



Original Article

## Promoting self-regulated learning skills in medical students is the need of time



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### المخلص

**أهداف البحث:** حاليا هناك حاجة لتخريج أطباء أمنين وأكفاء. وقد تبين أن تعزيز مهارات التعلم يقوم بتحسين التجربة مدى الحياة. تهدف هذه الدراسة إلى قياس كفاءة طلاب الطب في أربعة مكونات أساسية للتنظيم الذاتي؛ التخطيط، والمراقبة، والتحكم والانعكاس.

**طرق البحث:** أجريت هذه الدراسة المقطعية باختيار ما مجموعه 96 من طلبة بكالوريوس الطب والجراحة باستخدام تقنية عينات كرة الثلج. تمت مشاركة رابط الدراسة عبر الإنترنت، الذي صمم على نماذج جوجل، من خلال الفيس بوك، والواتس آب والبريد الإلكتروني. تم توزيع استبانة التنظيم الذاتي التي تحتوي على 22 بندا على جميع المشاركين.

**النتائج:** 50 سيدة من المستجيبين (52.1%) و 46 (47.9%) رجال أنهوا الدراسة. كان معدل الاستجابة 78% (96 من 123). وكان متوسط عمر المستجيبين 22.5 عاما. وكان متوسط مقياس التنظيم الذاتي  $71.56 \pm 11.19$ . بخصوص عناصر التنظيم الذاتي، وجد أقل مقياس للتخطيط بقيمة متوسطة  $27.01 \pm 1.33$ ، ولوحظت أعلى قيمة متوسطة للانعكاس  $34.08 \pm 1.30$ .

**الاستنتاجات:** بالرغم من شمل سمات السبع نجوم للطبيب في بيان رسالتنا ورؤيتنا ولكن الاستراتيجيات للحصول على هذه السمات لم يتم تحديثها. أحد هذه الاستراتيجيات هي تعزيز التنظيم الذاتي لطلابنا من خلال منهجيات التدريس المختلفة.

**الكلمات المفتاحية:** التنظيم الذاتي؛ الخطأ؛ المراقبة؛ الانعكاس؛ طلاب الطب؛ طبيب سبع نجوم

### Abstract

**Objectives:** Currently, there is a need to develop safe and competent medical graduates. Research reveals that the promotion of learning skills enhances lifelong experience. The objective of this study is to measure medical students' aptitude in four essential components of self-regulation: planning, monitoring, control, and reflection.

**Methods:** This cross-sectional study recruited 96 MBBS students using a snowball sampling technique. The Internet link to the online survey, designed on Google forms, was shared through Facebook, WhatsApp, and e-mail. A self-regulation questionnaire comprising 22 items was administered to all participants, and the collected data were analysed using SPSS version 20.

**Results:** Among the respondents, 50 (52.1%) women and 46 (47.9%) men completed the survey. The response rate was 78% (96 out of 123). The mean age of the respondents was 22.5 years. The mean self-regulation score was found to be  $71.56 \pm 11.19$ . Among self-regulation components, the lowest score was found for planning, with an average value of  $27.01 \pm 1.33$ , and the highest average value was noticed for reflection,  $34.08 \pm 1.30$ .

**Conclusions:** Our conclusions are as follows: although we have included the traits of seven-star doctors in our mission and vision statement, we could not identify the strategies to acquire these traits. One of the strategies involves promoting self-regulation in our students through various teaching methodologies.

**Keywords:** Medical students; Monitor; Plan; Reflection; Self-regulation; Seven-star doctor

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## Introduction

The World Federation for Medical Education (WFME) (WFME 1994) has advocated the redesigning of the 21<sup>st</sup>-century doctor to train practitioners in providing efficient primary healthcare services, communicating better with patients, critical thinking and lifelong learning, as well as working as the members of multidisciplinary teams for the community's benefit.<sup>1</sup> The World Health Organization (WHO) proposed the image of the "five-star doctor" as the ideal profile of a doctor possessing a combination of the following attributes: 1) Care provider, 2) Decision maker, 3) Communicator, 4) Community leader, 5) Manager.

