significance, $p<0.05$ was considered to reject the null hypothesis.

Ethical considerations

The purpose and nature of the study was explained to all the II and III MBBS students. Informed consent was obtained from them for participating in the study and giving their responses.

RESULTS

A total of 200 MBBS students were involved in the study. The students belonged to 19-22 years age group with majority 108 (54%) belonged to 20 years of age. The mean age of the students was: mean±Standrad deviation (SD)=20.26±0.85. Majority of the students were females 115 (57.5%) and the rest were males 85 (42.5%). With regard to area of residence of the students, around 136 (68.0%) reside in urban locality while 64 (32.0%) in rural areas. Around 172 (86.0%) students were hostellers and 28 (14.0%) were day scholars (Table 1).

Around 30 (15.0%) students were having presence of doctor in their family. Regarding the board of pre university schooling, around 151 (75.5%) were in state board, 45 (22.5%) in Central board of secondary education (CBSE) and 4 (2.0%) in Indian certificate of secondary education (ICSE).

Majority 171 (85.5%) have undergone their schooling in English medium and 29 (14.5%) in Tamil medium (Table 1).

About 195 (97.5%), 78 (39%), 22 (11%) of students had the habit of daily using smartphone, laptop or desktop and tablet respectively. Only 58 (29%) were aware of SDL. About 72 (36%), 15 (7.5%), 104 (52%), 55 (27.5%) and 54 (27%) had experienced in Google classroom, webinar,

online quiz contests, online educational course and online library or literature search respectively (Table 1).

Table 1: Demographic characteristics of students (n=200).

Characteristics	N (%)
Age of the students	
19	31 (15.5)
20	108 (54)
21	40 (20)
22	21 (10.5)
Gender of the students	
Male	85 (42.5)
Female	115 (57)
Area of residence	
Urban	136 (68)
Rural	64 (32)
Place of stay	
Hostel	172 (86)
Day scholar	28 (14)
Presence of doctor in family	
Yes	30 (15)
No	170 (85)
Board of pre university schooling	
State board	151 (75.5)
CBSE	45 (22.5)
ICSE	4 (2)
Language of instruction at school	
English	171 (85.5)
Tamil	29 (14.5)
Use smartphone daily	
Yes	195 (97.5)
No	5 (2.5)
Use laptop / desktop daily	
Yes	78 (39)
No	122 (61)
Use tablet daily	
Yes	22 (11)
No	178 (89)
Aware of SDL	
Yes	58 (29)
No	142 (71)
Experienced in any of the following	
Google classroom	72 (36)
Webinar	15 (7.5)
Online quiz contests	104 (52)
Online education course	55 (27.5)
Online library/literature search	54 (27)

After using the SDLRS instrument on students it was found that the mean±SD scores for domain self-management was 32.05±4.0, desire for learning was 61.54±4.1, self-control was 58.55±6.0 respectively.

The overall mean SDLRS score was 152.13±11.0 (table 2). The minimum and maximum attained scores were shown in (Table 2 and Figure 2).

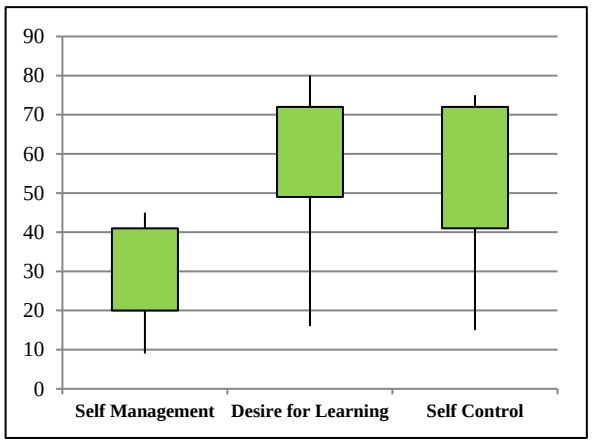

Figure 1: Scores of three domains (n=200).

