Scholars Bulletin
(A Multidisciplinary Journal)
An Official Publication of "Scholars Middle East Publishers",
Dubai, United Arab Emirates
Website: http://scholarsbulletin.com/

ISSN 2412-9771 (Print)
ISSN 2412-897X (Online)

Self-directed learning readiness among medical students at Umm Al-Qura University, Saudi Arabia: A cross-sectional study

Mohamed Salih[1], Hatem Sembawa[1], Saeed Baradwan[2], Abdulelah Nuqali[3]
[1]Department of Surgery, Umm Al-Qura University, Makkah, Saudi Arabia
[2]Department of Obstetrics and Gynecology, King Fahad Medical City, Riyadh, Saudi Arabia
[3]Department of Internal Medicine, Umm Al-Qura University, Makkah, Saudi Arabia

***Corresponding Author:**
Abdulelah Nuqali
Email: abdulelah.n@gmail.com

Abstract: Self-directed learning is increasingly used in higher education and has special importance in the context of healthcare education. In this single-center cross-sectional study, we aimed to study self-directed learning readiness among medical students at Umm Al-Qura University. Eight hundred medical students from the Faculty of Medicine at Umm Al-Qura University in Makkah, Saudi Arabia, participated in the study. Participants were from all academic years (1st year to 6th year) and included both genders. They completed a self-administered questionnaire that identified demographic characteristics and also contained Fisher's Self-Directed Learning Readiness Scale (SDLRS). Among these students, 99 (12.4%) scored below average on the SDLRS, 293 (36.6%) obtained an average score, and 408 (51%) scored above average. The highest SDLRS mean score was 4.41 for the item "I want to learn new information," and the lowest SDLRS mean score was 2.94 for the item "I set strict time frames."About half of the medical students scored above average (i.e., were high achievers), which is encouraging. Implementing time management skills into different teaching modules might improve the teaching outcomes.

Keywords: Self-directed learning readiness, medical students, educational measurement, Saudi Arabia.

INTRODUCTION

Self-directed learning (SDL) is increasingly used in higher education, as many schools expect their graduates to pursue lifelong learning [1-13]. SDL has special importance in the context of healthcare education because diagnostic studies and treatment options are continuously changing. Many national and international medical authorities emphasize the concept of a lifelong commitment to learning and professional development. For example, engagement in the continual enhancement of physicians' professional activities through ongoing learning is one of the key components described under the scholar role in the *Draft CanMEDS 2015 Physician Competency Framework* [4]. A similar component is included in the Saudi Meds competence framework developed for Saudi medical graduates under the professionalism domain [14]. SDL and the self-directed learner have been defined and explained in many ways. [11] Guglielmino, who developed the Self-Directed Learning Readiness Scale (SDLRS) in her 1977 doctoral dissertation, defined the self-directed learner as "one who exhibits initiative, independence, and persistence in learning; one who accepts responsibility for his or her own learning and views problems as challenges, obstacles; one who is capable of self-discipline and has a high degree of curiosity; one who has a strong desire to learn or change and is self-confident; one who is able to use basic study skills, organize his or her time and set an appropriate pace for learning, and to develop a plan for completing work; one who enjoys learning and has a tendency to be goal-oriented" [15]. Knowles defined SDL as the "process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes"[16]. SDL as an alternative form of learning has been widely documented [17] in both undergraduate and postgraduate programs in the form of clinical logs, contracts, problem-based packages, and distance learning packages. Helping students to become self-directed learners has been ranked as high priority [18]. Self-directed learners take control and accept the freedom to learn what they believe is important for them. The degree of control learners are willing to take over their own learning depends on their abilities, personality characteristics, and attitude. SDL readiness exists along a spectrum and is present in all individuals to different degrees. The literature supports the contention that matching teaching delivery with SDL readiness offers the best opportunity for learning [19-22]. In the last few years, significant changes have occurred in medical education in Saudi Arabia. [23] Many government and private medical schools have

evolved [23] in which two types of curricula have been implemented: (1) a classic, discipline-based, teacher-centered curriculum; or (2) a hybrid, integrated, community-oriented, community-based, or problem-oriented curriculum [23]. An examination of SDL among undergraduate and postgraduate students is essential as a baseline for evaluation and comparison of different curricula. In this study, we aimed to investigate SDL readiness among medical students at Umm Al-Qura University.

