



## Self-Care among Medical Students, Cairo University

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### ABSTRACT

**Background:** Self-care is the base of the healthcare pyramid. Medical students and healthcare providers play an essential role in disseminating self-care culture among their communities in addition to its importance for them as they live through stressful lives. **Objective:** to assess medical students' knowledge, health literacy, attitude, practice, perception of self-care, and the factors influencing them. **Methods:** A cross-sectional study was done between August and October 2022. A total 277 medical students from the first to sixth grades were included. Participants were approached through different social media platforms. Data were collected using an online self-administrated questionnaire. **Results:** The age ranged between 18 and 26 years. Approximately 61% of the students were females. More than 90% of the students were in the middle and upper middle social classes. The mean scores were 66.7+21.8 for knowledge, 74.9+21.7 for health literacy, 78.4+14.6 for attitude, 60.9+14.4 for practice, and 77.1+18.4 for perception. The mean score for health promotion activities among participants was highest for spiritual and lowest for psychological aspects. Practice score was significantly higher among females and those in clinical years and lower among those with chronic disease. Practice and health literacy scores were higher among students of higher social class. **Conclusions:** Our study highlights that the attitude and perception of self-care as future healthcare workers were generally positive, and the knowledge and health literacy were good. Self-care practice still needs more effort to improve, especially in psychological and physical aspects.

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### INTRODUCTION

WHO defines self-care as "The activities and practices taken by individuals, families, and communities to promote health, prevent diseases, and cope with illness and disability, either with or without the support of a health worker."<sup>1</sup> It refers to a broad range of activities, practices, and products that individuals can adopt to improve their health and well-being, from making healthy lifestyle choices to dealing with acute and chronic diseases.<sup>2</sup>

Self-care is important to achieve better health and quality of life for all individuals. As for chronic

diseases, more effective self-care leads to a better quality of life, less hospitalization, and fewer complications.<sup>3</sup> On the international level, it helps to face an estimated shortage of 18 million healthcare workers by 2030.<sup>4</sup> It can also be implemented to reduce the global rise in healthcare costs problem.<sup>2</sup> Self-care is considered an essential component of the health system. Healthcare providers and medical students have a significant role in promoting self-care through increasing health literacy, empowering patients to take a more active role in their health, and

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acting as role models for disseminating self-care to the community, in addition to the benefits they gain themselves from practicing it.<sup>5</sup> The study aims at assessing self-care among medical students. The assessment is expected to support the development of undergraduate curricula and incorporate the culture of self-care among future providers for better practice of self-care for themselves, their clients, and the community. This may hopefully be reflected in an effective and efficient health system and better population health at a lower cost.

The objective of the current study was to assess the knowledge, attitude, health-promoting lifestyle practice regarding health promotion, preventive measures, and acute and chronic disease management among Cairo University medical students. Additionally, to explore health literacy and perception towards self-care. Finally, to determine the factors affecting knowledge, attitude, practice, health literacy, and perception toward self-care.

## METHODS

A descriptive cross-sectional study was conducted at Kasr Al-Ainy Medical School, Cairo University, Egypt. Data collection was conducted during the period from August to October 2022.

The study targeted medical students from first to sixth grade enrolled in the academic year 2021-2022.

**Sample size calculation** was done using Epi-Calculator 2000 based on evidence from a similar study on Australian medical students that estimated the mean for self-care practice as 135.35, with standard deviation of 20.69<sup>6</sup> and the population size (total number of medical students Cairo University: 11726 students). Assuming 80% power, 0.05 level of significance, the sample size was calculated to be 277 participants. Then, sampling fraction for students in each grade was calculated based in their actual weight. Participants were approached through different social media platforms, asking them to participate and explain the purpose of the study, then giving them the link for the survey.

**Data collection tool:** Researchers adapted the questionnaire after a literature review.<sup>2,7-12</sup> The questionnaire consists of 6 sections: 1) Socio-demographic characteristics (5 questions) and whether they have been diagnosed with chronic disease or not; 2) knowledge (22 questions) in addition to a question about sources of knowledge; 3)

attitude (8 questions); 4) perception of self-care as future doctors (9 questions); 5) practice regarding health promotion (11 questions), preventive measures (6 questions), acute and chronic diseases management (20 questions); 6) health literacy (9 questions) and a question about factors preventing students from leading a healthy life. Face and content validity were performed. A pilot test was done. The reliability test showed Cronbach alpha 0.84.

