SELF-MEDICATION AMONG STUDENTS FROM THE FACULTY OF MEDICINE AT MISR UNIVERSITY FOR SCIENCE AND TECHNOLOGY, EGYPT

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ABSTRACT

Background: Self-medication is a global public health concern. There is increasing concern about how medical personnel handle their health issues. **Aim of the work:** This study aimed to assess the prevalence of self-medication among medical students, identify commonly used medications, and understand the reasons for this practice. **Subjects and Methods:** A cross-sectional study was conducted on 802 students from the Faculty of Medicine at Misr University for Science and Technology. An online survey was performed via Google Forms and was distributed across the students' social media platforms. The survey included an introduction (stating the purpose and informed consent statements), the socio-demographics of the students, and their self-medication practices. Data were collected from January 1, 2024, to February 29, 2024, then coded and analyzed. **Results:** Regular self-medication was reported by 17.7% of the students, and 59.2% self-medicate when getting sick. Females had higher rates of self-medication compared to males with a highly statistically significant difference. The most commonly used drugs for self-medication were analgesics and antipyretics (82.3%). Self-medication was notably higher among senior students (5^{th} and 6^{th} years) (71.3%). **Conclusion:** There is a high prevalence of self-medication among university medical students. **Recommendations:** Future implications of education and awareness about self-medication are deemed necessary.

Keywords: *Self-medication, Prevalence, Medical students, Egypt.*

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INTRODUCTION

Self-medication is defined as obtaining and consuming drugs without the supervision and guidance of a physician for diagnosis or treatment. It involves acquiring non-prescription drugs, or over-the-counter (OTC) medications; purchasing drugs by reusing a previous prescription; taking medications as directed by family members or others; or consuming leftover medicines stored at home ***(Zafar et al., 2008)***. Self-medication is a global public health concern that is particularly prevalent in developing countries. Patterns of self-medication differ among populations and are impacted by various factors, such as age, sex, educational attainment, socio-economic status, medical knowledge, and severity of illnesses ***(Helal and Abou-ElWafa, 2017)***.

Self-medication is driven by various factors, including limited access to healthcare services. Psychological factors, such as stress, anxiety, and perceived minor illness, also contribute ***(Akande-Sholabi and Akinyemi, 2023)***.

Furthermore, cultural beliefs, easy access to OTC medications, and lack of regulations facilitate self-medication practices ***(Alenzi et al., 2024)***. In Egypt, studies highlight cultural acceptance, pharmaceutical availability, and economic constraints as significant factors ***(Helal and Abou-ElWafa, 2017; Ramadan et al., 2018)***.

There is a lack of consistency in the prevalence of self-medication, with rates ranging from 11.7% to 92% worldwide ***(Alshahrani et al., 2020)***. In Europe, it could be as high as 63% ***(Bouqoufi et al., 2024)***.

Conversely, developing countries show significantly higher rates of self-medication ***(Ibrahim and Halboup, 2019; Alshammari et al., 2021)***. Studies have reported a high prevalence of self-medication among medical students, with rates ranging from 55% to 98% ***(Sawalha, 2008; El Ezz and Ez-Elarab, 2011)***.

The prevalence and trends of self-medication may differ among medical students compared to the general population since they usually have a basic understanding of pharmacology and healthcare procedures. Despite being regularly exposed to a vast array of medical information, medical students may not always use this information to make safe decisions for their health. Therefore, evaluating the prevalence of self-medication in this group is important as their actions may impact their future therapeutic procedures and ethical standards ***(Siraj et al., 2022)***.

Although self-medication may provide temporary relief for minor ailments, it carries several hazards, such as drug abuse, delayed detection of underlying diseases, and hazardous drug reactions. Additionally, self-medication compromises the effectiveness of the healthcare system ***(Alshahrani et al., 2020; Akande-Sholabi and Akinyemi, 2023)***.

With a growing number of medical students, studying their health behaviors, including self-medication, can provide valuable insights into the factors driving this practice, as well as the potential implications for both personal and public health ***(Alenzi et al., 2024)***.