SUBJECTS AND METHODS

Design and study setting

We conducted a questionnaire-based cross-sectional study in April 2012 to predict SDL readiness among medical students at Umm Al-Qura University in Makkah, Saudi Arabia, which is a government school. At the time of the study, the medical program curriculum consisted of a 6-year program divided into three levels: 3 years of basic science and 3 years of clinical clerkship followed by a 1-year mandatory internship. About 1500 students were enrolled in medical school at Um Al-Qura University.

Participants

Participants consisted of 800 medical students from all academic years (1st year to 6th year), both males and females; thus, the response rate was 53%. The purpose and study protocols were explained to participants, after which they gave verbal informed consent to participate in the study.

PROCEDURE

We obtained data from self-administered questionnaires that were distributed through a purposeful selective sampling method and answered anonymously. All medical students were invited to participate in this study.

Measures

The survey consisted of two parts. The first part included demographic characteristics (including gender and current academic year). The second part was the SDLRS. Although several instruments have been used to predict SDL, we used Fisher's SDLRS [3]. It was originally developed to assess SDL among undergraduate nursing students, but has since been used among different college student populations, as well as among medical students. After revising the original scale, we chose 48 items and divided them into seven major themes or subscales: initiative and independence in learning (questions 1-8), ability to use basic study skills and problem-solving skills (questions 9-13), openness to learning (questions 14-20), self-concept as an effective learner (questions 21-28), love of learning (questions 29-33), creativity and future orientation (questions 34-38), and informed acceptance of responsibility for one's own learning (questions 39-48). The answers were graded on a 5-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). Cronbach's alpha (a measure of internal consistency) was estimated for Fisher's SDLRS among medical students, which ranged from 0.89 to 0.72 [6]. The questionnaire was written in Arabic (the native responder language) and in English (the formal teaching language). It was professionally translated into Arabic by the members of the research team who speak both languages.

STATISTICAL ANALYSIS

Missing answers were assigned a value of 3 (middle value), and cases that reported more than five missing values were excluded from statistical analysis. The total possible score for the SDLRS was 240 and the participants' scores were subdivided into three main subgroups: values of ≤69% (166) were considered below average, values of 70-79% (167-191) were considered average, and values >80% (192) were considered above average. Academic years were stratified into two categories: basic years, which include the first, second, and third years; and clinical years, which include the fourth, fifth, and sixth years.

Statistical analysis was performed with SPSS, version 20. We used a chi-square test to analyze the relationship between gender, academic years, and SDLRS score subgroups and an independent sample *t* test to analyze the relationship between genders, academic years, and subscale score of the SDLRS. An alpha level of 5% was set for statistical significance and non-directional hypotheses were reported.

Ethical considerations

The Committee of Bio-Medical Ethics of the Faculty of Medicine at Umm Al-Qura University in Makkah, Saudi Arabia, reviewed and approved the study protocol. Voluntary informed verbal consent was obtained at the time of patient enrolment. All data were confidential, as no names or ID numbers were collected.

RESULTS

Of the 800 students, 330 (41.3%) were male and 470 (58.7%) were female; 345 (43.1%) were in the basic years and 455 (56.9%) in the clinical years. A total of 99 students (12.4%) scored below average, 293 (36.6%) had an average score, and 408 (51%) scored above average (Table 3). Figure 1 shows box plots for the SDLRS scores and SDLRS score subgroups, with two outlier scores at 48 and 103. The mean total SDLRS score was 191.6 (of 240). Table 1 shows the results for the SDLRS item scores. The highest SDLRS mean score was 4.41 for the item "I want to learn new information," and the lowest SDLRS mean score was 2.94 for the item "I set strict time frames." Table 2 shows measures of central tendency and dispersion for SDLRS subscales.

