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Original Article

Pattern Knowledge and Determinants of Analgesic Self-medication among Undergraduate Students in the Faculty of Pharmacy, Nursing and Health Professions

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ABSTRACT

Background: Self-medication is a widespread practice and it is referred to as the self-selection of medication by individuals, to treat self-recognized illnesses, without any consultation or prescription from a medical practitioner. Thus, tending to self-prescribe pain killers to overcome the sensation of pain, and avoid wasting time and money on medical consultation which might be of danger to their health. The main objective of this study was to evaluate the pattern, knowledge and determinants among undergraduate students at Birzeit University, Palestine, towards self-medication. **Methods:** A descriptive cross-sectional study on analgesics consumption was conducted among undergraduates in health professions students. A questionnaire was distributed to 284 selected students in order to collect information about different aspects of self-medication. **Results:** 78.1% of the study participants were against self-medication unless it is indicated or necessary. The most common reasons for self-medication were a headache for 70.8% of students. The analgesics and Non-steroidal anti-inflammatory drugs were the most commonly used medications, by 135 students (47.5%) and 113 others (39.8%) respectively. Whereas antibiotics were categorized as the third most commonly used type of drug. The pharmacist was the reliable source of information regarding self-medication. However, it is remarkably significant that as the years progress, the use of these drugs increases. **Conclusion:** This study demonstrated that self- medication practice is very common among health care professions students at Birzeit University. Commonly used drugs were analgesics, Non-steroidal anti-inflammatory drugs and antibiotics. The occurrence of self-medication practice among health professions students increased with year of progression in the school.

Key words: Analgesic, Awareness, Health Professions Students, Knowledge, Self-medication.

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INTRODUCTION

Self-medication (SM) is commonly defined as "the taking of drugs, herbs or home remedies on one's own initiative, or on the advice of another person, without consulting a doctor.",[1,2] It is a widely prevalent practice, with continuously increasing rates, especially when related to simple and common problems such as mild pain management.[3,4] Various reasons trigger such behavior, among which are the high cost of medical consultation, the lack of time or effort to pursue professional medical care, underestimation of the medical condition, and previous experiences of dealing with the condition. Self-medication is significantly influenced by numerous factors such as education, family, economic status, society, law, availability of drugs and exposure to advertisements.[5-7] Regardless of the potential benefits of self-medication as a common practice, it can lead to numerous side effects due to malpractice, hence, increase the burden on the healthcare system.[3]

Undergraduate students of health related professions are not excluded from this widespread behavior, as they are aware of the available drugs and are more familiar with their uses, hence feel entitled to treat themselves based on their knowledge. However, it is expected that students in health professions are more aware of the rational use of drugs compared to other groups of society. A number of studies have reported that health profession students are affected by this practice.[7-9]

Similarly in Palestine, it is observed that self-medication is still a common practice among different segments of society, despite the presence of regulations that control the dispensing of over the counter medications although to date there are no published studies on the use of self-medication among different segments of the population.

The main objective of this study was to evaluate the pattern, knowledge and determinants of analgesic self-medication among undergraduate medical students in the Faculty of Pharmacy, Nursing and Health Professions at Birzeit University. The results of the study would provide important information for both care providers and policymakers in this regard. Furthermore, we will be able to answer questions concerning the common health-related problems leading to self-medication with analgesics.

MATERIALS AND METHODS

Study Design

After obtaining the approval from the Ethical Committee at Birzeit University, an observational descriptive cross-sectional study was conducted amongst students enrolled at the faculty of health-care-professions from Birzeit University in the Occupied Palestinian Territories.

The study was carried out over a three month period between March and May 2018. The sample size was calculated online[10] The number of students at the Faculty of Pharmacy, Nursing and Health professions was 600, which was entered as the total population, the confidence level was set at 95%, and the margin of error was set at 5%. The minimal sample

size was found to be 235. By convenience sampling method, the questionnaires were distributed to (310) and filled by 284 students with a response rate of (92%).[10]

Study Population

The targeted respondents were all registered students, aged above 18 years, from different majors (pharmacy, nursing, speech and audiology and nutrition students) at Faculty of Pharmacy, Nursing and Health Professions at the period of conducting the study.