The Faculty of Medicine at Misr University for Science and Technology (MUST), located in Egypt, is a suitable setting to explore self-medication. Situated in the 6th of October City, MUST attracts a diverse student population from both urban and rural areas, providing a representative sample.

THE AIM OF THE WORK

This study therefore sought to assess the prevalence of self-medication among the students, identify commonly used medications, and understand the reasons for this practice. The findings of this survey could inform future educational interventions aimed at promoting safe health practices among medical students and guiding healthcare policies in Egypt.

SUBJECTS AND METHODS

Pilot study:

A pilot study was conducted on 80 students from the Faculty of Medicine at MUST. An online survey utilizing Google Forms assessed the clarity and relevance of questions, respondent comprehension, and technical functionality. The pilot data were excluded from the final analysis.

Data collection and population of the study:

A cross-sectional study was conducted on students from the Faculty of Medicine at MUST. An online survey was performed using Google Forms and was shared on the students' social media platforms. Students received the survey's link along with a statement explaining its purpose and encouraging participation. To ensure understanding and acceptance of the informed consent statement, participants had to click the "next" button before filling out the questionnaire. A self-administered English-language e-form questionnaire was used to collect data. Raw data were collected from January 1, 2024, to February 29, 2024. The questionnaire was designed for students from the Faculty of Medicine at MUST and was completed by 802 participants.

Survey's structure:

- Introduction: purpose statement explaining the survey's objectives, target sample, and informed consent statement.
- Socio-demographics of the students: age, sex, and residence.
- Self-medication practices: knowledge, frequency, reasons, side effects, information sources, and medications used.

Inclusion criteria:

- Age: all students from different grades, regardless of age.
- Faculty of Medicine at MUST.

Exclusion criteria:

- Non-medical students.
- Students from outside MUST.
- Incomplete/partially completed surveys.

Sample size:

Based on a previous study that showed a self-medication prevalence of 62.9%, a minimum sample size of 600 students was required to achieve this rate with 95% confidence and 4% precision, considering a 20% non-response

(Helal and Abou-ElWafa, 2017). Sample size calculations were done using Number Cruncher Statistical Systems (NCSS) 2004 and Power Analysis and Sample Size (PASS) 2000 software ***(Hintze, 2001)***.

Ethical considerations:

The Institutional Review Board at Misr University for Science and Technology (MUST-IRB) reviewed and approved the study protocol with *Code 2022/0102*. Data collection ensured anonymity by excluding personally identifiable information. Stored data were encrypted and password-protected to maintain confidentiality.

Statistical Analysis:

Data were coded, and analysed using the Statistical Package for the Social Sciences (SPSS) software (Armonk, NY: IBM Corp. version 25.0). Quantitative variables were summarized using mean and standard deviation, while categorical data were summarized by frequency and percentage. The chi-square test was used to study associations between categorical variables, with the Monte Carlo test being used when assumptions were violated.

The Kruskal Wallis test was used to compare non-parametric quantitative parameters between more than two groups. P values<0.05 were considered statistically significant, and values<0.001 were considered highly statistically significant ***(Chan, 2003)***.

RESULTS

The study included 802 medical students, with an average age of 21.7±1.6 years. Of these, 355 were males (44.3%) and 447 were females (55.7%), with the majority of students being from Greater Cairo (58.2%), as shown in **table (1)**. The distribution of the students according to their academic years is shown in **figure (1)**.

Table (2) highlights the self-medication practices among medical students:

Only a few students reported having chronic health conditions (9%). The majority of students (91.8%) expressed knowledge about self-medication. More than half of the students (55.9%) reported reading the informational pamphlets included with medications. The primary reason for self-medication was time and money saving (high expenses of doctors' visits) (78.7%). Among the students, 64.7% were aware of potential side effects of self-medication, and 51.1% had experienced side effects. Of those who experienced side effects, 56.1% waited for symptoms to subside, 20.9% visited a pharmacy, 21.5% went to a public hospital, and 1.5% went to a poison center. Approximately 59.5% of students reported that their family members also self-medicate. Students were often advised to self-medicate by family, relatives, or colleagues (59.9%). Lastly, in handling expired medications, 80.5% of students disposed of them.