Data analysis showed no significant relationship between gender and SDLRS score subgroups (P = 0.328). In contrast, there was a

significant relationship between academic years and SDLRS score subgroups (P = 0.002). Students in clinical years had significantly higher scores than did those in basic years for openness to learning (P = 0.001) and creativity and future orientation (P = 0.008) subscales (Table 4). Scores for ability to use basic study skills and problem-solving skills (P = 0.005), self-concept as an effective learner (P = 0.046), love of learning (P = 0.000), and creativity and future orientation (0.030) were significantly higher in females than in males (Table 5).

Table-1: Scores for items of the SDLRS

Item	Mean	SD
I solve problems using a plan	3.71	.972
I prioritize my work	4.13	.854
I manage my time well	3.25	1.087
I have good management skills	3.57	1.017
I set strict time frames	2.94	1.189
I prefer to plan my own learning	3.98	.997
I prefer to direct my own learning	3.88	1.038
I believe the role of the teacher is to act as a resource person	3.95	1.027
I am systematic in my learning	3.54	1.021
I am able to focus on a problem	3.72	.911
I need to know why	4.16	.899
I critically evaluate new ideas	4.04	.820
I prefer to set my own learning goals	4.12	.916
I am willing to change my ideas	3.88	1.008
I will ask for help in my learning when necessary	4.32	.847
I am willing to accept advice from others	4.37	.766
I will alter my practice when presented with the facts	4.24	.835
I am open to new learning opportunities	4.17	.902
I am open to new ideas	4.20	.892
When presented with a problem I cannot resolve I will ask for assistance	4.25	.882
I am responsible	4.25	.858
I like to evaluate what I do	4.08	.921
I have high personal expectations	4.31	.826
I have high personal standards	4.24	.821
I have high beliefs in my abilities	4.29	.827
I am aware of my own limitations	4.33	.784
I am assertive	3.69	1.019
I am confident in my ability to search out information	3.95	.912
I enjoy studying	3.47	1.093
I have a need to learn	4.15	.864
I enjoy a challenge	4.05	.987
I want to learn new information	4.41	.718
I enjoy learning new information	4.37	.782
I set specific times for my study	3.42	1.150
I am self disciplined	3.72	1.035
I like to gather the facts before I make a decision	4.12	.860
I am logical	4.24	.802
I am methodical	3.61	1.157
I evaluate my own performance	3.87	.964
I prefer to set my own criteria on which to evaluate my performance	3.89	.948
I am responsible for my own decisions/actions	4.34	1.261
I can be trusted to pursue my own learning	3.94	1.028
I can find out information for myself	3.97	.928
I need minimal help to find information	3.99	.889
I like to make decisions for myself	4.26	.807
I am in control of my life	4.09	.945
I need to be in control of what I learn	3.87	1.054
I learn from my mistakes	4.28	.907

SDLRS = Self-Directed Learning Readiness Scale

Table-2: Subscales, total score, and measures of central tendency and dispersion

Central tendency and dispersion	Initiative and independence in learning	Ability to use basic study skills and problem-solving skills	Openness to learning	Self-concept as an effective learner	Love of learning	Creativity and future orientation	Informed acceptance of responsibility for one's own learning	Total SDLRS score
Total score	40	25	35	40	25	25	55	240
Mean	29.4	19.6	29.4	33.1	20.5	19.1	40.5	191.6
SD	4.9	3.1	4.1	4.6	3.2	3.6	6.1	22.8
Minimum	8	5	7	8	5	5	10	48
Maximum	40	25	35	40	25	25	71	240

SDLRS = Self-Directed Learning Readiness Scale

Table-3: Gender and academic years with total score of SDLRS

Variables		SDLRS score subgroups		
		Below average % (n)	Average % (n)	Above average % (n)
Gender	Male	11.3 (46)	42 (125)	46.7 (159)
	Female	13.2 (53)	32.5 (168)	54.3 (249)
	***P* = 0.328**			
Academic year	Basic years	13.9 (39)	37.9 (145)	48.2 (161)
	Clinical years	11.3 (60)	35.7 (148)	53 (247)
	***P* = 0.022**			

