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Health Promoting Lifestyle Profile Among University Students and its Relation with the Study Speciality

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SUMMARY

Introduction: Unhealthy lifestyle behaviours are common modifiable risk factors for NCDs which cause a great decline for age group suffering from chronic diseases. The university years serve as a particularly crucial and formative stage for the overall development of lifelong behaviours that can either promote or seriously impair health outcomes. We aimed to assess health promoting lifestyle profile among university students and detect its determinants.

Methodology: A cross-sectional study was conducted among 397 students (204 medical and 194 non-medical) using health promoting lifestyle profile-II (HPLP-II) questionnaire. Results 75.82% of students were females and 96.22% were non-smokers. Less than half (43.3%) of students achieved total score of HPLP-II higher than 2.5. Medical students reported significant lower median total scores than non-medical ones (median:2.38 vs. 2.5 respectively). They also achieved significant lower median health responsibility (median 2 vs. 2.22) and nutrition (median 2.22 vs. 2.33) subscales compared to non-medical.

Conclusion: the higher burden that medical students face is responsible for the worse lifestyle scores they report. Intervention programs should be carried out to enhance lifestyle behaviours among the whole university students with special attention to medical ones.

Keywords: Keywords: health-promoting lifestyle, HPLP-II, medical, non-medical university students

INTRODUCTION

In the past, infectious diseases represented the main cause of death. Recently, non-communicable chronic diseases (NCDs) surpassed infectious diseases; accounting for more than 70% of worldwide deaths. In addition, two thirds of all years lived with disability in low- and middle-income countries and 85% of deaths in Egypt are caused by NCDs. This shift of disease pattern is attributed to lifestyle change over the years. (1, 2) Unhealthy lifestyle behaviours as poor dietary habits, physical inactivity, smoking and alcohol consumption are major modifiable risk factors for NCDs. Moreover, there is a great decline for the age group suffering from chronic diseases. Early diagnosis of chronic diseases have been observed in younger age groups (3)

A healthy lifestyle is a way of living that helps the individual not only to prevent diseases and reduce their severity, but to promotes the overall well-being of the individual, including his physical, mental, and social health. (4) Health promoting lifestyle behaviours are selfinitiated actions and perceptions which can affect individual wellbeing and quality of life. They encompass six dimensions, health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management. (5)

University students are experiencing a critical stage of transition from childhood to adulthood. At university life, students are more responsible and have greater autonomy upon their own behaviour. University related events such as academic burden, higher psychological vulnerability can lead to impairment of healthy lifestyle among university students. (6, 7)

The university years represent a particularly crucial stage for the overall development of lifelong behaviours that can either promote or seriously impair individual health outcomes. Lifestyle preferences at university time tend to remain stable. Adopting healthy lifestyle behaviours can improve cognitive function, increase

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self-perception, alleviate stress and improve academic performance. (4)

A study conducted among female university colleges in Saudia Arabia revealed that 96% of the studied students believed that a healthy diet, physical activity, adequate sleep, and stress management were good for their health. Despite that, less than 25% of participants were having the recommended amounts of grains, vegetables, fruits, meats, dairy products, and water. Also, 52% of study participants engaged in daily moderate physical activity and 30% were inactive. Only 25% of participants reported sleeping the recommended daily 7–9 h. (8)

Medical students face stress during their medical education, linked to the numerous academic demands, longer study periods, and preparation time for long-term careers, leading to a risk of neglecting healthy habits. (9)In contrast to non-medical students, medical students receive health education as an ongoing part of the medical curriculum, and so bring different levels of health awareness. (10) Consequently, it is difficult to know whether health-conscious behaviors and lifestyle changes are unique to this sub-population of students. In other words, it is necessary to ascertain whether adopting healthy promoting lifestyle behaviors is a generic problem for students in general, or if medical students are fully aware of and striving for early health at this young age.

Within this context, Sohag University, much like many other educational institutions, has significantly diversified in recent years. It has broadened its enrollment by admitting a larger number of students from a truly vast array of backgrounds, encompassing both medical and non-medical programs.(11) It worth considering that if the future doctors and other health professionals, who are responsible for providing essential guidance and direction toward fostering a healthier and longer-living society, begin their careers with a low starting base or suboptimal health levels, this poses a significant challenge and cause for concern regarding our nation's future health landscape. (12, 13)

Owing to the stressful university life and the long-term effects of lifestyle behaviours on university students, the current study was conducted to determine the status of Sohag university students' healthy lifestyle profile and its determining factors. Also, to detect if the studying field is affecting the students' health-promoting behaviours.