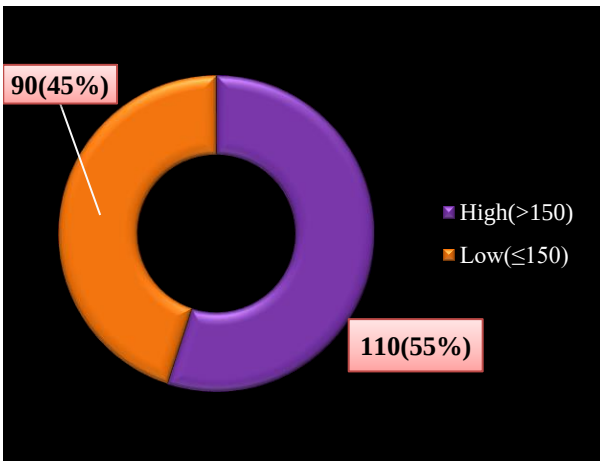

Figure 2: High and low SDLR (n=200).

Only 29% of students were aware of SDL. Around 55% of students showed high readiness for SDL (>150). More females had higher readiness for SDL than males (60.9% versus 39.1%) and the mean SDLR score was also higher 152.5 versus 149.04. Female students scored higher in all three domains than male students (Table 4).

III MBBS medical students had higher score than II MBBS medical students (58.2% versus 48.8%, mean SDLR score 149.97 versus 154.28). Demonstrating higher readiness for SDL was not associated with area of residence, stay, presence of doctor in the family, type of schooling, medium of school education, age and gender in bivariate logistic regression (Table 3 and 4). In this study, the experiences of students in Google classroom, webinar, online quiz contests, online educational course and online library or literature search respectively were found to be not associated with SDL readiness.

Daily usage of smartphones or laptops or tablets did not have any association with SDL readiness (Table 3).

Table 2: Domain and their respective score of students (n=200).

Domains	Minimum attainable score	Maximum attainable score	Minimum attained score	Maximum attained score	Mean±SD
Self-management	9	45	20	41	32.05±4.0
Desire for learning	16	80	49	72	61.54±4.1
Self-control	15	75	41	72	58.55±6.0
SDLR score	40	200	117	177	152.13±11.0

Table 3: Bivariate logistic regression analysis of high Self-directed learning readiness (SDLR score >150) with various factors (n=200).

Independent variable	SDLRS (>150) N (%)	OR (95% CI)	P value
Age of student (continuous variable)	-	0.971 (0.697-1.351)	0.859
Gender of student			
Male (85)	43 (50.6)	0.733 (0.417-1.289)	0.281
Female (115)	67 (58.3)	1	
Academic year			
III MBBS (100)	64 (64)	2.087 (1.184-3.679)	0.011*
II MBBS (100)	46 (46)	1	
Area of residence			
Rural (64)	31 (48.4)	0.678 (0.373-1.231)	0.202
Urban (136)	79 (58.1)	1	
Place of stay			
Hosteller (172)	97 (56.4)	1.492 (0.670-3.326)	0.328
Day scholar (28)	13 (46.4)	1	
Presence of doctor in family			
Yes (30)	18 (60)	1.272 (0.577-2.803)	0.551
No (170)	92 (54.1)	1	
Board of pre university schooling			
CBSE (45)	22 (48.9)	0.763 (0.392-1.486)	0.426
ICSE (4)	4 (100)	128553 (0.00-∞)	0.999
State board (151)	84 (55.6)	1	
Language of instruction at school			
English (171)	90 (50.6)	0.500 (0.215-1.61)	0.107
Tamil (29)	20 (69.0)	1	
Use smartphone daily			
Yes (195)	108 (55.4)	1.862 (0.304-11.393)	0.501
No (5)	02 (40)	1	
Use laptop/desktop daily			
Yes (78)	62 (50.8)	1.548 (0.869-2.760)	0.138
No (122)	48 (61.5)	1	
Use tablet daily			
Yes (22)	11 (50)	0.798 (0.329-1.936)	0.618
No (178)	99 (55.6)	1	
Aware of SDL			
Yes (58)	34 (58.6)	1.230 (0.663-2.282)	0.511
No (142)	76 (53.5)	1	
Google classroom experience			
Yes (72)	42 (58.3)	1.235 (0.89-2.213)	0.478
No (128)	68 (53.1)	1	
Webinar experience			
Yes (15)	12 (80)	3.551 (0.970-12.99)	0.056
No (185)	98 (53)	1	

Continued.