Inclusion Criteria

Having university student number and registered at one of the majors at the faculty of health professions were used as inclusion criteria. While the exclusion criteria adopted was any duplication or fabricated in the inserted university student number were excluded. Students registered from other faculties were also excluded.

Study Tool

The study was a questionnaire based one, in which the participants were asked to fill a confidential, anonymous and self-administered questionnaire in order to collect personal data and relevant information regarding the study variables.

The questionnaire was divided into three sections; section one included questions regarding socio-demographic information (e.g. age, gender, faculty, study year, residence status, and history of any present and past illness). Section two consisted of questions pertaining practice of self-medication in the last month, the source of information about the drug, symptoms that prompt self-medication, nature and type of medicines used for self-medication, in addition to the source of medicine for self-use. Section three contained questions concerning favor of self-medication practices, reasons to self-medication or reasons against self-medication practices and advice to others regarding these practices.

Questionnaire's contents were developed and adapted by reviewing the variables and factors used in previous studies to assess self-medication.[7,11,12] Some of the questionnaire sectors were incorporated with permission from the questionnaire developed by Albusalih *et al.*[3] The questionnaire was written in the English language then translated to Arabic by experts from the Department of Languages and Translation, Birzeit University, based on standard translation guidelines. The questionnaire was additionally tested on its content validity by three experts from the Faculty of Pharmacy, Nursing and Health Professions, including the head of the pharmacy department and two assistant professors; one from nursing and the other from the nutrition department. Moreover, it underwent revision from an epidemiologist from the Faculty of Pharmacy, Nursing and Health Professions. A pilot study was conducted in which the questionnaire was administered by twenty students, in order to be evaluated for clarity. The questionnaire was refilled by the same students to assess reliability using the test-retest method. Thereafter a finalized questionnaire was developed accordingly. After data collection, internal consistency (Cronbach's Alpha) was calculated for the questionnaire subsections and the results indicate satisfactory reliability and stability (ranging from $\alpha = 0.63$ to $\alpha = 0.84$).[13]

Data Analysis

The collected data were statistically analyzed using SPSS version 20 and presented as a percentage and absolute figures. Chi-square test, was used to test for the bivariate associations. A value of $P < 0.05$ was considered statistically significant.

Ethical Considerations

The process followed a standardized protocol for informing confidentiality by taking students informed consent before answering the questionnaire. Furthermore, prior to filling the questionnaire, the students were given a full and prolonged explanation about the purpose of the study and process of data analysis.[14] The study was approved by the *IRB* committee at Faculty of Pharmacy, Nursing and Health Professions, Birzeit University with reference number (*BZUPNH 18002*).

RESULTS

284 students from the Faculty of Pharmacy, Nursing and Health Professions at Birzeit University participated in the study. The sample had 230 (81%) females and 54 (19.0 %) males participants aged from 18 to 23 years old.

The participants' distribution based on their department was as follows: 126 doctors of pharmacy students (44.4%), 85 nursing students (29.9%), 44 speech and audiology students (15.5%) and 29 nutrition students (10.2%).

Regarding the year of study, the sample included 78 first year students (27.5%), 74 second year students (26.1%), 78 third year students (27.5%), 37 fourth year students (13.0%), 12 fifth year students (4.2%) and 5 sixth year students (1.8%). The overwhelming majority of students (88.4%) were considered healthy individuals, while a minority had reported a range of diseases including diabetes (3.5%), Anemia (2.8%), Hypertension (1.4%), Migraine (1.4%), Asthma (1.1%) and less than (2%) had either Eczema, Depression or Hyperthyroidism.

In our study, 148 (52.1%) of the participants reported practicing self-medication in the preceding month. The prevalence of self-medication practice varied with regard to faculty departments; the highest percentage of practice was among doctor of pharmacy students 70 (24.6%) followed by nursing students 44 (15.5%), audiology and speech therapy department students 21 (7.4%) and the lowest was within nutrition students 13 (4.6%). Furthermore, it was observed that the prevalence of self-medication increased with the students' years of study at the university. The lowest percentage of practice was among first year students (33.3%) followed by second year (51.4%), third year (52.6%), fourth year (81%) and the highest percentage of practice was among fifth year students (83.3%). In line with this, among sixth year students, three out of five participants practiced self-medication (60%).