METHOD

Study design

The current study is a cross-sectional study conducted among medical and non-medical students at Sohag University.

Study settings

Sohag University is an independent university located in Sohag Governorate on the Eastern Nile bank. The University includes 19 faculties. The number of registered students at Sohag University was 62,417 students of whom 3979 students were enrolled in the post-graduate programs in the academic year 2021-2022. (14) Sohag Governorate is located in Upper Egypt which is considered one of the regions with the lowest socioeconomic level. (15) Most of the registered undergraduate students belong to Sohag Governorate or the nearby surroundings. This reflects that most of the students may be of low or middle socio-economic level. Faculties of Medicine and Education were chosen to be involved in the current study to study lifestyle health profile of medical and non-medical students.

Study population

The studied population was composed of fourth year students of the selected medical faculty (faculty of Medicine) and non-medical faculty (faculty of Education) in Sohag University. The first three years of medical study at faculty of Medicine at Sohag University includes non-clinical curriculum, the fourth year of medical study is the beginning of engagement in clinical activities with its medical information and accompanying stress. So, students in fourth year medical study and their corresponding fourth year non-medical students were enrolled to participate in the current study.

Sample size and sampling procedure

Cluster sampling method was conducted. Sample size was calculated to be 351 students using Medcalc software version 15.8 (16) based on the following assumptions: mean score of health promoting lifestyle profile-II (HPLP-II) is 2.4 and standard deviation is 0.4 according to the results of a previous study conducted among university students to assess health-promoting lifestyle behavior and its association with student's characteristics (17), power as 80% and confidence level was set at 95%. However, the sample size was increased to 410 students (205 students from each faculty) to compensate for a dropout percent of 16%.

Inclusion criteria were being a student from the selected faculties, at age ranging from 17 to 25. Students who refused to answer or didn't complete the questionnaire were excluded.

Data collection procedure

At the end of lectures time, the study objectives and the questionnaire were explained to the students in the selected faculties, questionnaires were distributed to the students who agree to participate in the study,

and they were asked to fill them. The time required to complete the questionnaire was 15–20 min.

Data collection tool

Data was collected using a predesigned structured questionnaire composed of two parts, the first part includes sociodemographic data (age, gender, residence, number of family members and income), faculty type, smoking, perception of health, chronic illnesses and BMI and the second part includes a validated Arabic version of health promoting lifestyle profile HPLP-II questionnaire (Cronbach's alpha of 0.91). (18) Researchers have got permission to use the HPLP-II scale in the current study.

HPLP-II was developed by Walker et al. (19) to assess lifestyle. It includes 52 behavior statements categorized into six domains (subscales): physical activity, health responsibility, nutrition, spiritual growth, interpersonal relations, and stress management, that uses a 4 points Likert scale (never = 1, sometimes = 2, often = 3, routinely = 4). The mean score is obtained by calculating the total score for the whole HPLP-II and for each subscale and dividing by the number of items in the overall scale and subscales. Higher scores indicate higher adoption of health promoting lifestyle behaviors. To compare those who adopted regular healthy lifestyle behaviors and those who do not, participants were categorized into two groups based on the mean score of HPLP-II; students who achieved overall mean score ≥ 2.5 represented the group with regular healthy lifestyle behaviors, and participants who achieved overall mean scores less than 2.5 constituted the second group who do not adopt healthy behaviors.

Statistical analysis

Data was analyzed using IBM SPSS Statistics for Windows version 20. Quantitative data was expressed as means ± standard deviation, median and inter quartile range. Qualitative data was expressed as number and percentage. Quantitative data was tested for normality by Shapiro–Wilk test. Mann–Whitney U test was used for data which wasn't normally distributed. Chi-square ($\chi 2$) and Fisher exact test were used for comparison of qualitative variables as appropriate. Binary logistic regression analysis was used to determine predictor variables of high scores of HPLP-II (≥ 2.5) of the studied students. A 5% level was chosen as a level of significance in all statistical tests used in the study.

