Self-directed Learning Readiness (SDLR) among Medical Students: A Questionnaire-Based Study from an Indian Medical School

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Abstract

Self-directed learning (SDL) prepares medical students for life-long learning which is required to keep up with the continuous advances in medicine and technology. Most of the medical schools in India adopt teacher-driven learning. This prompted us to assess the readiness for SDL among undergraduate medical students in different years of study and to find out if there is any correlation with academic performance. The newly developed 40-item 3-factor Fisher self-directed learning readiness scale (SDLRS) that has been construct and content validated among health-care students was used. Cronbach's alpha co-efficient was >0.8. The mean and the median SDLRS scores (n=440) were 144.6 (SD=17.4) and 146 respectively. Overall, 38% scored above 150 implying high readiness for SDL. Scores were higher among girls compared to boys (146.7 and 141.35; p=0.002); among first (145.2) and final year students (146.3) compared to other year students (144.4 and 142.1); and for self-control (56.9) and desire for learning (45) attributes compared to self-management (42.8). Though the percentage marks in exams were higher among high readiness group (SDLRS score >150) the difference was not statistically significant implying that SDLRS is related to the learning process whereas exams assess content knowledge. However, other tools such as 360 degree feedback could assess the correlation better.

Keywords: Self-directed learning readiness, Medical Students, India

Introduction

Malcolm Knowles describes learning as a continuum with teacher-directed (pedagogical) learning at one end and self-directed (androgogical) at the other end. He provides one of the most commonly cited and comprehensive definitions of Self Directed Learning (SDL): 'SDL is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.' (Murad *et al.*, 2010; Williams *et al.*, 2013).

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Self-directed learning has been advocated for the efficient and effective training of medical students, residents, practicing doctors, nurses and other health care professionals. Self-directed lifelong learning is an integral component of medical professionalism. The concept that "physicians must be committed to lifelong learning" was described in a physician charter endorsed by over 120 national and international organizations. In addition, documentation of self-directed lifelong learning is now required for residency training, board certification, and maintenance of certification in many countries (Premkumar *et al.*, 2013).

The SDLR Scale is a validated tool used to measure the degree to which an individual possesses the attitudes, abilities, and personality characteristics necessary for self-directed learning. Two validated SDLRSs exist to assess readiness for self-directed learning. These scales were developed by Guglielmino in 1977 and Fisher in 2001 (William *et al.*, 2013) and have been used to study self-directed learning in medical, nursing, pharmacy, and non-medical education (Shankar *et al.*, 2011; Li *et al.*, 2010). Fisher established construct validity and internal consistency through a pilot study of undergraduate nursing students. Content validity was determined using Delphi

surveys. Fisher used principal component factor analysis to search for the underlying components of all items of the scale, and discovered 3 components based on Garrison's self-directed learning principles: self-management, desire for learning, and self-control. Fisher's 40-item scale has a 200-point maximum, and a score greater than 150 indicates high readiness for self-directed learning (Fisher *et al.*, 2001 & 2010). The Fisher scale has since been content and construct validated among medical students (Shankar *et al.*, 2011; Li *et al.*, 2010; Henry *et al.*, 2009) and was used in our present study.

Objectives

Self-directed learning, though elaborated theoretically, is not emphasised in most of Indian medical programmes which prompted us to do this study. The objectives of the study were to assess the Self-directed Learning Readiness (SDLR) among medical students using Fisher SDLR scale, to compare the SDLR scores among MBBS students of different years of study and to correlate the SDLR scores with measures of academic performance and demographic factors.

Methodology

a) Study Design: Cross-sectional paper-based questionnaire study involving undergraduate medical students in different years of study.

b) Participant: inclusion criteria: Students enrolled for MBBS at our Medical School (from first year to final year) who expressed willingness to take part in the study. Exclusion criteria: Students who were absent at the time of survey or those who declined to be included in the study and those who provided incomplete details.

c) Instrument: Self-directed learning Readiness Scale (SDLRS) designed by Fisher *et al.* (2001) to assess students' readiness for self–directed learning, was utilised. Written permission to use the same had been obtained. It has 40 items consisting of three sub-scales: 'Self–management', 'Desire for learning' and 'Self–control' and were rated on a 5- point Likert scale (1=strongly disagree and 5= strongly agree). Four questions were negatively phrased and the scores were reversed for computation. Demographic data such as age, gender, year of study, etc., and measures of academic performance (average percentage marks

obtained at the last attended University) were collected.

d) Procedure: Ethics and institutional approval were obtained prior to the study. At the end of a lecture class, in their respective programmes, students were invited to participate. Written instructions were given. Students were informed that participation in the study was voluntary and they could choose to remain anonymous. Students were requested to be honest in their responses. A non-teaching staff member facilitated the process of administration and collection of the questionnaire.

e) Data analysis: Descriptive analysis and ANOVA were performed using XLstat software to statistically evaluate the results. P value of <0.05 was considered statistically significant. Cronbach's alpha was computed for the scale and sub-scales.