**Statistical analysis:** The data was analyzed using SPSS version 22. The mean scores for correct answers for knowledge and varied answers for other scales were calculated and then transferred to a 0-100 scale by dividing the raw score by the maximum possible score.<sup>12</sup> Descriptive statistics were done. T-independent and One-way ANOVA tests were used for the association, and Pearson correlation was performed to correlate different numerical variables. P value less than or equal to 0.05 was considered statistically significant.

## RESULTS

The sociodemographic data of participants is presented in (Table 1). The age ranged between 18 and 26 years. Approximately 61% of the students were females. Approximately two-thirds of the students were in the academic years while one-third was in the clinical years. More than 90% of the students were in the middle and upper middle social classes. The majority (68.2%) of the students were living with their families and 20.2% were living in private apartments. During the last month, 77 students (27.8%) suffered from acute conditions; 55 students (71.4%) managed it by themselves. Nearly one-quarter of participants (70 students) reported having chronic diseases; the most common were mental disorders (14.1%) (39 students). Half of the students would adhere to treatment.

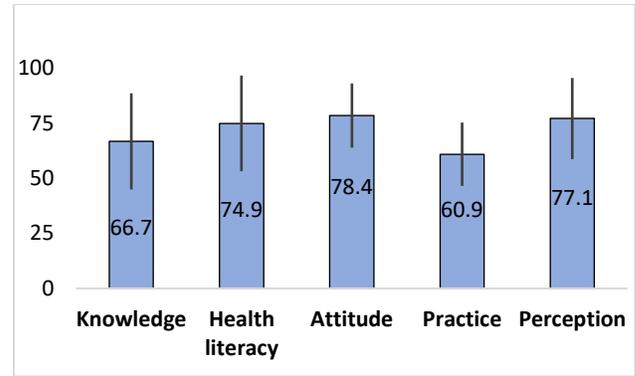
The most common source of knowledge was university curricula (76.5%), followed by social media (65.7%) and health websites (59.2%). Relying on relatives and friends as a source of knowledge was 44.0% and decreased with advancing grades. Students had access to most of the information; the least access was to mental health information. More than three-quarters of students mentioned that they could transfer knowledge to others.

**Table 1: Socio-demographic characteristics among the studied medical students.**

	Number	Percent
<b>Age</b>		
18 - 20 years	140	50.6
21 - 23 years	117	42.2
24 - 26 years	20	7.2
<b>Gender</b>		
Male	108	39.0
Female	169	61.0
<b>Study year</b>		
1st year	79	28.5
2nd year	52	18.8
3rd year	54	19.5
4th year	30	10.8
5th year	33	11.9
6th year	29	10.5
<b>Socioeconomic status:</b>		
Upper class	11	4.0
Upper middle class	119	43.0
Middle class	135	48.7
Less than middle	12	4.3
<b>Residence:</b>		
With family	189	68.2
University campus/hostel	25	9.0
Private apartment	56	20.2
Other	7	2.5
<b>Total</b>	<b>277</b>	<b>100.0</b>

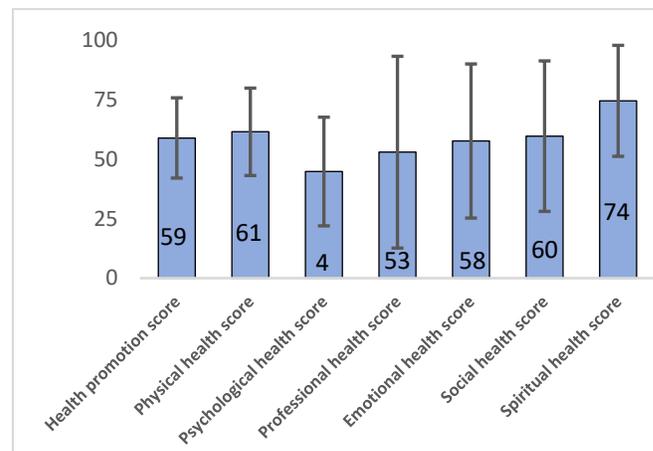
A high percentage (81.2%) (225 students) agreed that they are responsible for living a healthy lifestyle. However, only 39% (108 students) consider themselves engaged in adequate self-care. Students accepted that physicians act as role models to their clients, and 82% (227 students) agreed that clients are more likely to follow healthy behaviors if their doctors follow them. The majority (81.6%) (226 students) of participants perceived self-care as a mean of reducing medical care costs. Most students agreed that self-care should be part of their treatment guidelines and wellness plans (Table 2).

