

Self-Directed Learning Competencies Among Undergraduate Medical Students - A Gender-Based Analysis

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ABSTRACT

Introduction: Understanding the gender-based variations in self-directed learning (SDL) abilities among medical students will help identify specific factors that promote or hinder SDL in each group, thereby providing targeted and inclusive educational interventions that foster the development of competent, adaptable and well-rounded medical graduates.

Objectives: To compare SDL skills between male and female medical students. To examine gender-based variations across different dimensions of SDL skills. To identify the dimensions with lower SDL scores and analyze gender-wise differences in these specific areas.

Materials and Methods: A cross-sectional study was conducted among 102 first-year MBBS students (64 females, 38 males) at Jubilee Mission Medical College. SDL abilities were assessed using the SRSSDL tool. Data were analyzed using independent samples t-test; results were expressed as mean \pm SD, frequency, and percentage.

Results: All students scored above 140/300; 64.7% were moderate and 35.3% high scorers. No significant gender difference was noted except in the interpersonal skills domain, where females scored higher ($p = 0.028$). Learning activities was the domain

where majority of students scored less than 3.

Conclusion: These findings emphasize the need to nurture SDL skills in all learners through targeted strategies that enhance self-motivation, self-regulation and reflective learning practices, irrespective of gender differences.

Key words: Self-directed learning, medical students, Gender differences, Interpersonal skills, Self-motivation, Reflective learning.

INTRODUCTION

SDL stands for "self-directed learning," where 'self' signifies autonomy, 'directed' means to control or be in charge of an activity and 'learning' indicates mastery of information or skills through deliberate study. The Medical Council of India (now the National Medical Commission) envisions the Indian medical graduate as a competent professional prepared to undertake diverse roles, encompassing clinical care, leadership, effective communication, lifelong learning and adherence to the highest standards of ethics and professionalism. Self-directed learning is recognized as an indispensable component for producing holistic healthcare professionals, as this enables health care professionals to be aware of the recent

advances in their field and to participate in collaborative learning which is beneficial to the patient.

Through SDL activities, competency-based medical education program is providing comprehensive training on lifelong learning techniques so as to ensure effective healthcare provision over time. Learner who practices SDL can organize their knowledge into a systematic manner, identify the broader meaning of information, be open to development, possess self-confidence, be willing to learn new things, use various learning strategies, know their own learning styles, interests and talents. The key aspect about SDL is that students take responsibility for learning well beyond what is presented by an external body. [1] The SDL process begins in the first year of the MBBS program. As per NMC guidelines, there is a defined number of SDL activities required for each chapter across all subjects. The role of the faculty in SDL is limited. The faculty assigns a topic for SDL, facilitates group discussions, and assists students in identifying the necessary resources and methods for their learning rather than lecturing them and giving them the exact material they should learn. [2]

School system of education focuses primarily on teacher directed learning and limited autonomy, while medical education demands strong self-directed learning skills. The move from school to professional college marks a crossroads, creating a gap in learning readiness and highlighting the importance of assessing and strengthening SDL skills to help students adapt effectively to the demands of professional education.

Different assessment methods have been created globally to measure students' abilities in SDL across various academic areas. In the present study, the Chinese version of the Self-Rating Scale for Self-Directed Learning (SRSSDL) Tool, developed by Williamson and Naska, was employed. The scale encompasses five key dimensions of self-directed learning. Awareness reflects the learner's understanding of factors influencing self-

directed learning. Learning Strategies measures the ability to apply diverse techniques to facilitate effective learning. Learning Activities assesses the degree of active participation and engagement in the learning process. Evaluation examines the learner's capacity to monitor, assess, and regulate their own learning progress. Interpersonal Skills evaluates the use of social and collaborative abilities that support learning and knowledge sharing.

Research suggests that gender may influence learning behaviours like goal setting ability, reflective practices and help seeking behaviour all of which contribute to effective SDL. In medical education, where learners navigate high cognitive demands and emotional stressors, such differences may have implications for both academic performance and professional development. It is important to note that the relationship between gender and self-directed learning is not straightforward and is influenced by many variables. Some studies show that female students have self-motivation and ability to self-evaluate whereas males are better at using various learning strategies. [3]

By assessing gender-based variations in self-directed learning (SDL) abilities among medical students, this study aims to provide valuable insights into how male and female learners differ in their approach to self-directed learning. Understanding these differences will help identify specific factors that promote or hinder SDL in each group, thereby guiding the design of targeted and inclusive educational interventions that foster the development of competent, adaptable and well-rounded medical graduates. [4]

Objectives

1. To compare self-directed learning (SDL) skills between male and female medical students.
2. To examine gender-based variations across different dimensions of SDL skills.