A five-star doctor is expected to provide the complete range of services that a healthcare provider must deliver to meet the requirements of relevance, quality, cost-effectiveness, and equity.<sup>2</sup> Following these announcements, the Pakistan Medical and Dental Council, as a member of the WFME, is bound to implement appropriate healthcare reforms. This led to planning appropriate measures countrywide to inspire our medical graduates to become five-star doctors.

Accordingly, the University College of Medicine and Dentistry (UCMD), which is a private, independent university, redefined its mission and vision statement. Further, the ideal profile of a five-star doctor, as proposed by WHO, was incorporated along with two new traits (researcher and lifelong learner) to the outcomes of UCMD graduates: 1) Care provider, 2) Decision maker, 3) Communicator, 4) Community leader, 5) Manager, 6) Researcher, 7) Lifelong learner.

To acquire the seven traits of UCMD medical graduates mentioned in the mission and vision statement, students require certain skills. One suggestion is to promote self-regulation and self-direction among students to guide them in becoming care-providers, decision makers, leaders, managers, and lifelong learners. We should identify where our students are standing now in order to go further. Therefore, we decided to measure the students' skills using a self-regulation questionnaire.

The self-regulation questionnaire administered in this study comprises 22 items and was developed in 2015 by the Research Collaboration. An extensive review of related research resulted in the identification of four components that are cardinal for self-regulation. This literature review revealed that self-regulation requires students to plan what they want to achieve, monitor their performance, control their circumstances when things do not proceed according to plan, and then reflect on their progress.

The questionnaire was tested for reliability using Cronbach's coefficient alpha 2 with 1,396 high-school and middle-school students during the 2015–2016 academic year. The plan subscale comprised five items ( $\alpha = .607$ ), the monitor subscale six items ( $\alpha = .700$ ), the control subscale six items

( $\alpha = .719$ ), and the reflect subscale five items ( $\alpha = .685$ ). The overall self-regulation questionnaire was found to be highly reliable (22 items;  $\alpha = .891$ ). The purpose of this study is to assess the aptitude of medical students with respect to the four essential components of self-regulation, that is, planning, monitoring, control, and reflection.

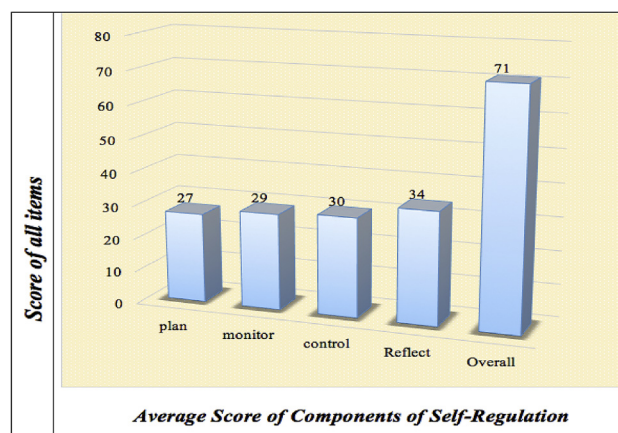
## Materials and Methods

This cross-sectional study was conducted at University College of Medicine and Dentistry, University of Lahore. The duration of the study was two months, from July to September 2018. A total of 96 MBBS students were included using the snowball sampling technique. The Internet link to an online survey designed on Google Forms was shared through Facebook, WhatsApp, and e-mail. Further, the confidentiality and anonymity of participants was ensured.

Our questionnaire consisted of two sections: the first section collected demographic details, and the second section introduced the questionnaire on self-regulation. The self-regulation questionnaire comprised 22 items, which are answered on a Likert scale by participants (from 1 to 5). The questionnaire was downloaded from the Research Collaboration organization, which gives free access to teachers and students. The total score of all the items could have a maximum value of 110, and it was divided into four global scales: 22–40, poor; 41–60, average; 61–80, good; and 81–100, excellent in self-regulation. All the data for the study were analysed using SPSS version 20.