As shown in Figure 1, the mean scores were 66.7+21.8 for knowledge, 74.9+21.7 for health literacy, 78.4+14.6 for attitude, 60.9+14.4 for practice, and 77.1+18.4 for perception.



**Figure 1: Mean scores of knowledges, health literacy, attitude, practice, and perception of self-care among the studied medical students**

As shown in Figure 2, health promotion activities included physical, mental, social, emotional, professional, and spiritual. The mean score for health promotion activities among participants was highest for spiritual and lowest for psychological aspects.



**Figure 2: Mean scores of health promotion activities among Cairo University medical students**

As preventive measures, the COVID-19 vaccine was received by 91.3% of participants (253 students), but less than half received hepatitis B and influenza vaccines. Taking COVID-19 as an example of dealing with acute diseases, it was found that as a curative measure, 74.5% (117 students) of participants adhere to prescribed medication. As a preventive measure, 87.3% of participants (137 students) adhered to isolation measures at home, 75.9% (210 students) were mainly doing regular hand washing, and only 31.4% (87 students) were keeping an appropriate physical distance. Only 14.8% (41 students) of participants claimed they were leading a healthy life. The most cited cause for not having a healthy life was

**Table 2: Perception of self-care as future healthcare workers among the studied medical students**

	Disagree		Neutral		Agree	
	Number	%	Number	%	Number	%
Self-care programs will help reduce not seriously ill patient seen by physician	17	6.1	38	13.7	222	80.2
Self-care programs will help reduce medical care cost	11	4.0	40	14.4	226	81.6
Self-care allows easier access to physicians by seriously ill patients.	29	10.5	50	18.0	198	71.5
People need to rely more on their common sense, less on physicians	157	56.7	53	19.1	67	24.2
Self-care will be considered a core component of my managing patient approach	18	6.5	79	28.5	180	65.0
Using over the counter products as 1st line for minor ailments improve health outcomes	54	19.5	92	33.2	131	47.3
Self-care should be included in treatment guideline in my workplace	13	4.7	39	14.1	225	81.2
Complementary use of self-care products must be part of wellness plan	14	5.1	36	13.0	227	81.9
Complementary use of self-care products should be part of treatment plan	20	7.2	50	18.1	207	74.7

lack of time (81.6%) (226 students), and the least was lack of knowledge (58 students) (20.9%).

Factors affecting knowledge, health literacy, attitude, practice, and perception are presented in Table 3. Females scored higher than males, with a significant difference in practice mean score ( $p=0.019$ ). Having chronic disease is associated with significantly lower practice scores ( $p=0.030$ ). The higher the social class of the student, the better mean scores achieved, with significant differences for practice ( $p=0.008$ ) and health literacy ( $p=0.015$ ).

Regarding correlation, knowledge is significantly correlated to health literacy; health literacy is significantly correlated to practice and attitude; perception were  $66.7\pm 21.7$ ,  $74.9\pm 21.7$ ,  $78.4\pm 14.6$ ,  $60.9\pm 14.9$ , and  $77.1\pm 18.4$ , respectively. The highest scores were achieved in attitude and perception; it was good for knowledge but was just acceptable for practice. This highlights the need for more efforts to advance self-care practice among medical students. It was also found that health literacy and attitude were the most important drivers for self-care practice, while

attitude is significantly correlated to practice and perception (Table 4).

## DISCUSSION

Self-care is the base of the healthcare pyramid.<sup>1</sup> Self-care programs support the rational use of healthcare services and contribute to reducing healthcare costs.<sup>13</sup> Medical students should be prepared to support their clients/patients and the communities they serve with appropriate care through the care continuum.<sup>14</sup> So, we conducted this study to assess self-care situations among them.