- To identify the dimensions with lower SDL scores and analyze gender-wise differences in these specific areas.

MATERIALS & METHODS

A total of 102 first-year MBBS students (64 females and 38 males) aged between 18 to 25 years, were included in this cross-sectional study conducted at the Department of Physiology, Jubilee Mission Medical College and Research Institute, Thrissur, from January 2025 to March 2025. Prior to the commencement of the study, approval was obtained from the institutional review board and ethics committee. Detailed information regarding the study procedures

were provided to all potential participants, and their consent was obtained.

In order to assess the learner's levels of self-directedness, a Self-Rating Scale for Self-Directed Learning (SRSSDL) Tool- Chinese version, developed by Williamson and Naska was used. The SRSSDL includes 60 questions summarized in 5 components: (1) Awareness, (2) Learning strategies, (3) Learning activities, (4) Evaluation, (5) Interpersonal skill. And the students responded in a Likert scale (5=Always, 4=often, 3=sometimes, 2=seldom, 1=Never). The scores were summed up, giving a total score of 300.

Scoring Range	Level of Self-directedness in Learning	Interpretation**
60 – 140	Low	Guidance is definitely needed from the teacher. Any specific changes necessary for improvement must be identified and a possible complete re-structuring of the methods of learning.
141 – 220	Moderate	This is half way to becoming a self-directed learner. Areas for improvement must be identified, evaluated and a strategy adopted with teacher guidance when necessary.
221 – 300	High	This indicates effective self-directed learning. The goal now is to maintain progress by identifying strengths and methods for consolidation of the students' effective self-directed learning.

The printout of this questionnaire was given to the students with adequate time to answer the questions. Students were instructed to provide their first reaction to the questions; and not to spend too long a time on each item. Since it was a self-rating scale, students were asked to evaluate themselves, to identify their score, so that they become aware of their self-directedness. They were specifically advised to go through the questions where they scored below 3 and see what can be done regarding those. There was no financial burden on the study subjects. Study was done with utmost confidentiality.

STATISTICAL ANALYSIS

Data was coded and entered in Microsoft Excel. Numerical data was expressed as mean +/- standard deviation and non-numerical data was expressed as frequency and percentage. Independent Samples t-test was used to compare variables.

RESULT

There were no low scorers among the study subjects, all of them scored more than 140 out of 300. Among the 102 participants 66(score:141-220) of them were moderate scorers and 36 (score 221-300) were high scorers. There was no statistically significant difference between males and females among the moderate or high scorers.

Table 1: Gender-wise distribution of subjects.

Gender	Frequency	Percentage
Female	64	62.7
Male	38	37.3
Total	102	100.0

Table 2: Gender-wise distribution of subjects among moderate and high scorers.

Scoring range	Gender	Frequency	Percentage	Mean+SD	p value
Low	-	-		-	-
Moderate	Male	23	34.8	196.3+16.4	0.96
	Female	43	65.2	196.2+17.2	
High	Male	15	41.7	235.3+11.2	0.13
	Female	21	58.3	242.9+16.2	

Table 3: Comparison of marks scored by males and females belonging in various components.

Components	Gender	Mean +SD	p Value
Awareness	Male	43.79+6.023	0.635
	Female	43.59+5.857	
Learning strategies	Male	43.82+5.239	0.447
	Female	44.20+6.667	
Learning activities	Male	39.89+5.506	0.531
	Female	39.63+6.596	
Evaluation	Male	42.55+7.225	0.774
	Female	40.95+6.858	
Interpersonal skill	Male	41.71+5.775	0.028
	Female	43.16+7.473	

Across most components—Awareness, Learning Strategies, Learning Activities, and Evaluation—the mean scores of male and female students are very similar, and all corresponding p-values are >0.05. The only domain showing a meaningful difference is

Interpersonal Skills. Here, female students have a higher mean score (43.16 ± 7.473) compared to male students (41.71 ± 5.775), with a p-value of 0.028, suggesting a statistically significant difference.

Table 4: Students that got less than 3 association between males and females' component wise.