Ethical considerations

Ethical approval was secured from the ethical committee of the Faculty of Medicine in Sohag university, registration number: Soh-Med-24-11-8PD. Informed verbal consent was obtained from the study participants, confidentiality of data was assured, and questionnaires were anonymous.

RESULTS

The current study included 397 students (194 were non-medical students) of whom 301 (75.82%) were females and 235 (59.19%) reported urban residence. The majority of the students (382 (96.22%)) were non-smokers. Most of the studied students (296 (74.56%)) perceived having good health, reported being non-diabetic (389 (97.98%)) and weren't suffering from other chronic diseases (377 (94.96%)). The mean body mass index of the participants was (24.21 ± 5.31). (table 1)

The median total score of HPLP-II among the studied students was 2.44. Regarding scores of HPLP-II subscales, interpersonal relations (IPR) subscales median score was the highest reported one (2.89), followed by spiritual growth subscales (2.75) and stress management subscales (2.5). The lowest reported median score was health responsibility subscales (2.11). (table 2)

Less than half (43.3%) of the studied university students had total score of HPLP-II higher than 2.5 while 56.7% of them had total score of HPLP-II less than 2.5 (Fig.1).

Regarding relation between students' characteristics and their total scores of HPLP-II, residence and faculty type were found to significantly influencing the total scores of the students (P-value = 0.043 and 0.009 respectively), on the other hand there was no statistically significant effect of other students' characteristics on their scores (table 3).

Binary logistic regression applied to determine predictor variables of high total scores of HPLP-II (> 2.5) of the studied students revealed that faculty type and students' perception of health are significant predictors of high total scores of HPLP-II (>2.5). Non-medical students were 1.81 times higher than medical students in achieving higher total HPLP scores (P-value= 0.005) and scores of students perceived their health status excellent was 2.61 times higher than those with poor health perception (P-value=0.025) (table 4,5).

Comparison between total and subscales scores of HPLP-II of medical and non-medical students shows that 56.4% of non-medical students had HPLP-II higher than 2.5 compared to 43.6% of the medical students while 43.1% of non-medical students reported HPLP-II lower than 2.5 compared to 56.89% of medical students. Results also revealed that there is a highly significant difference between total scores of HPLP-II of medical and non-medical students where the median total score of HPLP-II of medical students was 2.38 (IQR=2.17 – 2.62) compared to 2.5 (IQR=2.25 – 2.7) of non-medical students (P-value=0.009).

Table (1): Characteristics of the studied university students (No.=397)

Characteristics	Summary statistics
Age Mean ± SD	21.08 ± 0.97
Gender Male Female	 96 (24.18%) 301 (75.82%)
Smoking Smoker Nonsmoker	 15 (3.78%) 382 (96.22%)
Residence Urban Rural	 235 (59.19%) 162 (40.81%)
Perception of health Excellent Good Poor	 58 (14.61%) 296 (74.56%) 43 (10.83%)
Diabetes Yes No	 8 (2.02%) 389 (97.98%)
Other chronic illnesses Yes No	 20 (5.04%) 377 (94.96%)
Crowdedness index ≤ 1 /room > 1/ room	 172 (43.32%) 225 (56.68%)
BMI Mean ± SD	24.21 ± 5.31
Family members number < 5 ≥ 5	 172 (43.3%) 225 (56.7%)
Family members with income One Two Three or more	 150 (37.78%) 172 (43.32%) 75 (18.89%)
Faculty type Medical Non-medical	 203 (51.13%) 194 (48.87%)

Table (2): Total and subscales scores of HPLP II of the studied university students

Variables	Median (IQ range)
HPLP II Total	2.44 (2.23 – 2.66)
Health Responsibility	2.11 (1.78 – 2.44)
Physical activity	2.25 (1.75 – 2.5)
Nutrition	2.33 (2 – 2.67)
Spiritual growth	2.75 (2.33 – 3.11)
Interpersonal relations (IPR)	2.89 (2.5 – 3.22)
Stress management	2.5 (2.25 – 2.88)

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Figure (1): Total scores of HPLP II among the studied university students