## Results

The response rate was 78% (96 out of 123). Among the 96 respondents, 50 (52.1%) were women and 46 (47.9%) were men. The mean age of the respondents was 22.5 years. Further, most of the participants were second-year students (42, 43.8%), followed by first-year (28, 29.2%), fourth-year (16, 16.7%), and third-year (10, 10.4%) students. They included 50 (52.1%) day scholars, 18 (18.8%) students living in hostels, 8 (8.3%) students living with relatives, and 20 (20.8%) students living in a rented house. The motivation to



**Figure 1:** Graphical representation of the components of self-regulation.

**Table 1: Demographic details of UCMD medical students.**

Gender	Male	23 (47.9%)
	Female	25 (52.1%)
Age (years)	18–20	22 (45.8%)
	21–23	25 (52.1%)
	24–26	1 (2.1%)
Year of Study	First year	14 (29.2%)
	Second year	21 (43.8%)
	Third year	5 (10.4%)
	Fourth year	8 (16.7%)
Residence	Living with parents	25 (52.1%)
	Hostel	9 (18.8%)
	Living with relatives	4 (8.3%)
	Rental house	10 (20.8%)
Motivation to study MBBS	Personal interest	35 (72.9%)
	Parental pressure	10 (20.8%)
	Random choice	4 (8.3%)

study MBBS was recorded as personal by 70 students (72.9%), parental pressure by 20 students (20.8%), and random choice by 6 students (8.3%). [Table 1](#) depicts the participants' demographic details (See [Fig. 1](#)).

The main objective of this study was to determine the mean self-regulation score among MBBS students, which was found to be  $71.56 \pm 11.19$ . Among the components of self-regulation, the lowest score was found for planning, with an average value of  $27.01 \pm 1.33$ , and the highest average value was recorded for reflection,  $34.08 \pm 1.30$ . Further, the lowest mean score was  $2.33 \pm 1.04$ , which was identified for the question that stated, 'I keep making the same mistakes over and over again'. In addition, the highest score was  $4.40 \pm 0.92$ , which was recorded for the question that stated, 'I feel a sense of accomplishment when I get everything done on time'. [Table 2](#) summarizes these questions and their scores (see [Table 3](#)).

**Table 3: Mean and standard deviation values of the components of self-regulation.**

Components of self-regulation	Mean	Standard deviation
Plan	28.64	1.33
Monitor	30.53	1.20
Control	31.7	1.29
Reflect	34.08	1.30

## Discussion

Often, we assume that our students might have already learned self-regulation at school, at home, or through their life experiences and, hence, we do not need to teach it to them.<sup>3</sup>(4) Research proves that self-regulated learning skills can be taught; however, they have to be emphasized. Further, students should be provided with relevant instructions.<sup>5</sup>

Our study revealed that the mean self-regulation score among MBBS students was  $71.56 \pm 11.19$ , which is higher than the scores recorded by other studies in which the self-regulated learning quality was poor among medical students.<sup>6</sup> One explanation for this finding is intrinsic motivation,<sup>7</sup> which is indicated by the highest score, personal interest 70 (72.9%) followed by parental pressure 20 (20.8%) and random choice 6 (8.3%). Another explanation may be that the students who responded on Google Forms were the ones actively attempting to manage their routine.

Among the four components of self-regulation, 'plan' had the lowest score, with an average value of  $27.01 \pm 1.33$ . Similar results have been observed in earlier studies, as well.<sup>4,8</sup> The lack of planning among students was explained