Results

Participant profile

The questionnaire was distributed to all students enrolled in the MBBS course of our Medical College during the period of the study. Out of 544 students, 440 provided a complete set of responses to all the items which were analyzed (81%). The age of the participants ranged from 17 to 21 years and included 268 (61%) females and 172 (39%) males. The cohort comprised first year (n=116), second year (n=153), third year (n=77) and fourth year (n=94) students.

SDLRS scores

The maximum possible score was 200. Scores above 150 was used to indicate high readiness for self-directed learning. The mean and median SDLRS scores for the entire study population was 144.6 (SD= 17.4) and 146 respectively. The SDLRS scores were higher among females compared to males and this difference was statistically significant (p=0.002). Overall, 38% had scores >150; highest were obtained by fourth (42.3%) and first year (39.7%) students. The results are illustrated in Tables 1A and 1B.

SDLR subscales

The Fisher scale has a 3-factor structure reflecting the three attributes of self-directed learning: 'Self-management' (13 items with a maximum score of 65), 'Self-control' (15 items with a maximum score of 75) and 'Desire for

learning' (12 items with a maximum score of 60). The score was highest for self-control - 76% (mean=56.9, SD=7.8; median=57) followed by desire for learning - 75% (mean=45, SD= 6.2; median=46) and the least for self-management - 66% (mean=42.8, SD= 6.4; median=43). In all the subscales, girls scored more compared to boys; the difference being statistically significant for self-control (p=0.0001) and desire for learning (p=0.01) subgroups and not so for self-management (p=0.21). The results are illustrated in Tables 2 and 3.

Academic performance

Academic performance as indicated by the average marks in the last University/Board examinations, was correlated with the SDLRS scores. The results are indicated in Table 5. There was no statistically significant difference between the mean percentage marks of the high readiness group (SDLRS Score >150) and the low readiness group (p>0.05).

Internal consistency

The internal consistency of the questionnaire was estimated by computing Cronbach's alpha coefficient. Cronbach's alpha of >0.8 is considered an acceptable level of internal consistency (Fisher et al.,2010). Cronbach's alpha co-efficients for the scale and subscales are given in Table 4.

Table 1 A: SDLRS Scores, Year-Wise

Cohort	Mean (SD)	Median	% with score >150
Year 1(n=116)	145.2 (16.7)	148	39.7
Year 2 (n=153)	144.4 (16.1)	145	36.6
Year 3 (n=77)	142.1 (19.7)	144	32.5
Year 4 (n=94)	146.3 (18.5)	146.5	42.3
Total (n=440)	*144.6 (17.4)*	*146*	*38*

Table 1 B: SDLRS Scores, Gender-Wise

Cohort	Mean (SD)	Median	% with score >150	p value
Men (n=172)	141.35(19.16)	142	32.6	0.002
Women (n=268)	146.70 (15.9)	148	41.4	

Table 2: Subscale Scores

Subscale	Mean (SD)			Median		
	Total	Boys	Girls	Total	Boys	Girls
Self-management	42.8 (6.4)	42.3 (6.5)	43.1 (6.4)	43	42	43
Self-control	56.9 (7.8)	55.0 (8.3)	58.1 (7.2)	57	56	58
Desire for learning	45 (6.2)	44 (7.1)	45.6 (5.4)	46	45	46