In terms of the frequency of self-medication use, 17.7% of students reported regular self-medication, while 59.2% self-medicated only when getting sick as shown in **figure (2)**.

Figure (3) displays the drugs used for self-medication, with the most common being analgesics and antipyretics (82.3%), followed by antibiotics and antimicrobials (52%), and vitamins (50%).

Self-medication was notably higher among senior students (5th and 6th years). Females reported higher rates of self-medication compared to males (54.9% and 43.5%, respectively) (P value<0.001). Additionally, there was a highly statistically significant difference in frequency of self-medication based on residence and age **(Table 3)**.

Table (1): Socio-demographic characteristics of the studied sample.

	Study sample (N = 802)
Age (Years)	
Mean ± Standard deviation	21.7 ± 1.6
Median (Min - Max)	22 (17 - 28)
	Count (%)
Sex	
Males	355 (44.3)
Females	447 (55.7)
Residence	
Greater Cairo	467 (58.2)
Lower Egypt	306 (38.2)
Upper Egypt	29 (3.6)

N: Number , Min: Minimum, Max: Maximum

Table (2): Self-medication among medical students

	Study sample (N = 802)
	Count (%)
Q1: Suffering from chronic health problems (Yes)	72 (9)
Q2: Committing to medical visits for chronic illness (Yes)	55 (6.9)
Q3: Knowing self-medication (Yes)	736 (91.8)
Q4: Reading the pamphlet (Yes)	448 (55.9)
Q5: Awareness of the side effects of self-medication (Yes)	519 (64.7)
Q6: Had side effects from self-medication (Yes)	410 (51.1)
Q7: How did you treat the side effects related to self-medication? N = 410	
Wait until the symptoms disappeared	230 (56.1)
Went to the pharmacy and took other medications to treat the symptoms	86 (20.9)
Went to the poison center	6 (1.5)
Went to a public hospital	88 (21.5)
Q8: Reasons for self-medication	
Time and money saving (high expenses of doctors' visits)	631 (78.7)
Lack of awareness of the risks related to self-medication	370 (46.1)
No particular reason	112 (13.9)
Q9: Do anyone in your family self-medicate?	
Yes	477 (59.5)
No	145 (18.1)
May be	180 (22.4)
Q10: Sources of self-medication	
Family, relatives, and colleagues	480 (59.9)
Internet	408 (50.9)
Pharmacy	230 (28.7)
Q11: Do you advise others to be self-medicated?	
Yes, with a previous prescription	358 (44.6)
Yes	166 (20.7)
No	278 (34.7)
Q12: Do you think that people self-medicate too much?	
Yes	739 (92.1)
No	29 (3.6)
Don't know	34 (4.2)
Q13: If you have expired medication, what will you do?	
Get rid of it	646 (80.5)
Use it even after it has expired if I know it is still well	16 (2.0)
Use it if it has expired soon	140 (17.5)

N: Number

Table (3): Comparison of frequency of self-medication among medical students for sociodemographics.