Out of a maximum of 100 points, the mean scores for knowledge, health literacy, attitude, practice, and attitude was the main driver for the role of the students as future healthcare providers (perception). Assessing sources of knowledge was essential to help identify the most used sources to disseminate self-care knowledge through them. The most cited source of knowledge was university curricula (76.5%), followed by social media and health websites. The whole population commonly uses the Internet and social

**Table 3: Factors affecting knowledge, health literacy, attitude, practice, and perception of self-care among the studied medical students.**

Variables	Knowledge		Health literacy		Attitude		Practice		Perception	
	Mean±SD	P	Mean±SD	P	Mean±SD	P	Mean±SD	P	Mean±SD	P
<b>Gender *</b>										
Male	65.1±21.2	.326	73.0±21.1	.259	77.7±12.9	.527	58.3±14.0	.019*	75.6±16.7	.276
Female	67.8±22.2		76.1±22.1		78.9±15.6		62.5±14.5		78.0±17.4	
<b>Chronic disease status *</b>										
Yes	68.4±23.3	.468	76.5±21.1	.472	75.8±14.7	.077	57.3±16.5	.030*	75.6±20.0	.450
No	66.2±21.4		74.3±21.9		79.4±14.5		62.1±13.5		77.6±17.9	
<b>Age in years **</b>										
18 - 20	64.2±22.9	.150	73.1±21.0	.392	77.5±14.6	.403	59.4±15.3	.120	76.6±20.2	.629
21 - 23	69.0±21.0		76.5±22.3		79.9±14.3		63.0±12.9		77.0±16.6	
24 - 26	70.7±21.8		77.5±23.5		77.5±16.0		59.5±15.6		80.8±15.7	
<b>Study year **</b>										
1st	62.9±21.9	.139	72.9±21.9	.06	78.3±14.3	.681	59.8±17.0	.011*	77.2±21.1	.464
2nd	67.9±23.9		73.6±18.8		76.6±14.9		56.1±11.6		77.5±19.7	
3rd	63.9±20.8		69.5±26.9		77.1±18.4		62.9±12.8		76.9±16.4	
4th	73.6±21.4		82.5±17.4		80.4±10.9		64.3±12.1		71.1±19.5	
5th	67.3±18.4		79.4±19.6		81.4±12.4		66.6±12.6		80.8±12.9	
6th	72.4±22.4		79.3±20.4		79.1±13.1		59.0±16.1		78.1±15.5	
<b>Socioeconomic status **</b>										
Upper class	75.2±24.4	.256	82.8±26.6	.015*	79.5±13.1	.111	59.0±15.0	.008*	79.3±18.4	.840
Upper middle class	67.9±21.4		77.6±20.6		79.5±12.7		61.3±14.0		76.5±19.2	
Middle class	65.7±21.9		73.2±21.6		78.3±16.0		61.9±14.5		77.7±17.4	
Less than the middle class	58.3±21.9		59.2±22.6		68.7±15.3		47.3±13.8		73.6±22.4	
<b>Residence **</b>										
With family	67.6±22.1	.678	75.7±21.4	.160	78.3±14.8	.818	61.8±14.1	.402	77.6±17.1	.417
University campus/hostel	63.4±16.9		66.6±17.3		79.5±16.5		59.7±15.8		72.7±22.8	
Private apartment	64.7±22.7		74.5±24.6		79.2±12.9		59.3±15.1		78.1±18.1	
Other	70.5±25.8		84.1±13.8		74.1±17.8		54.5±15.0		69.8±34.8	

\* Independent sample t-test \*\* One way ANOVA

media, and there's a need to improve their health content to reflect better self-care and promote health among students and the whole population.

Factors related to self-care Knowledge, Health literacy, Attitude, Practice, and Perception (KHAPP) revealed that females had better mean scores for all aspects. Differences were statistically insignificant except for practice, which is significantly better among females ( $P \leq .019$ ). A study done in Jordan showed that the health responsibility and interpersonal relations subscales means were higher among females.<sup>15</sup> A study in the USA showed that males had significantly lower self-care results than females.<sup>16</sup> On the contrary, another study in Iran showed that self-care practice is higher among males.<sup>17</sup> The place of residence did not

show significant differences in KHAPP scores. Two studies in Iran reported similar results where the place of residence had no statistically significant effect.<sup>17,18</sup>

The higher the social class, the significantly higher the health literacy mean scores; the mean health literacy score among the upper class reached  $82.8 \pm 26.6$ . This relationship between health literacy and socio-economic class is similar to a study in China among medical students<sup>19</sup> and Texas university students.<sup>20</sup> Social class has a significant relation with practice, but the findings were ambiguous as they showed higher scores among the middle and upper middle classes. A previous study in Iran showed that those with higher socio-economic status had higher scores than middle and lower classes.<sup>17</sup> In Jordan, a significant positive