It was noticeable from the results that most students at the faculty (52.8%) preferred the pharmacist as a reliable source of information regarding self-medication (Figure 1). The results have shown that 71 (56.3%) of doctor of pharmacy students, 40 (47%) of nursing students, 15 (51.7%) of nutrition students and 24 (54.5%) of the audiology and speech therapy department students in this study, referred to the pharmacist as a main reference in deciding the optimal therapy (Table 1). Whereas, 34.5% of participants referred to friends or family members as a source of information regarding self-medication. Moreover, a high percentage of students, 47 (37.3%) of Doctors of Pharmacy students, 24 (28.2%) of Nursing students, 12 (41.3%) of Nutrition students and 13 (29.5%) of Audiology and speech therapy students relied upon the internet as their primary source of information (Table 1). The least trusted and used sources of medical information were magazines and adverts, as depicted in Figure 1 and Table 1.

The nature of medications used, over the counter medications or prescription, varied among participants. As the results have shown, 111 (39.1%) participants used non-prescription medications, 68 (23.9%) participants used prescription medications, whereas 102 (35.9%) participants used both. The major symptoms that prompted self-medication practice were headache in 201 students (70.8%) and cold & flu symptoms in 129 others (45.5 %).

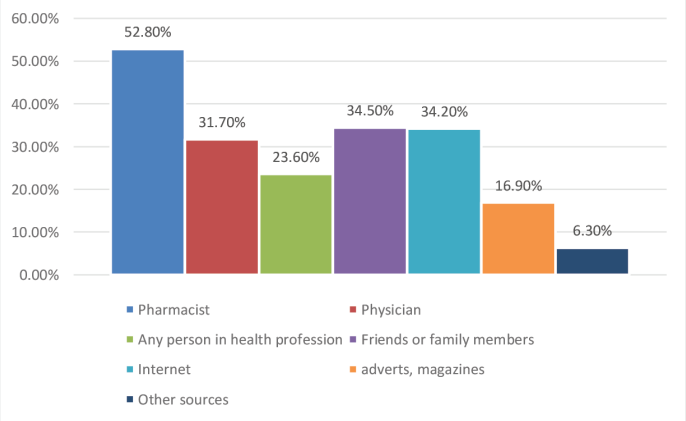

Figure 1: Source of drug information.
Dark blue color represents pharmacist (52.80%), red color represents physician (31.70%), green color represents any person in a health profession (23.60%),
Purple color represents friends or family members (34.50%),
Sky blue colour represents the internet (34.30%), orange color represents adverts/magazines (16.90%), and navy color represents other sources (6.30%).

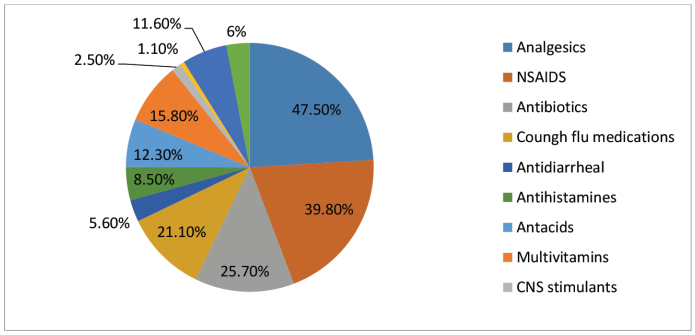

Figure 2: Types of medicines used for self-medication last month -among BZU students.
As chart above shows, percentages from highest to lowest are as follows: analgesics (47.50%), NSAIDs (39.80%), antibiotics (25.70%), cough and flu medications (21.10%), multivitamins (15.80%), antacids (12.30%), antihistamines (8.50%), antidiarrheal (5.6 %), CNS stimulants (2.50%) and tranquilizers (1.10%).
Students who took other medicines or didn't remember were 6% and 5.6% accordingly.

Table 1: The relationship between department and source of information for self- medication as reported by the study participants.

Department	*n*	Pharmacist *n* (%)	Internet *n* (%)	Ads and Magazines *n* (%)
		Yes	yes	yes
Pharmacy Doctor	126	71 (56.3)	47 (37.3)	23 (18.2)
Nursing	85	40 (47)	24 (28.2)	17 (20)
Nutrition and dietetics	29	15 (51.7)	12 (41.3)	3 (10.3)
Audiology and speech therapy	44	24 (54.5)	13 (29.5)	5 (11.3)
		P=0.588	*p*=0.213	*P*=0.459

Chi square test was used to study the differences between the students from the different departments and each source of information separately.