	How frequently do you self-medicate?				Test of significance (P value)
	Regularly (N = 142)	When getting sick (N = 475)	Rarely (N = 172)	Never (N = 13)	
	Count (%)	Count (%)	Count (%)	Count (%)	
Academic year					
1st	0 (0.0)	5 (0.6)	6 (0.7)	0 (0.0)	
2nd	1 (0.1)	9 (1.1)	105 (13.1)	1 (0.1)	MC^p (< 0.001*)
3rd	4 (0.5)	19 (2.4)	11 (1.4)	2 (0.2)	
4th	19 (2.4)	25 (3.1)	13 (1.6)	2 (0.2)	
5th	78 (9.8)	82 (10.2)	15 (1.9)	1 (0.1)	
6th	40 (4.9)	335 (41.8)	22 (2.7)	7 (0.9)	
Sex					
Male	34 (4.2)	272 (33.9)	43 (5.4)	6 (0.7)	x^2 (< 0.001*)
Female	108 (13.5)	203 (25.3)	129 (16.1)	7 (0.9)	
Residence					
Greater Cairo	132 (16.5)	244 (30.4)	91 (11.3)	0 (0)	MC^p (< 0.001*)
Lower Egypt	5 (0.6)	219 (27.3)	71 (8.9)	11 (1.4)	
Upper Egypt	5 (0.6)	12 (1.5)	10 (1.2)	2 (0.2)	
Age (Years)					
Mean ± Standard deviation	21.8 ± 0.7	22.4 ± 1.4	20 ± 1.7	21.8 ± 1.5	H (< 0.001*)
Median (Min - Max)	22 (19 - 26)	23 (18 - 28)	19 (17 - 25)	23 (19 - 23)	

*N: Number , MC^p: Monte Carlo test, x^2: Chi-Square test, H: Kruskal Wallis test, *P value < 0.001 is statistically highly significant.*

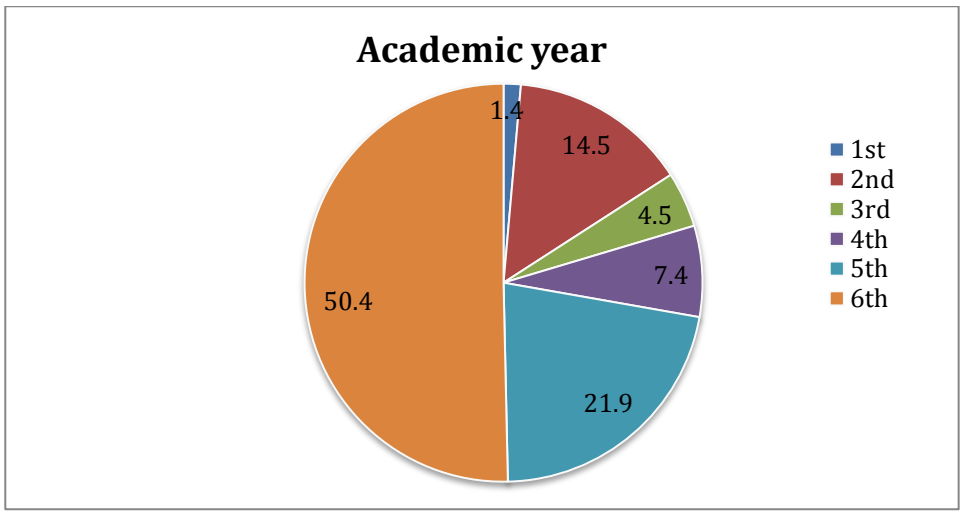

Figure (1): Distribution of the students according to their academic years.

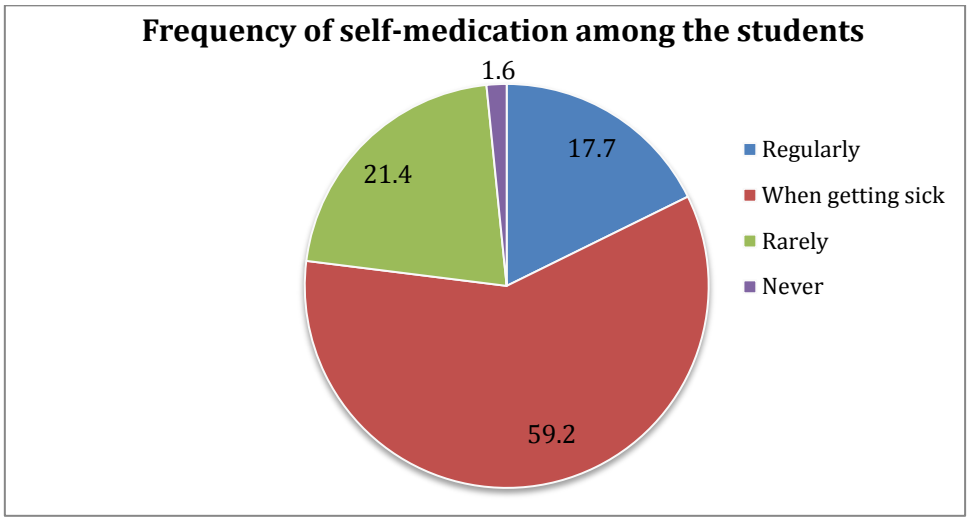

Figure (2): Frequency of self-medication among the students.