**Table 2: Mean scores of the self-regulation questionnaire items of the respondents.**

No. of Question	Mean	Standard Deviation
1) I plan the projects that I want to complete.	3.10	1.36
2) If an important test is coming up, I create a study plan.	3.02	1.39
3) Before doing anything fun, I consider all the things that I need to get done.	2.88	1.27
4) I can usually estimate how much time I will need to complete my homework.	2.85	1.32
5) I have trouble making plans to attain my goals.	3.06	1.34
6) I keep track of how my projects are going.	2.92	1.22
7) I know when I am behind on a project.	3.62	1.20
8) I track my progress in reaching my goal.	3.33	1.19
9) I know what my grades are at any given time.	3.62	1.12
10) Every day, I identify the things that I need to get done and track what gets done.	2.77	1.13
11) I have trouble remembering all the things I need to accomplish.	2.81	1.02
12) I do what it takes to get my homework done on time.	2.85	1.30
13) I make choices to help me succeed, even when they are not the most fun right now.	3.19	1.18
14) As soon as I see that things are not going right, I want to do something about it.	3.75	1.21
15) I continue trying as many different possibilities as necessary to succeed.	3.83	1.12
16) I experience difficulty in maintaining my focus on projects that take a long time to complete.	3.50	1.22
17) When I get behind on my work, I often give up.	2.69	1.37
18) I think about how well I am doing my assignments.	3.27	1.20
19) I feel a sense of accomplishment when I get everything done on time.	4.40	0.92
20) I think about how well I have done in the past when I set new goals.	3.69	1.26
21) When I fail at something, I try to learn from my mistakes.	4.06	1.04
22) I keep making the same mistakes over and over again.	2.33	1.04

by Zimmerman and Kitsantas (1996). According to them, there are two types of goals:

- Outcome goal
- Process goal

An outcome goal focusses on the final end result alone, for example, obtaining a good grade in an Anatomy paper. In contrast, a process goal includes the planning of or strategies identified by a learner. Students who are taught the skill to set process goals demonstrate better performance and motivation compared to those who are taught to set only outcome goals.<sup>9</sup> It is highly recommended to teach students planning and goal-setting, to make them community leaders and managers.<sup>10</sup>

The average score of the 'monitor' component was  $30.53 \pm 1.20$ , which was followed by 'control' as  $31.7 \pm 1.29$ . These findings are consistent with the results of previous studies, where an inability to plan was accompanied by a lack of control and monitoring skills.<sup>11,12</sup>

An interesting finding in our results was the huge difference between the average score of the monitor component,  $30.53 \pm 1.20$ , and the average score of the reflection component,  $34.08 \pm 1.30$ . One may question how students who are good at reflection are poor in planning, monitoring, and control. This latter finding could be the result of the Kruger-Dunning effect, according to which 'poorly performing learners rarely monitor their learning and consequently are unlikely to notice that they are not doing so as compared to average students'.<sup>13–15</sup> Therefore, our study found a high level of reflection among students, since they were aware of their deficiencies; however, they did not know how to monitor their performance.

Based on these findings, it is highly recommended to promote the development of self-regulated learning skills. By teaching them self-regulation, we can help our students improve their academic and clinical performance (as care-providers and lifelong learners) and manage difficult situations (as leaders, communicators, and decision makers). In addition, the environment of a medical institute that promotes peer support, mentorship, extracurricular activities, and self-care from the beginning of its students' learning is considered highly favourable in improving the self-regulation of students.<sup>7</sup>

### Limitations

Although our study identified an interesting finding with respect to the reflection component of self-regulation, it has a few limitations that should be considered in future research. First is the response bias due to small sample size, which might have caused the sampling to miss the students who are poor at self-regulation and whose motivation to respond to the online questionnaire was low. Second, since it was a cross-sectional study, our study provides only a snapshot of self-regulation skills. Therefore, further research following a longitudinal design is required to gain insight into the students' perception of self-regulated learning. Third, the study was conducted in only a single institute; therefore, its scope is restricted to UCMD.

### Conclusion

From this study, we conclude the following: Although we have included the traits of seven-star doctors in our mission and vision statement, the strategies to realize these traits have been not identified. Further, one strategy to realize the traits is to promote self-regulation among students through the adoption of various teaching methodologies.<sup>16</sup>

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None declared.

### Conflict of interest

The authors have no conflict of interest to declare.

### Ethical approval

None declared.

### Authors' contributions

FS conceived, designed and performed data collection, conducted analysis, and performed manuscript writing. AAM performed manuscript editing and provided final approval of the manuscript after review. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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