SDLRS = Self-Directed Learning Readiness Scale

Table-4: Academic years with subscale score of SDLRS

Subscale	Academic years	Mean	SD	Significance
Initiative and independence in learning	Basic years	29.2812	4.75252	0.543
	Clinical years	29.4945	5.03375	
Ability to use basic study skills and problem solving skills	Basic years	19.7420	2.93537	0.234
	Clinical years	19.4769	3.25275	
Openness to learning	Basic years	28.8638	4.20223	0.001
	Clinical years	29.8505	4.05410	
Self-concept as an effective learner	Basic years	32.7681	4.54162	0.055
	Clinical years	33.4000	4.64824	
Love of learning	Basic years	20.2087	3.25155	0.060
	Clinical years	20.6396	3.17371	
Creativity and future orientation	Basic years	18.7130	3.61626	0.008
	Clinical years	19.3912	3.56882	
Informed acceptance of responsibility for one's own learning	Basic years	40.2116	5.69209	0.277
	Clinical years	40.6879	6.45515	

SDLRS = Self-Directed Learning Readiness Scale

Table-5: Gender with subscale score of SDLRS

Subscale	Gender	Mean	SD	Significance
Initiative and independence in learning	Male	29.1061	4.78196	0.153
	Female	29.6106	4.99675	
Ability to use basic study skills and problem solving skills	Male	19.2212	3.12498	0.005
	Female	19.8511	3.09466	
Openness to learning	Male	29.2152	4.30230	0.230
	Female	29.5723	4.02896	
Self-concept as an effective learner	Male	32.7394	4.60922	0.046
	Female	33.4000	4.59647	
Love of learning	Male	19.9212	3.28391	0.000
	Female	20.8277	3.11097	
Creativity and future orientation	Male	18.7697	3.37544	0.030
	Female	19.3298	3.74048	
Informed acceptance of responsibility for one's own learning	Male	40.0455	5.72530	0.092
	Female	40.7894	6.40098	

SDLRS = Self-Directed Learning Readiness Scale

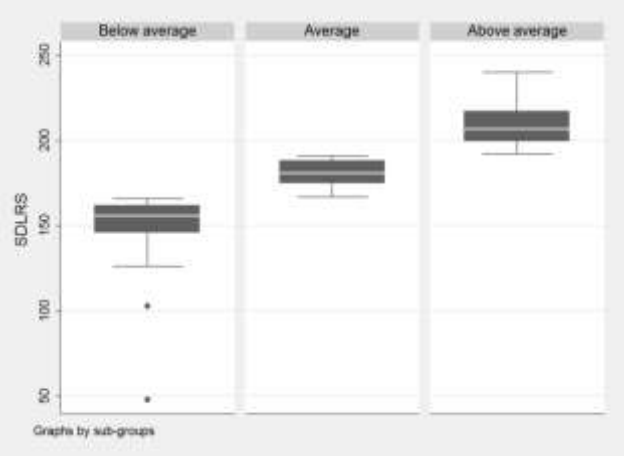

Fig-1: SDLRS scores and subgroups

DISCUSSION

In this single-center cross-sectional study, we aimed to investigate SDL readiness among medical students at Umm Al-Qura University in Saudi Arabia by using the SDLRS [3]. The main finding of our study was that about half of the medical students (n = 408, 51%) scored above average (i.e., were high achievers). The desire to learn new information was the highest scored item, whereas the lowest scored item was "I set strict time frames," suggesting that students had problems managing their time. These findings are consistent with those of many studies [1, 24] that showed that the desire to learn is not accomplished by setting a strict time frame to achieve the educational target. This result suggests that time management skills could be incorporated into the curricula.

The SDLRS score was not affected significantly by gender. This finding is consistent with the results of a study by El-Gilany and Abusaad, [2] which was conducted among undergraduate nursing students in 2013. It also agrees with the results of several other studies [25-27]. Some studies, however, have documented differences between men and women [28, 29]. Interestingly, we found a significant difference between males and females in some SDLRS subscale scores. Scores for ability to use basic study skills and problem-solving skills, self-concept as an effective learner, love of learning, and creativity and future orientation were significantly higher in females than in males.