Independent variable	SDLRS (>150) N (%)	OR (95% CI)	P value
Online quiz experience			
Yes (104)	61 (58.7)	1.361 (0.778-2.380)	0.280
No (96)	49 (51)	1	
Online educational course experience			
Yes (55)	27 (49.1)	0.720 (0.386-1.343)	0.302
No (145)	83 (57.2)	1	
Online library/literature search experience			
Yes (54)	35 (64.8)	1.744 (0.914-3.327)	0.092
No (146)	75 (51.4)	1	

Table 4: Descriptive statistics of SDLR scores among different variables (n=200).

Independent variables	Self-management (mean)	Desire for learning (mean)	Self control (mean)	SDLRS (Mean±SD)
Gender				
Male (85)	31.98	61.13	58.51	149±11.9
Female (115)	32.10	61.83	58.57	152.50±10.4
Academic year				
III MBBS (100)	32.69	62.08	59.51	154.28±11.2
II MBBS (100)	31.40	60.99	57.58	149.97±10.5
Area of residence				
Rural (64)	31.98	60.63	57.50	150.11±12.5
Urban (136)	32.07	61.96	59.04	153.07±10.2
Place of stay				
Hosteller (172)	31.83	61.65	58.69	152.16±10.4
Day scholar (28)	33.39	60.86	57.68	151.93±14.7
Presence of doctor in family				
Yes (30)	33.53	60.67	59.53	153.73±9.9
No (170)	31.78	61.69	58.53	151.84±11.2
Board of pre university schooling				
CBSE (45)	31.20	61.78	57.13	150.11±9.2
ICSE (4)	36.75	63	60.50	160.25±0.5
State board (151)	32.17	61.42	58.91	150.64±11.6
Language of instruction at school				
English (171)	31.75	61.20	57.96	150.91±10.7
Tamil (29)	33.79	63.48	62	159.28±10.3
Use smartphone daily				
Yes (195)	32.11	61.56	58.63	152.30±10.8
No (5)	29.4	60.40	55.40	145.20±18.0
Use laptop/desktop daily				
Yes (78)	32.91	62.09	59.51	154.51±12.3
No (122)	31.49	61.18	57.93	150.60±9.9
Use tablet daily				
Yes (22)	34.91	62.86	59.64	157.41±13.4
No (178)	31.69	61.37	58.41	151.47±10.6
Aware of SDL				
Yes (58)	33.09	62.60	58.67	14.36±13.0
No (142)	31.62	61.10	58.49	151.21±10.6
Google classroom experience				
Yes (72)	32.56	62.07	58.11	152.74±10.6
No (128)	31.76	61.23	58.79	151.78±11.3

Continued.

Independent variables	Self-management (mean)	Desire for learning (mean)	Self control (mean)	SDLRS (Mean±SD)
Webinar experience				
Yes (15)	34.47	65.60	61.93	162.00±11.5
No (185)	31.85	61.21	58.27	151.31±10.7
Online quiz experience				
Yes (104)	32.38	61.41	57.88	151.66±10.5
No (96)	31.69	61.67	59.27	152.63±11.7
Online educational course experience				
Yes (55)	31.51	61.73	58.00	151.24±11.9
No (145)	32.25	61.46	58.75	152.46±10.7
Online library/literature search experience				
Yes (54)	32.59	62.81	58.52	153.93±12.8
No (146)	31.84	61.06	58.55	151.46±10.3

DISCUSSION

In the present study the mean age of students was 20.26 years. Similarly, the mean age reported in various studies such as 20 years in Bijaya et al, 18.8 years in Gyawali et al, 17.5 years in Premkumar et al and 21.06 years in Subramaniam et al respectively. The current study reported that majority of the students were females (57.5%) which was identical in similar studies like Balamurugan et al (61%), Bijaya et al (58.4%), Gyawali et al (57%), Madhavi et al (57.3%), Premkumar et al (56.95%), Shirke et al (72.1%) and Subramaniam et al (54.4%) respectively. In contrast, a study by Kar et al showed higher proportion of male students (60.9%).[6-14]

With look to area of residence of the students, majority (68.0%) reside in urban locality in the current study. Similar scenario was seen in Bijaya et al (76.5%), Kar et al (96.8%) and Madhavi et al (72.6%) of students reside in urban locality. In contrast, the study done by Subramaniam et al (77.7%) of students resides had come from rural locality. With respect to the stay, majority (86.0%) students were hostellers and (14.0%) were day scholars in the current study. Similar picture was seen in Kar et al (71.9%), Madhavi et al (68.9%) and Subramaniam et al (85.4%) respectively whereas in study by Bijaya et al (52.3%) majority of students were day scholars.