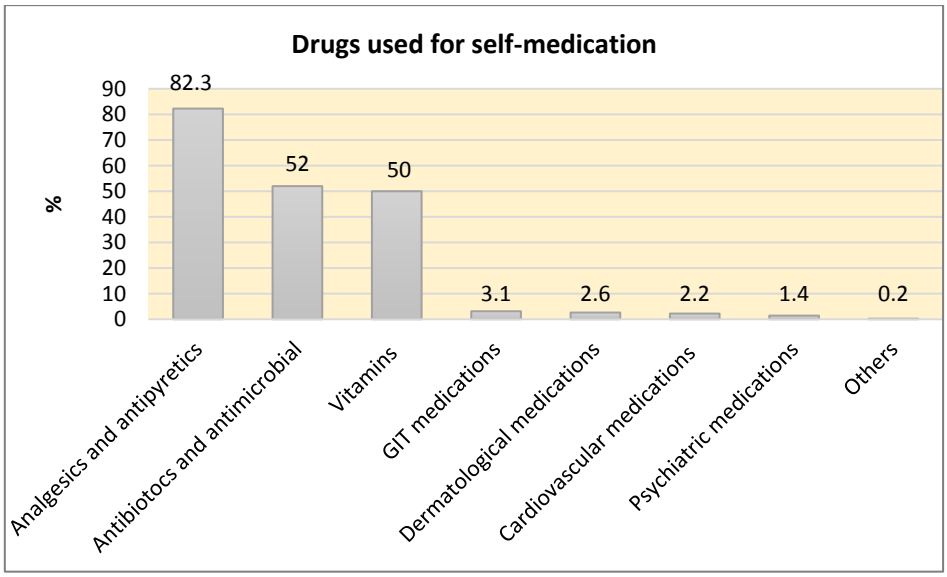

Figure (3): Drugs used for self-medication.

DISCUSSION

The increasing trend of self-medication on a global scale presents a significant challenge for many nations. Self-medication prevalence varies from 11.2% to 93.7% according to the country and the population. National legislation, socio-economic conditions, data collection tools, and research techniques may all have an impact on the variations in self-medication rates ***(Ayanwale et al., 2017; Tesfamariam et al., 2019; Akande-Sholabi et al., 2021)***.

University students often face specific health risks, including stress, poor diet, sleep deprivation, and mental health disorders ***(Mofatteh, 2021)***. Institutions can address these risks and provide appropriate support by understanding students' behaviors and attitudes ***(Kokabisaghi et al., 2024)***.

The results of our study demonstrated that the majority of students expressed knowledge about self-medication (91.8%) and practiced self-medication at least once (98.3%). Only 1.6% of students reported that they never self-medicated, and 59.5% of students reported that their family members also self-medicate.

Three previous national studies have reported self-medication prevalence among university students. A study conducted among medical students at Ain Shams University in 2011 found a prevalence of 55% ***(El Ezz and Ez-Elarab, 2011)***. Similarly, a study among university students at Mansoura University in 2017 reported a prevalence of 62.9% ***(Helal and Abou-ElWafa, 2017)***, and a study among medical students at Alexandria Faculty of Medicine in 2018 reported a prevalence of 52.77% ***(Ramadan et al., 2018)***. These findings, along with the results of our study, suggest that the prevalence of self-medication in Egypt on the rise.