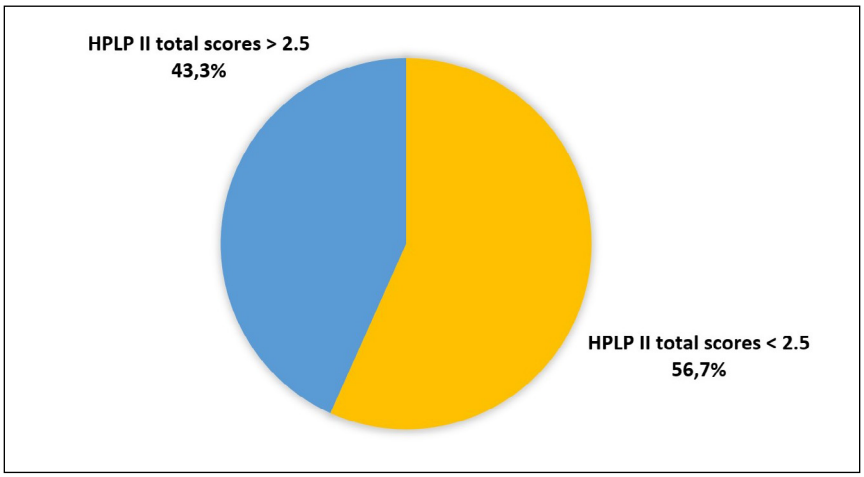

Table (3): Relation between students' characteristics and their total scores of HPLP II.

Characteristics	< 2.5 (N= 225)	> 2.5 (N= 172)	P-value
BMI Median (IQR)	23.15 (21.33- 23.07)	23.73 (22.13-19.23)	0.327*
Gender Male Female	 56 (24.89%) 169 (75.11%)	 40 (23.26%) 132 (76.74%)	0.706
Smoking Smoker Nonsmoker	 9 (4%) 216 (96%)	 6 (3.5%) 166 (96.5%)	0.791
Residence Urban Rural	 143 (63.56%) 82 (36.44%)	 92 (53.49%) 80 (46.51%)	0.043
Perception of health Excellent Good Poor	 28 (12.44%) 167 (74.33%) 30 (13.33%)	 30 (17.44%) 129 (75%) 13 (7.56 %)	0.097
Diabetes Yes No	 4 (1.78 %) 221 (98.22%)	 4 (2.33 %) 168 (97.67%)	0.484**
Other chronic illnesses Yes No	 8 (3.56 %) 217 (96.44%)	 12 (6.98%) 160 (93.02%)	0.123
Crowdedness index ≤ 1 /room > 1/ room	 100 (44.44%) 125 (55.56%)	 72 (41.86%) 100 (58.14%)	0.607
Family members number < 5 ≥ 5	 45 (20%) 180 (80%)	 32 (18.60%) 140 (81.40%)	0.493
Family members with income One Two Three or more	 76 (33.78%) 100 (44.44%) 49 (21.78%)	 74 (43.02%) 72 (41.86%) 26 (15.12%)	0 .098
Faculty type Medical Non-medical	 128 (56.89%) 97 (43.11%)	 75 (43.60%) 97 (56.40%)	0.009

P-value was calculated by Chi-Square Test *P-value was calculated by Mann Whitney U-Test
**P-value was calculated by Fisher's Exact Test P- value <0.05 is statistically significant.

Table (4): Multiple binary logistic regression analysis of predictor variables of high total scores of HPLP II (>2.5) among studied students.

Variables	Adjusted OR (CI 95%)	P - value
BMI	1.01 (0.97– 1.05)	0.564
Gender Male Female	 1.03 (0.6– 1.75) 1	 0.921
Smoking Smoker Non smoker	 0.79 (0.24 – 2.7) 1	 0.720
Residence Urban Rural	 0.81 (0.51– 1.29) 1	 0.382
Perception of health Excellent Good Poor	 3.14 (1.29 – 7.6) 2.45 (1.17– 5.14) 1	 0.012* 0.019*
Diabetes Yes No	 1.33 (0.27– 6.56) 1	 0.725
Other chronic illnesses Yes No	 2.41 (0.89– 6.48) 1	 0.082
Crowdedness index ≤ 1 /room > 1/ room	 1.02 (0.66– 1.58) 1	 0.925
Family members with income One Two Three or more	 1.65 (0.89– 3.05) 1.41 (0.79– 2.53) 1	 0.107 0.244
Faculty Medical Non-medical	 1 1.61 (0.98– 2.63)	 0.055

* Statistically significant

Table (5): final model of Multiple binary logistic regression analysis of predictor variables of high total scores of HPLP II (>2.5) among studied students.