A significant difference was observed among SDL readiness and academic years in the association between the scores of students in clinical years on the openness to learning and creativity and future orientation subscales. Several studies found that the older students have higher scores than do younger students [11, 30-32]. The literature supports that SDL readiness exists along a spectrum and is present in all individuals to different degrees [19-22]. This spectrum could be explained by Knowles description of the learning continuum in terms of teacher-based (pedagogical) learning at one end and self-directed (andragogical) learning at the other [16]. Confidence in controlling the learning method may depend on previous learning experiences and develop with age [33].

CONCLUSIONS

SDL as an alternative form of learning is important in the pursuit of lifelong learning. Establishing a baseline for SDL is essential, given the rapid changes in medical education in Saudi Arabia and, more specifically, in the current reform of the Umm Al-Qura University curriculum. About half of the medical students in this study scored above average (i.e., were high achievers), which is encouraging. Implementing time management skills into different teaching modules might benefit the learner. We recommend that further SDL readiness longitudinal studies be performed and comparisons made between the curriculum used and SDL readiness.

Limitations

These findings can be applied with the following limitations taken into consideration. First, we used a modified and non- validated version of Fisher's SDLRS and subscales. Second, Assigning a value of 3 (middle value) for missing answers and excluding cases with more than five missing values from statistical analysis could affect the reliability and validity of the results. Third, the nature of this study as a cross-sectional study conducted among medical students at Umm Al-Qura University may limit the generalizability of the study results.

Conflict of interest

The authors have no conflicts of interest.

Authors' contributions

HS, MS, SB, and AN made substantial contributions to the conception or design of the work and/or the acquisition, analysis, or interpretation of data

for the work. HS, MS, SB, and AN drafted the manuscript or revised it critically for important intellectual content. HS, MS, SB, and AN approved this final version to be published. HS, MS, SB, and AN have agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Acknowledgment

We would like to extend special thanks to Dr. Amar Alkhotani, who assisted in statistically analyzing the data.