Studies in the Middle East have also shown high rates of self-medication. For example, 92% of adolescents in Kuwait self-medicated ***(Abahussain et al., 2005)***, and the prevalence among Palestinian university students was 98% ***(Sawalha, 2008)***. In Oman, 94% of university students reported self-medication ***(Al Flaiti et al., 2014)***. In Sana'a, Yemen, the prevalence of self-medication among health science students was 90% ***(Ibrahim and Halboup, 2019)***, while in Hail, Saudi Arabia, the prevalence of self-medication among university students was 98.2% ***(Alshammari et al., 2021)***.

Medical students endure significant psychological burden due to the demanding nature of their study and easy access to medications. These burdens can increase the likelihood of drug *misuse* ***(Chew-Graham et al., 2003; Ramadan et al., 2018)***. Due to the complexity of self-referral and time constraints, medical students may treat their ailments irrationally and prefer to use medications recommended by their peers. According to studies, a substantial percentage of medical students, between 57.7% and 76%, practice self-medication ***(James et al., 2008; Zafar et al., 2008)***.

The primary reasons for self-medication were time and money saving (high expenses of doctors' visits) cited by 78.7% of the students, followed by a lack of awareness of associated risks (46.1%). Numerous studies have documented various justifications for self-medication, such as the mildness of the illness, previous experience, time-saving, accessibility, and cost-effectiveness ***(Ramadan et al., 2018; Ibrahim and Halboup, 2019; Alshammari et al., 2021; Siraj et al., 2022; Akande-Sholabi and Akinyemi, 2023)***. Self-medication as a time- and cost-saving measure could end up costing irreplaceable health and life. Additionally, self-treating perceived illnesses without proper diagnosis may result in misdiagnosis, missed treatment, and subsequent health issues ***(Siraj et al., 2022)***.

The results of the current study revealed that the most common drugs used for self-medication were analgesics and antipyretics (82.3%), followed by antibiotics and antimicrobials (52%), and vitamins (50%). These findings were consistent with previous studies that also found analgesics to be the most frequently used drugs for self-medication ***(Zafar et al., 2008; Ramadan et al., 2018; Ibrahim and Halboup, 2019; Siraj et al., 2022)***.

El Ezz and Ez-Elarab (2011) similarly reported that analgesics, antibiotics, and vitamins were the most commonly used self-medication drugs (87.2%, 58.8%, and 54.4%,

respectively). The widespread use of these drugs for self-medication highlights their accessibility as OTC medications and the lack of strict regulations governing their use in developing countries ***(Alenzi et al., 2024)***.

The main sources for self-medication were family, relatives, or colleagues (59.9%), followed by the internet (50.9%) and pharmacies (28.7%). Previous studies have reported similar sources of information for self-medication ***(Bhattarai et al., 2014; Helal and Abou-ElWafa, 2017)***. Family or friends with medical backgrounds may influence students' self-medication habits as they may suggest purchasing medications to treat their ailments without proper diagnosis ***(Siraj et al., 2022)***.

In the present study, 80.5% of students disposed of expired medications. Similarly, ***Akande-Sholabi and Akinyemi (2023)*** reported that the majority of respondents checked expiration dates and discarded OTC drugs when they noticed a change in odor or color.

The findings of our study showed that females had higher rates of self-medication compared to males (54.9% and 43.5%, respectively), with a highly statistically significant difference. This was consistent with previous studies ***(Helal and Abou-ElWafa, 2017; Ibrahim and Halboup,*** **2019;** ***Alenzi et al., 2024)***. Female students are more likely to self-medicate due to their reluctance to seek medical attention outside their homes. Additionally, females may experience particular health issues, such as menstrual issues, which increase their likelihood of using self-medication as a form of relief ***(Donkor et al., 2012; Raut et al., 2014; Ibrahim and Halboup, 2019)***.

In contrast, ***Badiger et al. (2012)*** and ***Alshammari et al. (2021)*** reported that females had a significantly lower prevalence of self-medication than males.

In the current study, self-medication was significantly higher among senior students (5^{th} and 6^{th} years). This was consistent with ***Ramadan et al. (2018)***, who noted that gaining clinical expertise and medical knowledge impacted and increased the practice of self-medication.