In the current study, about 15% of students were having presence of doctor or physician in their family. This proportion was seen in different ranges as 14.6%, 16.55%, 25%, 38.4% and 51.6% in studies conducted by Madhavi et al, Subramaniam et al, Bijaya et al, Shirke et al and Kar et al respectively. Regarding the board of pre university schooling, about (75.5%) of students had their schooling in State board and the rest in central board of secondary education (CBSE) and Indian certificate of secondary education (ICSE) syllabus. This was similarly seen in studies by Bijaya et al (88.1%), Madhavi et al (72%) and Subramaniam et al (89.3%) whereas in the studies by Kar et al (51.6%) and Shirke et al (67.4%) of students had their schooling in Central board of secondary education (CBSE) syllabus respectively.

In the existing study, the mean SDLR score among study participants was 152.[13] Similarly studies done in other parts of India showed mean SDLR score as Abraham et al (151.54), Bijaya et al (147.8±13.2), Gyawali et al (157.8±15.8), Balamurugan et al (144.6±17.4), Kar et al (140.4±24.4), Madhavi et al (145.1±18.1), Shirke et al (148.1±13.6), Subramaniam et al (141.9±22.6) respectively. Study conducted by Premkumar et al showed relatively higher mean SDLR score of 212.91 than that of other studies. In the present study about 55% of students showed high readiness for SDL (>150) whereas studies conducted by Abraham et al and Gyawali et al showed 60.2% and 72.72% of students having high readiness for SDL respectively. Studies conducted by Bijaya et al (44%), Balamurugan et al (38%), Kar et al (30%), Madhavi et al (36%), Subramaniam et al (39.81%) showed lower proportion of students having high readiness for SDL.

Female students had high readiness for SDL when compared to male students in the current study. Same scenario was seen in studies done by Gyawali et al and Balamurugan et al whereas in contrast male students had high readiness for SDL in studies by Bijaya et al, Kar et al, Madhavi et al, Shirke et al and Subramaniam et al respectively.

In the present study the only factor that had statistically significant association with high readiness of SDL was the academic year of the students. III MBBS medical students had higher score than II MBBS medical students (58.2% versus 48.8%, mean SDLR score 149.97 versus 154.28, p=0.011) in bivariate logistic regression model. Moreover, there was no significant difference in domain specific scores with respect to any independent variables. In study by Bijaya et al, male students and day scholars showed significant association with high SDLR whereas study by Balamurugan et al reported female gender to have high SDLR. In study by Shirke et al, students with CBSE

schooling, presence of doctor or physician in their family, distance of residence from institution <100 km and those with interest in paediatrics subject showed high SDLR. In study by Kar et al, male students had high SDLR. In the same study, hostellers had high scores for self-management domain and day scholars had high scores for desire for learning domain respectively. Studies by Madhavi et al and Premkumar et al did not report any significant association between high SDLR and other variables.

Table 5: Comparison of SDLR score in various Indian studies.

Studies	SDLR score (mean±SD)
Abraham et al[6]	151.54
Premkumar et al[7]	212.91
Bijaya et al[8]	147.8±13.2
Gyawali et al[9]	157.8±15.8
Balamurugan et al[10]	144.6±17.4
Kar et al[11]	140.4±24.4
Madhavi et al[12]	145.1±18.1
Shirke et al[13]	148.1±13.6
Subramaniam et al[14]	141.9±22.6
Current study	152.1±11.0

CONCLUSION

SDL has become a mandatory and one of the significant processes in teaching learning methods. There is a need of the hour to address medical students' SDL skills, and methods and to update their competencies. SDL readiness scales help the medical faculty to assess students' learning capabilities and improve teaching learning strategies. These data can be useful resource for any curriculum development programme. The smaller sample size can be a limitation to the study which can be a factor for statistical significances during analysis.

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