Table 2: The relationship between department and reasons for self-medication.

Department	*n*	Mild problems *n* (%)	Hassle of time *n* (%)	Knowledge about one's body is enough *n* (%)
		yes	yes	yes
Pharmacy Doctor	125	72 (58.7)	11 (8.7)	13 (10.3)
Nursing	85	30 (35.3)	17 (20)	16 (18.8)
Nutrition and dietetics	29	15 (51.7)	0 (0)	3 (10.3)
Audiology and speech therapy	44	23 (52.2)	5 (11.3)	4 (9.1)
		P=0.01	P=0.014	P=0.242

Chi square test was used to study the relationship between the different departments and the reason for self-medication separately.

It was reported that analgesics and Non-steroidal anti-inflammatory drugs were the most commonly used medications among students as shown in Figure 2, 135 students (47.5%) and 113 others (39.8%), respectively. Antibiotics were used to a lesser extent than analgesics and Non-steroidal anti-inflammatory drugs, but the percentage was significant since 25.7% of the participants used antibiotics without prescription. On the other hand, tranquilizers were the least to be used.

Notwithstanding of the engagement of a variety of departments in this study, it was seen that the most common reason for self-medication among most participants (29%) was when facing mild problems as presented in Figure 3 and Table 2. The second reason for self-medication was the high confidence in their past experiences to treat themselves (16%) as shown in Figure 3.

Whereas, among the reasons for self-medication practice, wasting of time at the doctor's clinic had the least percentage, showing results as follows; 11 (8.7%) pharmacy doctor students, 17 (20%) Nursing students, 0 (0%) Nutrition students and 5 (11.3%) Audiology and speech therapy students (Table 2). It is noteworthy that in spite of the tremendous knowledge gained by the students about their body and what they most need, they

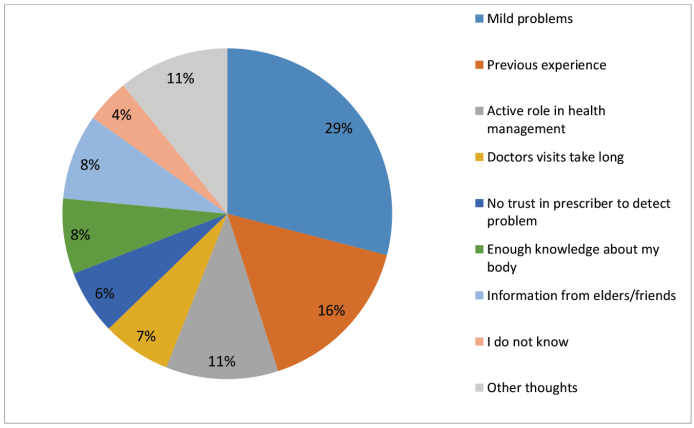

Figure 3: Reasons for being in favor of self-medication practice among students.

did not solely depend on understanding the external symptoms, instead, they gained experience of what exact drugs should be used, with only a small percentage of students were depending on their own knowledge, as shown in Table 2.

DISCUSSION

Self-medication is a widespread practice nowadays, where different age groups pursue self-care in various aspects.[15,16] Our findings were compared with various other studies conducted in several European countries including: Spain, UK, France, Germany, Sweden, Portugal and Norway, and other Arabian countries such as Saudi Arabia.

Self-medication is a common practice among health care professions students at Birzeit University. Results have shown that 52.1% of the participants had practiced self-medication in the month preceding the study. The relatively high level of self-medication in this study was similar to the findings in other countries[4,16,17] Nevertheless, it is lower when compared to similar studies conducted among university students in Nepal 81.9%,[18] Nigeria 81.8%[19] Serbia 79.9%,[12] India 78.6%[20] and Egypt 62.9%.[6]

The prevalence of self-medication behavior increased in proportional manner with study years, this might be attributed to the comprehensive understanding of students with year progression and their better clinical judgment regarding medical conditions and related drugs, as well as their ability to seek trusted medical sources. This is comparable with the findings of previously conducted studies.[6,19] Among other health care professions participants, pharmacy students were the most to practice self-medication, which is probably due to multiple pharmacological courses covered during their study years.[4]