REFERENCES

1. Abraham, R. R., Fisher, M., Kamath, A., Izzati, T. A., Nabila, S., & Atikah, N. N. (2011). Exploring first-year undergraduate medical students' self-directed learning readiness to physiology. *Advances in physiology education*, *35*(4), 393-395.
2. El-Gilany, A. H., & Abusaad, F. E. S. (2013). Self-directed learning readiness and learning styles among Saudi undergraduate nursing students. *Nurse Education Today*, *33*(9), 1040-1044.
3. Fisher, M., King, J., & Tague, G. (2001). Development of a self-directed learning readiness scale for nursing education. *Nurse education today*, *21*(7), 516-525.
4. Frank, J. R., Snell, L., & Sherbino, J. (2014). The Draft CanMEDS 2015: Physician Competency Framework. *Ottawa: Royal College of Physicians and Surgeons of Canada*.
5. Frisby, A. J. (1991). Self-directed learning readiness in medical students at the Ohio State University. *AISR Staff Papers and Presentations*, 8.
6. Hendry, G. D., & Ginns, P. (2009). Readiness for self-directed learning: validation of a new scale with medical students. *Medical Teacher*, *31*(10), 918-920.
7. Hoban, J. D., Lawson, S. R., Mazmanian, P. E., Best, A. M., & Seibel, H. R. (2005). The Self-Directed Learning Readiness Scale: a factor analysis study. *Medical Education*, *39*(4), 370-379.
8. Litzinger, T., Wise, J., Lee, S., & Bjorklund, S. (2003, June). Assessing readiness for self-directed learning. In *CD) Proceedings, 2004 American Society for Engineering Education Conference*.
9. Nor, M. M., & Saeednia, Y. (2009). Exploring self-directed learning among children. *International Journal of Human and Social Sciences*, *4*(9), 658-663.
10. Phairachkul, T., & Mungkung, N. Self-Directed Learning Readiness of Industrial Workers.
11. Premkumar, K., Pahwa, P., Banerjee, A., Baptiste, K., Bhatt, H., & Lim, H. J. (2013). Does medical training promote or deter self-directed learning? A longitudinal mixed-methods study. *Academic Medicine*, *88*(11), 1754-1764.
12. Shokar, G. S., Shokar, N. K., Romero, C. M., & Bulik, R. J. (2002). Self-directed learning: looking at outcomes with medical students. *FAMILY MEDICINE-KANSAS CITY-*, *34*(3), 197-200.
13. Williams, B., & Brown, T. (2013). A confirmatory factor analysis of the self-directed learning readiness scale. *Nursing & health sciences*, *15*(4), 430-436.
14. Zaini, R. G., Bin Abdulrahman, K. A., Al-Khotani, A. A., Al-Hayani, A. M. A., Al-Alwan, I. A., & Jastaniah, S. D. (2011). Saudi Meds: A competence specification for Saudi medical graduates. *Medical teacher*, *33*(7), 582-584.
15. Guglielmino, L. M. (1978). *Development of the self-directed learning readiness scale* (Doctoral dissertation, ProQuest Information & Learning).
16. Knowles M, editor. Self-Directed Learning: A Guide for Learners and Teachers. New York, NY: Englewood Cliffs: Prentice Hall/ Cambridge. 1975.
17. Brockeet, R. G., & Hiemstra, R. (1991). Self-direction in adult learning: perspectives on theory, research, and practice.
18. Developing Self-Directed Learners.,(2002). Northwest Regional Educational Laboratory Office of Planning and Service Coordination.
19. Guglielmino, L. M. (1978). *Development of the self-directed learning readiness scale* (Doctoral dissertation, ProQuest Information & Learning).
20. Wiley, K. (1983). Effects of a self-directed learning project and preference for structure on self-directed learning readiness. *Nursing Research*, *32*(3), 181-185.
21. O'Kell, S. P. (1988). A study of the relationships between learning style, readiness for self-directed learning and teaching preference of learner nurses in one health district. *Nurse Education Today*, *8*(4), 197-204.
22. Grow, G. O. (1991). Teaching learners to be self-directed. *Adult education quarterly*, *41*(3), 125-149.
23. Telmesani, A., Zaini, R. G., & Ghazi, H. O. (2011). Medical education in Saudi Arabia: a review of recent developments and future challenges.
24. Stewart, R. A. (2007). Evaluating the self-directed learning readiness of engineering undergraduates: a necessary precursor to project-based learning. *World Transactions on Engineering and Technology Education*, *6*(1), 59.
25. Chen, Y. F., Wang, C. M., & Lin, H. J. (2006). Explore the relationships among demography, personality traits and self-directed learning. *The Journal*, *141*.
26. Roberson, D. N., & Merriam, S. B. (2005). The self-directed learning process of older, rural adults. *Adult Education Quarterly*, *55*(4), 269-287.
27. Harvey, B. J., Rothman, A. I., & Frecker, R. C. (2003). Effect of an undergraduate medical curriculum on students' self-directed learning. *Academic Medicine*, *78*(12), 1259-1265.
28. McCollin, E. D. (1998). Faculty and student perceptions of teaching styles: Do teaching styles differ for traditional and nontraditional students?.

29. Dieber, J. M. (1994). A comparison between traditional and problem-based learning medical students as self-directed continuing learners.
30. Reio, T. G., & Davis, W. (2005). Age and gender differences in self-directed learning readiness: A developmental perspective. *International Journal of Self-Directed Learning*, *2*(1), 40-49.
31. Kell, C., & van Deursen, R. (2003). Does a problem-solving based curriculum develop life-long learning skills in undergraduate students?. *Physiotherapy*, *89*(9), 523-530.
32. Hiemstra, R. (1994). Self-directed learning. *The sourcebook for self-directed learning*, 9-20.
33. Deursen, C. K. R. V. (2000). The fight against professional obsolescence should begin in the undergraduate curriculum. *Medical Teacher*, *22*(2), 160-163.