

Original Research Article

Readiness for self-directed learning and learning style preferences among first year's medical students

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ABSTRACT

Background: Self-directed learning (SDL) is a core element in enhancing learning outcomes and academic performance. It can be promoted through increasing students' awareness of their own SDL skills and learning styles assessment.

Methods: A cross sectional study was conducted on 320 first year medical students (Zagazig University) during August and September, 2022. Using two standardized questionnaires: self-directed learning scale (assessing the readiness for SDL) and VARK questionnaire that assess different learning styles (visual, aural, read and write, kinesthetics).

Results: Almost 65% of the studied participants scored below the optimum score for self-directed learning readiness. Regarding the learning styles, all the participants reported multimodal learning styles. kinesthetic learning and visual styles were the most preferred (28% and 20.7% respectively). There was significant positive correlation between SDLR and kinesthetic learning style ($p \leq 0.05$).

Conclusions: Although the low overall SDLR score, but the students had a high desire for learning. As kinesthetic style was the most preferred that can increase the students' self-directed learning.

Keywords: Learning styles, Self-directed learning readiness, VARK

INTRODUCTION

Medical knowledge doubles every day; therefore, it is essential that medical students develop life-long learning skills.¹ Medical education is not only for the acquisition of desired knowledge and skills, but also to help the graduate to be a lifelong learner, professional, team-worker and leader. Self-directed learning (SDL) is an important aspect of lifelong learning and is one of the core competencies expected of a medical graduate.² SDL is a learner-centered strategy; it is defined as "a process in which individuals take initiatives, with or without the help of others, to identify their learning needs, formulate their learning objectives, identify resources required for learning, choose and implement appropriate learning strategies, and finally evaluate learning outcomes."³

Learning styles (LS) represent an individual preferred set of cognitive and behavioral feedback concerning a learning task, it can markedly affect the SDL.⁴ It is very important to identify whether learners are predominantly visual, auditory, reading/writing or kinesthetic learners.⁵

Due to the new changes in Egyptian medical education curricula, it is very important to enhance the concept of SDL among the students from the first years. It is also very important to identify the preferred learning style that enhances SDL. The number of researches done in this topic still limited in Egypt.

This study aimed to assess the self-directed learning readiness among the students at the beginning of the first year and to identify the preferred learning style using VARK that help in enhancing SDL.

METHODS

Study design and setting

A cross sectional study was conducted in the faculty of medicine (Zagazig University, Egypt) in on August and September 2022.

Sample size and sampling method

The sample size was determined by the open Epi-info system at CI 95%, the test power 80% and response distribution of 50%, the sample size was calculated to be 320. The selection of the participants was done by simple random technique method.

Inclusion criteria

First year medical students, and accepted to share in the study.

Tools of data collection

The data was collected using two questionnaires.

self-directed learning scale

It consists of first part: socio-demographic data: gender, social class, residence and second part: It had three sections covering the domains- self-management (SM), desire for learning (DL), and self-control (SC)- each having 13, 12, and 15 questions which amounted to 65, 60, and 75 points per section respectively. Fisher's readiness scale was used which comprised of 40 questions and 200 total point scores. Following Fisher's lead, an SDLR score of more than 150 and SM, DL and SC domains' score of 47, 44, and 59 or more respectively were considered optimum.⁶

VARK questionnaire

The questionnaire consisted of sixteen questions in four domains of learning: 1) visual, 2) aural, 3) read and write and 4) kinesthetic. Each question had four alternatives and each measured one dimension of learning style. Participants could choose more than one alternative for each answer. Each alternative associated with any particular style domain had one score. The minimum and maximum score in a single model was zero and 16 respectively. Moreover, the minimum and maximum scores in the multi -model method were 16 and 64 respectively. A high score in each of the various learning styles indicated a higher affinity of the individual to that style of learning. If the individuals obtained an equivalent score in two or more of the fields, they were considered to have multi- model learning styles.

Finally, depending on the options selected, the total responses for each student were aggregated and the final score obtained.⁷

Pilot study

A pilot study was conducted to test the clarity of the questionnaire among 30 students that were not included in the final results. Modifications were done accordingly. The Cronbach's alpha coefficient of the questionnaire was 0.78 indicating acceptable internal consistency.

Statistical management

The collected data was analyzed by using SPSS (Statistical Package for the Social Sciences) version 20.0 and the appropriate statistical tests including chi-square test and correlation were used. Excel program was used to draw figures.

RESULTS

The total number of students who completed the questionnaire was 320. More than half of the participants were female (55.9%), living in rural areas (59.1%) and of middle socioeconomic status (56.9%) (Table 1).

Table 1: Demographic characteristics of the participants (n=320).