**Table 4: Correlation between knowledge, health literacy, attitude, practice, and perception of self-care among the studied medical students**

Variables	Health literacy		Attitude		Practice		Perception	
	R	P	R	P	R	P	R	P
Knowledge	.124	.039*	.069	.254	.057	.346	.030	.613
Health literacy			.154	.010*	.301	.000*	.044	.470
Attitude					.306	.000*	.175	.004*
Practice							.081	.177

correlation was found between family monthly income and the average score of all scales of Health Promoting Lifestyle Profile (HPLP).<sup>15</sup>

Generally, higher scores were reported with advanced grades, but it was only significant for practice. Fourth- and fifth-year students possibly had the best scores due to their recent exposure to public health and community medicine courses and other clinical topics. This is consistent with the results of another study in the USA, where 4th-year students had better scores than previous years.<sup>16</sup>

About one-fourth of participants had chronic diseases, primarily mental health disorders, and this is going with the worldwide prevalence of stress, anxiety, and depression among medical students.<sup>20</sup> Participants with chronic diseases showed better knowledge and health literacy; this may be through prolonged contact with caregivers and being more exposed to information related to their diseases; however, they had significantly lower self-care practices. This could be related to the prevalence of mental disorders that may affect their ability to do proper self-care. A previous study has shown that mental health problems decrease the ability to do self-care.<sup>22</sup>

As previously mentioned, the practice score was the lowest. The practice of health promotion activities was generally inadequate. The mean score for overall health promotion activities was  $58.9 \pm 16.86$ , with the lowest score for the psychological aspect and the highest for the spiritual aspect. Deficiency in performing physical exercise could be due to lack of time, which was the most cited cause of not leading a healthy life. Poor physical activity was also shown in a study in Iran with a mean score of  $14.10 \pm 4.95$ .<sup>18</sup>

Self-care includes self-management of minor ailments. In this study, more than 50% of participants usually or always practice self-management and self-monitor for most conditions cited. Self-medication assumes a special significance among medical students as they

are exposed to knowledge about diseases and drugs. A systematic review paper from Iran published in 2020 included 89 studies (54 studies were in Asia, 14 in Africa, 11 in South America, 7 in Europe, 2 in the USA, and 1 in Australia) with a total of 60938 college students; the prevalence of self-medication was 70%, and the prevalence among medical students was 97.2%.<sup>23</sup> All levels of self-care were reflected in dealing with COVID-19. The high response of medical students in dealing with COVID-19 reflects government guidelines, including lockdown, working from home, distancing, and wide availability of vaccines. Massive awareness campaigns supported this through the media.

For chronic diseases, more effective self-care leads to better quality of life, fewer complications, and less hospitalization.<sup>3</sup> In our study, among 77 participants suffering from chronic diseases, 57.2% would monitor signs and symptoms, and about 50% adhere to their prescribed treatment.

Regarding students' perception of self-care as future healthcare providers, most participants perceived self-care as a means of reducing medical care costs. Most students agreed that self-care should be part of their treatment guidelines and wellness plans. These findings reflect a promising positive attitude.

**Limitations of the study:** It's the first time using this research tool to evaluate self-care. It's unknown if this instrument would achieve the same outcomes among university students in different settings or people of different age groups.

## CONCLUSIONS

Our study highlights that the attitude and perception of self-care as future healthcare workers were generally positive, and the knowledge and health literacy were good. Self-care practice still needs more effort to improve, especially in psychological and physical aspects. Active steps should be taken to

incorporate self-care and lifestyle medicine in the preclinical and clinical years curricula and make it a constant clinical practice component. A culture of self-care for better health and quality of life for all should be a core concept in our health policy.

### Ethical Considerations

Objectives of the study were explained to the participants (by a statement before initiation of the survey) before joining the study. They were completely free to accept or refuse participation in the study. Strict confidentiality of participants' personal data (this was secured by the questionnaire being anonymous) was maintained throughout data collection and analysis. The protocol was approved by the Research Ethical Committee at the Faculty of Medicine, Cairo University (Code: MS-271-2022).

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