Results from the current study show clearly that most students in this faculty consider pharmacists as the most reliable source of drug information, as shown in Table 1. This is probably due to their vast understanding of various medical conditions and related drugs, hence, emphasizing the pharmacist role as a trustworthy health care practitioner. These results are in line with a prior study carried out at a public sector university in Dammam City, Saudi Arabia and another study done in BP Koirala Institution of Health Sciences in Nepal.[3,21] In contrast, other studies reported the use of drug leaflets, booklets and previous experience as the most frequently selected options for a reliable source of drug information.[22,23]

Our results also show that the internet was used in a high percentage compared to other sources of information, as depicted in Table 1, which is in analogue with the results of other studies.[3] This is due to the availability of highly recommended medical articles on the internet, where there is easy and quick access. Furthermore, newly developed computer systems and phone applications using the internet are considered a new trend of getting reliable information at the earliest time. However, the study revealed that among the respondents, only a minority depended on advertisement and magazines as a source of information as seen in Table 1, this might point to their ability to differentiate between correct and fabricated information. This is comparable with previous reports.[24]

In regards to the most frequently used classes of medications, regardless of the study year, analgesics and Non-steroidal anti-inflammatory drugs fell in first and second place respectively, and antibiotics followed, as depicted in Figure 2. This behavior is most likely attributed to their easy access, relatively low cost, and fairly harmlessness. Whereas, antibiotics are categorized as the third most commonly used drugs, this is due to their harder access and stricter purchase regulations, in comparison with previous types, as shown in Figure 2. Previous studies conducted in Portugal, the North-Eastern region of Romania, Italy, UK, Spain, France and Denmark have reported similar results regarding Non-steroidal anti-inflammatory drugs and analgesics being the most commonly utilized agents for self-medication.[25-27] In contrast, a study conducted among medical students in Saudi Arabia revealed that sedatives and antibiotics were the most commonly utilized drugs for self-medication.[14] Moreover, a study performed in Europe, revealed that the UK and Germany had a very high consumption of both mild and strong opioids among self-medicating agents.[14,26]

Non-steroidal anti-inflammatory drugs are considered first-line treatment for generalized pain; which is the main indication people seek self-medication. This explains the consensus on their use, however, the indication slightly differs as mild headache was the main complaint in our study. This was in accordance to results of studies conducted in Sweden, Germany and France. Whereas, musco-skeletal pain was the main reported reason for use non-steroidal anti-inflammatory drugs in Romania.[3,25,28,29]

The results of our study has shown that irrespective of the department, facing mild problems and past experience with similar conditions were the most prevailing justifications for the use of self-medications rather than the hassle of time, as seen in Table 2. This demonstrates that students in the faculty of health professions seem to exhibit adequate information and awareness of the indications and adverse effects of each analgesic or other drugs, which affected the practice of self-medication as they become more qualified to differentiate mild problems from more serious ones with each passing year. Hence, self-diagnosis becomes more eligible and so does self-medication. These results are found to be comparable to the findings of a former studies that were done among medical students in Spain, France, Germany, UK, Sweden and King Abdul-Aziz University.[26,30-34] On the contrary, an Italian meta-analysis study revealed the opposite.[31]

Despite the significant results, we do acknowledge certain limitations in our study, which limits our ability to generalize the results obtained. These limitations include a small sample size, a non-random sampling method and the inclusion of medical profession students only.

CONCLUSION

This study has demonstrated that self-medication is a common practice among health care professions students at Birzeit University. Self-medication practice increased with year progression. Analgesics, Non-steroidal anti-inflammatory drugs and antibiotics were the most frequently used medications. The major reason behind self-medication practice is pain management. The pharmacist was considered as the most trusted source of drug information. The findings of this research highlight the need to spread awareness of the abuse of over the counter medications, thus, decrease the risk of side effects and high costs on the patients.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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ABBREVIATIONS

SM: Self-medication; **UK:** United Kingdom.

AUTHORS' CONTRIBUTIONS

All authors reviewed and approved the final version of the manuscript. HN participated in the study design and reviewed the manuscript and corrected the final version of the manuscript design and supervised the work. TM and LH performed all analytical testing and manuscript writing, data collection and interpretation of results. LK reviewed and corrected the final version of the manuscript.

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