Table 3: Scores for Individual Items

Item	Mean	SD	Median	Mode	Minimum	Maximum
Q1	3.2	1.1	3.0	4.0	1.0	5.0
Q2	3.5	1.1	4.0	4.0	1.0	5.0
Q3	2.8	1.2	3.0	2.0	1.0	5.0
Q4	3.3	1.0	3.0	3.0	1.0	5.0
Q5	2.7	1.2	3.0	3.0	1.0	5.0
Q6	3.8	1.1	4.0	4.0	1.0	5.0
Q7	3.2	1.1	3.0	4.0	1.0	5.0
Q8	3.5	1.1	4.0	4.0	1.0	5.0
Q9	3.8	1.0	4.0	4.0	1.0	5.0
Q10	3.4	1.0	3.0	4.0	1.0	5.0
Q11	3.8	1.0	4.0	4.0	1.0	5.0
Q12	4.0	1.0	4.0	4.0	1.0	5.0
Q13	3.8	1.0	4.0	4.0	1.0	5.0
Q14	3.5	1.2	4.0	4.0	1.0	5.0
Q15	3.8	2.2	4.0	4.0	1.0	44.0
Q16	3.6	1.0	4.0	4.0	1.0	5.0
Q17	3.9	1.0	4.0	4.0	1.0	5.0
Q18	3.8	1.0	4.0	4.0	1.0	5.0
Q19	3.8	1.0	4.0	4.0	1.0	5.0
Q20	4.0	1.0	4.0	4.0	1.0	5.0
Q21	3.8	1.0	4.0	4.0	1.0	5.0
Q22	3.4	1.2	4.0	4.0	1.0	5.0
Q23	3.8	1.0	4.0	4.0	1.0	5.0
Q24	3.8	1.0	4.0	4.0	1.0	5.0
Q25	4.1	0.9	4.0	4.0	1.0	5.0
Q26	4.1	0.9	4.0	4.0	1.0	5.0
Q27	3.0	1.2	3.0	3.0	1.0	5.0
Q28	3.6	1.1	4.0	4.0	1.0	5.0
Q29	3.7	1.0	4.0	4.0	1.0	5.0
Q30	2.6	1.1	3.0	2.0	1.0	5.0
Q31	3.6	0.9	4.0	4.0	1.0	5.0
Q32	3.4	0.9	3.0	3.0	1.0	5.0
Q33	3.6	0.9	4.0	4.0	1.0	5.0
Q34	3.6	0.9	4.0	4.0	1.0	5.0
Q35	4.0	0.9	4.0	4.0	1.0	5.0
Q36	3.8	0.9	4.0	4.0	1.0	5.0
Q37	3.7	0.9	4.0	4.0	1.0	5.0
Q38	4.0	0.9	4.0	4.0	1.0	5.0
Q39	4.1	0.9	4.0	4.0	1.0	5.0
Q40	3.5	1.3	4.0	5.0	1.0	5.0

Table 4: Test for Internal Consistency

Item	Cronbach's alpha
All items (n=40)	0.92
Self-management (n=13)	0.79
Self-control (n=14)	0.93
Desire for learning (n=12)	0.89

Table 5: Correlation Between SDLRS Scores and Academic Performance

Cohort	Mean percentage marks in the last University exam		p value
	High readiness for SDL (SDLRS score >150)	Low readiness for SDL (SDLRS score <150)	
Year 1	88.9 (5.8)	86.8(8.2)	0.12
Year 2	71.3(8.2)	68.2(10.1)	0.2
Year 3	68.5(5.1)	64.3(7.5)	0.12
Year 4	62.8(9.3)	62.5(8)	0.92

Discussion

The mean and median SDLRS scores of 440 medical students in this study was 144.6 (± 2SD, 34.8) and 146 respectively. 38% of the respondents scored >150 and were categorised as 'highly ready for SDL'. The scores were comparable to other studies like a South Indian study at JIPMER by Kar *et al.*, (2014) who reported a mean SDLRS score of 140.4 ± 24.4, with 30% in the high readiness category and a Manipal study by Vasudha Devi *et al.*, (2012) who reported a median SDLR score of 132. Similar but slightly higher scores were reported by Abraham *et al.*, 2011 (51.4 among first-year MBBS students at Manipal) and Shankar *et al.*, 2011 (152.7 in first year MBBS students at Nepal). Western schools report a higher score. In a study at the University of Texas by Shokar *et al.* (2002), the mean SDLRS score of third-year medical students was found to be significantly higher than that of general adult learners. The mean SDLRS score of 148.6 (± 13.8) was reported by Deyo *et al.* (2011) among first-year pharmacy candidates at the University of Maryland. The variations in the SDLRS scores among different study groups may be attributed to the differences in students' learning behaviour and personal attributes and also the differences in teaching/learning methodology and curricular design.

An interesting observation in this study was that high scores were obtained by the first year students (those entering into the course) and the fourth year students (those exiting the course) compared to the students of other years of study. This may reflect the changes in attitude and zeal of the medical students at the time of entering and completing the course. Also, overall SDLRS scores were higher among girls than boys.

Among the three attributes of SDL, subscale scores were highest for self-control and desire for learning compared to self-management.

This trend is similar to studies elsewhere (Shankar *et al.*, 2011) and emphasises the need to impart this skill to medical students.

Academic performance was assessed by average percentage mark (self-declared) in the last attended University exam. No statistically significant difference in the mean marks between the high and low SDLRS scorers was observed. Similar results were observed by Deyo *et al.*, 2011 and Premkumar *et al.*, 2013. This may be because the University examinations test the content knowledge whereas the SDLRS assesses the learning process. However, other tools such as 360 degree feedback could assess the correlation better.

Conclusion

Though most medical students are ready for self-directed learning, others lag behind. The scores for 'desire for learning' and 'self-control' were higher compared to 'self-management' stressing the need to focus on this skill by teachers. More studies are needed to compare the SDLRS scores with academic performance.

Acknowledgement

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