However, ***Helal and Abou-ElWafa (2017)*** concluded that younger individuals tended to self-medicate more than their peers. Students in the health departments are future medical professionals and health policymakers. Therefore, educating them about the proper use of medicines can help in creating a better healthcare system ***(Siraj et al., 2022)***.

Effective educational strategies and policy recommendations can mitigate self-medication practices. Integrated curricula incorporating self-medication education should be implemented in medical and pharmacy schools. Peer education programs can raise awareness among students and healthcare professionals. Policy recommendations include developing national guidelines, strengthening pharmaceutical regulation, and enforcing prescription-only medication sales. Public awareness campaigns highlighting self-medication risks and consequences can also promote responsible medication use ***(Arafa et al., 2019; Rathod et al., 2023)***.

Limitations of the study

Self-reported data: Potential biases and inaccuracies may arise from respondent recall, social desirability, or limited internet access.

Limited generalizability: Results may not be representative of non-medical students, non-university students, or broader populations.

CONCLUSION

In conclusion, self-medication is highly prevalent among students from the Faculty of Medicine at MUST.

RECOMMENDATIONS

- Further studies are needed beyond medical students to assess self-medication practices in the general population and to examine changes in self-medication practices over time.
- Developing specific educational programs targeting students through workshops and case-based learning using real-life scenarios to illustrate self-medication risks.
- Healthcare providers should take an active role in providing guidance and public health awareness and education about potential issues resulting from improper medication use.

- Health facilities should be accessible to everyone with significantly fewer difficulties.
- Strict regulations and guidelines should be established governing pharmaceutical advertising and the purchasing of drugs without a prescription.

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التطبيب الذاتي بين طلاب كلية الطب بجامعة مصر للعلوم والتكنولوجيا، مصر

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الملخص العربى

المقدمة: التطبيب الذاتي هو مصدر قلق عالمي للصحة العامة. هناك قلق متزايد بشأن كيفية تعامل العاملين في المجال الطبي مع مشاكلهم الصحية.

هدف الدراسة: هدفت هذه الدراسة إلى تقييم مدى انتشار التطبيب الذاتي بين طلاب الطب وتحديد أنواع الأدوية شائعة الاستخدام، واستكشاف الأسباب الكامنة وراء هذه الممارسة.

طريقة الدراسة: أجريت دراسة مقطعية على ٨٠٢ طالبًا من كلية الطب بجامعة مصر للعلوم والتكنولوجيا. تم إجراء استطلاع عبر الانترنت باستخدام نماذج Google وتم توزيعه عبر منصات التواصل الاجتماعي الخاصة بالطلاب. احتوى الاستطلاع على مقدمة (تتضمن الغرض والموافقة المستنيرة)، والتركيبة السكانية الاجتماعية للطلاب، وممارسات العلاج الذاتي. تم جمع البيانات في الفترة من ١ يناير ٢٠٢٤ إلى ٢٩ فبراير ٢٠٢٤، ثم تم ترميزها وتحليلها.

النتائج: أفاد ١٧.٧% من الطلاب بالتطبيب الذاتي بشكل منتظم، و٥٩.٢% بالتطبيب الذاتي عند المرض، مع وجود فرق ذات دلالة إحصائية عالية بين الذكور والإناث. وكانت الأدوية الأكثر شيوعًا المستخدمة في العلاج الذاتي هي المسكنات وخوافض الحرارة (٨٢.٣%). وكان التطبيب الذاتي أعلى بشكل ملحوظ بين الطلاب الكبار (السنتين الخامسة والسادسة) (٧١.٣%).

الاستنتاج: هناك نسبة عالية من التطبيب الذاتي بين طلاب الطب الجامعيين.

التوصيات: تعتبر الآثار المستقبلية للتعليم والتوعية حول التطبيب الذاتي ضرورية.

الكلمات الدالة: التطبيب الذاتي، انتشار، طلاب الطب، مصر.