Component	Gender	Number of students that got score less than 3	Percentage	Mean + SD	p value
Awareness	Male	23	35.4	43.3+6.2	0.94
	Female	42	64.6	43.4+5.5	
Learning strategies	Male	20	36.4	43.2+5.2	0.75
	Female	35	63.6	43.7+7.1	
Learning activities	Male	29	37.2	40.0+5.8	0.76
	Female	49	62.8	39.6+6.2	
Evaluation	Male	21	31.3	41.3+6.5	0.64
	Female	46	68.7	40.5+6.7	
Interpersonal skill	Male	20	30.8	41.5+6.5	0.48
	Female	45	69.2	42.7+6.6	

It can be noted that the mean scores and standard deviations for males and females within each component were comparable. All p-values were greater than 0.05, indicating no statistically significant gender association in any of the components. This suggests that, the overall performance patterns between genders did not differ significantly. It is also observed that

learning activities was the component were maximum students scored <3.

DISCUSSION

To increase student participation, creativity and critical thinking in the learning process, NMC has implemented the CBME curriculum which includes SDL as one of its key strategies. Learning skill and styles are

influenced by a variety of factors. The present study focuses on the role of gender in relation to self-directed learning skills.

The study includes 102 1st year MBBS students, who belonged within 18-22 years of age. 62.7% (64) of study subjects were females and 37.3% (38) were males. Students were assessed using the SRSSDL tool and it was noted that there were no low scorers. All the students scored above 140 out of 300, 64.7% (66) of medical students were moderate scorers and 35.3% (36) were high scorers. Similar findings were noted in other studies as well, participants, particularly students in medical and nursing fields, tend to report moderate to high SRSSDL (Self-Rating Scale of Self-Directed Learning) scores. [5] It can also be observed from table 2 that among the moderate scorers 34.8% were males and 65.2% were females and out of the high scorers 41.7% were males and 58.3% were females and there was no significant difference in the marks scored among males and females. Similar findings were noted in other articles as well. Where they say that SDL abilities are not based on gender, but on motivation, interest, persistence, time devoted to learning, self-control and focus. [6] On the contrary many studies have concluded that females have better self-directed learning capabilities compared to men. [7] Some others state that males are more motivated for SDL compared to females. [8]

Table 3 compares the differences between males and females in marks scored component wise. It was observed that there was no significant difference in the marks scored between males and females in most components except interpersonal skills, where females scored significantly higher compared to males. This finding in our study contradicts the results of several researchers who have reported that males have better interpersonal skills in comparison to females. Researchers have documented that regarding the significant elements of effective interpersonal communication, which are openness,

empathy, supportiveness, positive attitude and equality, male students dominated.[9] However some studies have reported findings similar to ours, where females showed better interpersonal skills.[10] (3) This could be attributed to the fact that females have better collaborative skills, empathy and emotional intelligence compared to males.[11] The importance of interpersonal skills in the college setting is underscored by the fact that academic success alone is not sufficient to ensure students' future achievements. In fact, life skills such as time management, stress management, and the ability to work collaboratively with others are increasingly recognized as predictors of post-college success. [12]

We also compared the subjects on the bases of those who scored below 3 in each question, and it was noted that there was no significant difference among males and females. This shows that there were no gender related differences among students regarding SRSSDL scores. Males and females had similar self-directedness. And it was also observed that Learning activities was the domain where majority of students scored less than 3. Hence as faculty we should provide adequate guidance to the students in actively designing and implementing personalized and group activities that promote learning. It is also important that we give awareness to the students regarding various educational techniques and resources that help students achieve their learning goals.

CONCLUSION

The present study highlights that there is no substantial gender-based differences in self-directed learning (SDL) abilities. This observation aligns with previous research suggesting that SDL is not determined by gender, but rather by individual learner characteristics such as self-motivation, intrinsic interest, perseverance, time and effort invested in learning, self-regulation and a focused commitment toward achieving learning goals. [6] While certain

dimensions showed variations in males and females, the overall competence appeared comparable. Females tend to excel in areas requiring collaboration and organization while males show greater motivation in independent learning. And to address the lower performance in the learning-activities domain, we should take an active role in guiding students to design and carry out meaningful individual and group learning tasks.

Several studies have observed a gradual decline in self-directedness as students' progress through medical school. The demanding curriculum, coupled with time constraints, often drives learners to adopt surface or superficial learning strategies rather than deep learning approaches. Consequently, their overall SDL capacity tends to diminish over time. [5] Hence there is need for regular evaluation and reinforcement of SDL skills throughout the medical training period.

These findings emphasize the importance of nurturing SDL skills in all learners through targeted strategies that enhance self-motivation, self-regulation, and reflective learning practices, irrespective of gender differences.

Declaration by Authors

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