Variables	Adjusted OR (CI 95%)	P - value
Faculty Medical Non-medical	 1 1.81 (1.19– 2.75)	 0.005*
Perception of health Excellent Good Poor	 2.61 (1.13– 6.03) 2.15 (1.06– 4.37) 1	 0.025* 0.034*

* Statistically significant

Median scores of health responsibility and physical activity subscales of non-medical students were higher than those of medical students and these differences were highly significant (P-value < 0.001) (Fig.2, table 6).

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Figure (2): Comparison between medical and non-medical students regarding total scores of HPLP II

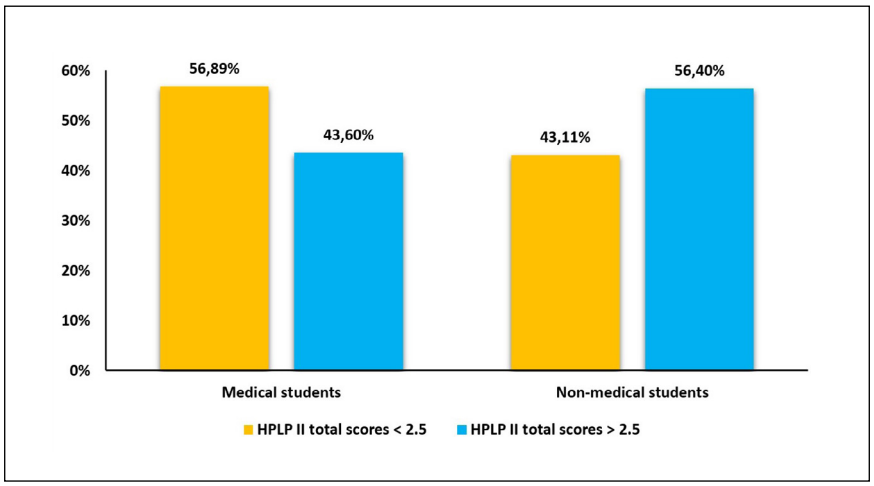

Table (6): Comparison between medical and non-medical students regarding total and subscales scores of HPLP II.

Characteristics	Median (IQR)		P-value
	Medical (N= 203)	Non-medical (N= 194)	
HPLP II Total	2.38 (2.17 – 2.62)	2.5 (2.25 – 2.7)	0.009
Health Responsibility	2 (1.67 – 2.33)	2.22 (1.89 – 2.56)	<0.001
Physical activity	2.13 (1.75 – 2.5)	2.25 (2 – 2.63)	<0.001
Nutrition	2.22 (1.89 – 2.56)	2.33 (2 – 2.67)	0.087
Spiritual	2.78 (2.33 – 3.11)	2.67 (2.33 – 3.11)	0.760
Interpersonal relations	2.89 (2.44 – 3.22)	2.81 (2.56 – 3.11)	0.175
Stress management	2.5 (2.13 – 2.88)	2.5 (2.25 – 2.88)	0.957

P-value was calculated by Mann Whitney U Test
P- value <0.05 is statistically significant.

DISCUSSION

Health was defined by the World Health Organization as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". (20) One of the primary strategies for promoting and preserving health is adopting a healthy lifestyle and health-promoting activities. University life carries new challenges for the emerging adults due to the unfamiliar life circumstances and the academic burden which can make drastic changes in their lifestyle behaviours. (8, 21)

In this work, we studied university students to detect degree of adoption of health-promoting behaviours among them and its determinants which can guide potential intervention to improve the situation. This research was conducted using HPLP-II score which is a 52-item tool that measures self-initiated health-promoting behaviours as a total as well as clusters. (22)

The present study revealed that the reported median total HPLP-II score was 2.44 (IQR: 2.23:2.66). Interpersonal relations, spiritual growth and stress management subscales were the highest reported median subscale scores, while physical activity and health responsibility were the lowest. Also, 56.7% of the studied students reported a total HPLP-II score less than 2.5. In agreement with our study, a cross-sectional study was conducted among 1112 university students in Saudi Arabia revealed that the studied students displayed a moderate level of health-promoting activities and, the spiritual growth subscale had the greatest mean score, followed by interpersonal relationships, while the physical activity subscale had the lowest mean score. (23) The high score in the interpersonal relationships and spiritual growth subscales reflect the strong family and social ties which maintain positive relationships with family and friends.