Socio-demographic criteria	Frequency	Percentage
Gender		
Male	141	44.1
Female	179	55.9
Residence		
Urban	131	40.9
Rural	189	59.1
Socioeconomic status		
Low	48	26.3
Middle	182	56.9
High	54	16.9

Table 2: Self-directed leaning readiness among the study participants.

Domains	Range	Mean±SD	Below optimum N (%)
Self-control	38-58	49.26±4.1	320 (100.0)
Self-management	9-44	25.37±8.9	320 (100.0)
Desire for learning	26-30	29.12±1.2	161 (50.3)
Total	78-129	103.74±11.8	209 (65.3)

The findings of self-directed leaning readiness were represented in Table 2. It shows that the total mean score of all the domains was 103.7±11.8. Mean score of self-control, self-management and desire for learning was 49.3, 25.4 and 29.1 respectively. Almost 65% of the studied participants scored below the optimum score in the total score of the self-directed learning readiness. All

the participants (100%) were below the optimum score in self-control and self-management domains.

Regarding the learning styles, all the participants reported multimodal learning styles. About 28% of the respondents preferred the kinesthetic learning style, while only 20.7% preferred the visual style (Table 3).

Table 3: Distribution of the study participants regarding the different learning styles.

Learning style	Percentage
Visual	20.7
Self-management	25.6
Read and write	26
Kinesthetic	28

Table 4: Relationship between demographic characteristics and domains of self-directed learning readiness.

	Self-control	Self-management	Desire for learning	Total
Gender				
Male	48.9±4.3	25±8.9	29.2±1.2	103.1±12.2
Female	49.5±3.9	25.6±8.8	29±1.3	104.3±11.5
P value	0.168	0.547	0.661	0.376
Residence				
Urban	49.2±4.1	25.7±9.2	29±1.4	103.9±12.4
Rural	49.3±4.1	24.9±8.3	29.3±1.0	103.5±10.9
P value	0.859	0.42	0.077	0.713
Socioeconomic status				
Low	49.5±4.2	25.5±7.7	29.3±1.0	104.4±10.9
Middle	49.5±4.1	25.5±9.0	29±1.3	104.1±11.7
High	47.8±3.7 ^a	24.5±10.2	29.1±1.3	101.4±13.3
P value	0.019*	0.745	0.185	0.281

*Statistically significant difference $p \leq 0.05$; ^aHigh SES is significantly different than low and middle.

Table 5: Relationship between demographic characteristics and learning styles.

	Visual	Aural/auditory	Read/write	Kinesthetic
Gender				
Male	3.3±1.3	4.2±1.4	4.1±1.7	4.4±1.4
Female	3.3±1.5	4±1.4	4±1.7	4.6±1.5
P value	0.988	0.306	0.65	0.143
Residence				
Urban	3.5±1.3	3.9±1.3	3.9±1.5	4.7±1.3
Rural	3±1.5	4.4±1.3	4.4±1.9	4.2±1.6
P value	0.001*	0.001*	0.037*	0.01*
Socioeconomic status				
Low	2.9±1.4 ^b	4.2±1.2	4.5±1.7 ^c	4.4±1.4
Middle	3.4±1.4	4.1±1.4	4±1.7	4.5±1.5
High	3.6±1.4	3.9±1.6	3.9±1.3	4.6±1.5
P value	0.011*	0.551	0.048*	0.718

*Statistically significant difference $p \leq 0.05$; ^bLow SES is significantly different than middle and high; ^cLow SES is significantly different than middle and high.

Table 6: Relationship between self-directed learning readiness and VARK learning styles.

	Self-directed learning readiness			
	Self-control	Self-management	Desire for learning	Total
Visual	-0.155*	-0.034	-0.133*	-0.096
Aural/auditory	-0.054	-0.023	0.229*	-0.017
Read/write	0.015	-0.045	-0.189*	-0.045
Kinesthetic	0.199*	0.123*	0.103	0.169*
Self-control	-	-	-	-
Self-management	0.434*	-	-	-
Desire for learning	0.242*	-	-	-

Students with high social class had lower mean scores in self-control domain more than other classes ($p \leq 0.05$). Students of high social class had lower mean score (47.8 ± 3.7) of self-control than students of middle (49.5 ± 4.1) and low (49.5 ± 4.2) social class (Table 4).

Regarding VARK learning styles, students from urban areas had higher mean score as regard to visual (3.5 ± 1.3) and kinesthetic (4.7 ± 1.3) learning styles. Students from rural areas had higher mean score concerning aural (4.4 ± 1.3) and read and write (4.4 ± 1.9) learning styles. Students of low SES reported lower mean score (2.9 ± 1.4) for visual learning style compared to middle and high SES (3.4 ± 1.4 and 3.6 ± 1.4 respectively). Moreover, low SES students had higher mean score (4.5 ± 1.7) for read and write style than the middle and high SES (4 ± 1.7 and 3.9 ± 1.3 respectively) as manifested in Table 5.

Table 6 displays the relationship between self-directed learning readiness and VARK learning styles. There was significant positive correlation between SDLR and Kinesthetic learning style ($p \leq 0.05$). Self-management had positive significant correlation with kinesthetic learning style while, desire for learning correlates positively with aural learning style. Whereas, there was negative significant correlation between self-control and visual style and between the desire for learning and visual and read and write learning style ($p \leq 0.05$).

DISCUSSION

Assessing students' readiness to self-learning and learning styles preferences is an essential step to cope with the new changes and modifications in medical education programs.

The majority of this study participant had low self-directed learning readiness that may be referred to the pre-university education system; which is teacher centered, depending upon providing ready information and memorizing rather than understanding in addition to unfamiliarity with the medical education system. In a similar study; it was found that readiness for SDL is below average for more than 99% of their sample. It was explained this high percentage by defects in the learning system and personal potentials among students.⁸ In studies performed in countries encouraging student centered learning approach the total SDLR score was high.^{9,10} In contrast to other studies in countries with traditional learning systems, had below average self-directed learning readiness score.^{11,12}

The respondent student show high desire for learning as compared to self-control and self-management domains. Students at this age are superior graduates having the passion of learning and knowing more about diseases. At the same time, they are still young with traditional learning systems and need more time and more experience for self-management and self-control. Additionally, these domains can be enhanced if self-

confidence, critical thinking, curiosity and decision-making abilities are promoted. Consistently; it was mentioned that the desire of learning was higher and the least score in self-management domain.¹³ In contrast; a higher score for self-management rather than desire for learning and self-control was recorded.⁶ The 3 subscales of SDL were higher among first year students compared to the higher grades and they explained that by higher passion and energy among younger grades.¹⁴

Regarding the socio-demographic criteria as predictors of SDLR, self-control domain was significantly higher among students with lower socioeconomic status. This may be due to harder living conditions among lower social classes that make their personality more rigid and stricter in dealing with different conditions including learning. In contrast; higher social classes and older age are significant indicators for higher SDLR scores.¹⁵ A study conducted at Najran University found that gender was the only socio-demographic predictor; with higher mean self-management, desire for learning and total RSDL scores among females.¹⁶ Female students had higher self-control scales than males making them more able to put learning plans and achieve goals.^{17,18} However; higher grades of faculty education had higher self-management and self-control in comparison to early grades due to more life experiences.¹⁹

There is no doubt that learning style affects the level and the continuity of self-directed learning readiness. In this study all the students preferred multimodal style of learning; however, the kinesthetic style was the most popular and visual mode was the least. This may be due to the nature of medical education that is usually practical; in addition, this learning style helps students to promote their skills in communication, critical thinking and problem solving. In accordance; kinesthetic style was the most preferred style.²⁰ visual style was the most preferred.²¹ In contrast; another study noted that 17.7% preferred the Aural style, 17% preferred reading and writing, 6.4% preferred kinesthetic style and 0.7% preferred visual styles.²² Another work had reported that multimodal learning style was preferred by 70% of the respondents; with the aural style was the most preferred uni-modal style.²³

The noticed variation in learning styles between studies can be attributed to differences in cultures, pre-experienced system of education and personalities of the target students.

Relation between socio-demographic factors and learning styles was demonstrated; it was noted that visual and kinesthetic styles were significantly preferred in students from urban areas. Moreover, students from low social class prefer read and write style, in comparison to students from higher classes who prefer visual style. This may be explained by most of those students had their education in private, language and international schools

which usually depends upon such styles, in contrast to the classic governmental schools.

A significant positive correlation was noticed between kinesthetic style and SDLR. This may be due to this style simulate the real practical life with active participation of the students that motivate them for more SDL and better self-management. In contrast there was negative correlation between self-control and visual style and between the desire for learning and visual and read and write learning style. This may be referred to the negative role of the student in this style; they don't have a control over the plan of learning thus decreasing their interest overtime.

Limitations of the study were young age of the students and lack of background about the topic, subjective bias due to the self-reported questionnaire and the sample was restricted to first year medical students of single institution that makes the results of the current study couldn't be generalized.

CONCLUSION

Although the low SDLR scores the student had high desire for learning. So, with some help, coordinated learning programs and supportive environment the SDLR will increase. Kinesthetic style was the most preferred due to the nature of the current student's generations it is very important to enhance it through problem solving, simulation, practical sessions, role modelling and role play.

Recommendations

Increasing students' awareness about the importance of SDL. Enhancing the kinesthetic style of learning as the main style. Further researches regarding the SDLR and learning styles are recommended involving more than one institution also medical students in different grades. Planning and implementation of educational activities that satisfy all learning styles.

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