Another cross-sectional study conducted among 450 university students in Saudia Arabia concluded that 62.4% of the studied students were physically inactive. Although 78% of the studied students reported having good understanding of principles of eating habits, only 16% of them were satisfied with their eating habits.(24) This may reflect lack of knowledge and poor practice to physical activities among Arab populations. Also, despite having a good nutritious knowledge, small percent can adopt this knowledge to adopt good eating habits which may be due to community habits.

The current study revealed no significant association between gender, smoking, income or chronic diseases and HPLP-II score. Another cross-sectional study conducted in Turkey among 2100 university students revealed presence of no significant association between total HPLP-II score and gender (P value: 0.9) but they revealed significant association between HPLP-II total score and income where participants with the lowest income reported the lowest total score (median 2.38, IQR 0.51), participants with middle income had a middle score (median 2.42, IQR 0.46), and those with good income reported the highest total score (median 2.46 and IQR 0.48), P value 0.02. (25) This may be accused to the wide economic disparity among students in Turkey while those at Sohag University belong to closely related economic levels.

As regard the study speciality, the study between our hands revealed that medical students reported significant lower total HPLP-II scores compared to non-medical counterparts. As regard subscales, medical students reported statistically significant scores for health responsibility and physical activity subscales compared to non-medical ones. In contrast to our results, Chao in his study which included 1062 medical and non-medical university students in Taiwan revealed that medical students reported statistically significant higher total HPLP-II scores, health responsibility subscale and nutrition subscale scores compared to non-medical students. (26) This may be owed to better educational systems in Taiwan emphasizing preventive medicine, provision of health promotive infrastructure (e.g. better access to gym, healthy food or mental health services) in the Taiwanese medical educational institutions. or attributed to economic constraints, poor stress management and lack of support to medical students in Egypt.

In line with our results, Ajrash and Al-Abedi conducted a cross-sectional study among 300 students in Bahrein and showed that medical students achieved significant lower overall score compared to non-medical ones. Moreover, medical students achieved significant lower scores as regard physical activity and nutrition.(27)

The lower lifestyle scores achieved by medical students may be attributed to the high stress and the increased burden accompanying medical study which affects students physical and mental health. Medical students were found to have higher rates of psychosocial morbidities such as anxiety, depression and burnout compared to age-matched university students. The medical program carries a great load of new knowledge, experience, and required practices besides the high stressful impact of exams they try to cope which contribute to the increased stress. Medical students struggle with time management. They try to cope even by following unhealthy behaviours as missing breakfast, consuming more fast foods, having less time for physical activity, having less time for families and friends and may be engaging in non-healthy habits as smoking to alleviate stress.(28)

STUDY LIMITATIONS

The current study has some limitations. First, the cross-sectional design which doesn't provide temporal sequence to ensure causality and couldn't detect changes of lifestyle across time. Second, the self-reported lifestyle practices may be associated with over or under estimation of one's level and biases (e.g., recall or social desirability biases). Also, there is a potential for selection bias.

CONCLUSION

The study sheds light on lifestyle profile of Sohag University Students and its determinants. More than half of the students reported total lower lifestyle scores with the lowest scores achieved in health responsibility and nutrition subscales. Medical students reported significant worse lifestyle scores compared to their non-medical counterparts due to the higher stress and academic burden they face. Intervention programs should be carried out to enhance lifestyle behaviours among the whole university students with special attention to medical ones.

DECLARATIONS

Ethical considerations and Consent for publication:

Ethical approval was secured from the ethical committee of the Faculty of Medicine in Sohag university, registration number: Soh-Med-24-11-8PD. Informed verbal consent was obtained from the study participants, confidentiality of data was assured, and questionnaires were anonymous.

Availability of data and materials:

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare no conflicts of interest.

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