Knowledge of Medical Students' about Self-Medication

A Graduation Project Submitted to the College of Pharmacy - University of Babylon
Partial Fulfillment of the Requirement for the B.S. in Pharmacy

By :
Muthanna' Abdulalmuhsin Abduallah
Muammal Ali Kareem
Ameer Mohammed Ali

Supervisor :
Prof. Dr. Samah Ahmed Kadhim

Babylon, Iraq
2022 – 2023

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(نَرْفَعُ دَرَجَاتٍ مَنْ نَشَاءُ وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ)

القرآن الكريم : الجزء الثاني عشر : سورة يوسف : ٧٦

صَدَقَ اللَّهُ العَلِيُّ العَظِيمُ

"We raise the degrees of whom We will, and above every one possessed

of knowledge is the All-Knowing One"

The Quran 12:76 {Surah Yusuf (Joseph)}

LIST OF CONTENTS

LIST OF TABLES

DEDICATION

To the owner of our souls and time, Our Imam Al-Hujja is the expected justice..

To our parents who made this accomplishment possible..

To those who use Self-Medication because they are under the sway of poverty..

Muthanna' Abdulalmuhsin Abduallah
Muammal Ali Kareem
Ameer Mohammed Ali

2023

ACKNOWLEDGEMENT

ABSTRACT

Background: Self-medication is defined as the self-administration of medication based on self-diagnosis without visiting a physician or having a prescription and is a public health concern with potentially harmful consequences. Self-medication is a common practice worldwide, particularly among adolescents and university students, and the irrational use of medicines is a cause of concern. Self- prescribed drugs comprises a big problem in medicine since drug resistance, cumulative side effects, drug interactions may harm more than the benefit needed from it on individuals and communities. Our study aimed to explore patterns of self-medication among medical students.

Objectives:
1. The aim of this research was to demonstrate and evaluate the knowledge of self-medication among medical students, and to find out the relationship between students' knowledge and their demographic data (age, gender, family income) and to determine the frequency of self-medication among them.
2. To identify the main reasons for self-medication among people, and to evaluate the information of medical students about the drugs that are used as self-medications, as well as to identify the sources of information that the students depend on for self-medication.
3. To identify the common sources and types of self-medication drugs.
4. To evaluate the possible role of the pharmacist in self-medication in community pharmacies.

Materials and Methods: An online, self-administered, anonymous, questionnaire-based, cross-sectional survey was conducted via Google Forms for 4 weeks among medical students in Iraq. The research recruited 440 students of all academic years during the academic year of 2022–2023 from December 2022 to January 2023. Samples were selected in a stratified, random sampling design from all stages of the medical colleges. The questionnaire consisted of demographic data and data about students' practice, knowledge and reasons behind the use of self- medication. A prevalidated questionnaire, containing open-ended and close-ended questions, was administered to the subjects. Data were analyzed using SPSS version 22 and the results expressed as counts and percentages.

Results: A total of 440 students, most of them were female (70%) while male (30%) there was a significant difference between male and female students in self-medication practice. Self-medication was high infrequent using (72.5%), and most of them (82.3%) got their medications from pharmacies. The most important self- medications used by students were antibiotics were the most frequent self-prescribe medicine that used by (69.8%) of the participants, followed by analgesic (66.6%), and anti-flu by (45.9%). The main source of information about medicines was the study books and learning experiences. The experience in self-medication was the most important reason of using self-medication in the studied students. However, some of the students reported non-favorable attitude towards self-medication and suggested health

education and legislation to stop this phenomenon among university medical students. The main reasons to self-medicate were quick relief desired, convenience, and avoiding waiting at clinics. The reasons against it were a misdiagnosis, adverse effects' risk, and wrong medication use. Doctor visits sought necessary in cases of worsening symptoms, severe pain, and serious problems. The respondents' knowledge about appropriate self-medication was poor, but knowledge of the benefits and risks of self-medication was adequate. The respondents found self-medication to be time-saving, economical, convenient and providing quick relief in common illnesses. Important disadvantages of self-medication mentioned were the risk of making a wrong diagnosis, inappropriate drug use and adverse effects. Education of students about the safe use of medications and supervision of pharmacies are effective ways to control this malpractice. Contribution of the pharmacist as a part of self-medication care was low totally. However, the role of the pharmacist as a drug consultant was more noticeable after obtaining the drug, not before. Around (84.5%) of the students request information from the pharmacist about doses, duration of treatments and side-effects.

Conclusions: Self-medication is common practice in the Iraqi community and there were significant differences for age and gender; the knowledge is moderate, and the views about the self-medication concept are generally appropriate. The practice of self-medication is alarming. They tend to use it correctly with little information, so it has become necessary to develop educational programs to increase the knowledge of the potential side effects of these non-prescription medications.

Keywords: Self-medication (SM), Medical students, Students' knowledge on SM, non-prescribed medications, Over-the-counter (OTC) medications.

INTRODUCTION

Feeling unwell is common for people, and there is a tendency in humans to use herbs, potions, and medications to treat their condition. Whenever the health problem is simple, self-medication becomes the first option among patients [2].

A global phenomenon, Self-medication (SM) is the self-administration of treatment without a medical prescription or consultation or guidance from a physician or a health-care provider [1,2].

World Health Organization (WHO) points out that responsible Self-Medication (SM) requires the medicinal product to be supported with information describing how to take the medicine, possible side effects, monitoring, possible interactions, warnings, duration of use, etc. It should also be noted that since herbal medicines are regulated as over-the-counter (OTC) medicinal products, self-medication only medicines/drugs, dietary supplements, functional or health food in most countries [18], the use of herbal medicines also constitutes a potential case of responsible-self-medication (SM), provided that they are supported by the appropriate, aforementioned information.

There are many individual and social benefits linked to self-medication practices [19, 20, 21]. It facilitates prompt access to medication providing faster relief to the patient, which is a particularly important issue in those countries with congested (private and/or public) health systems, where getting an appointment with a physician could be problematical. This is a very important argument in favor of self-medication when delays in access to the medication could endanger the patient or jeopardize the efficacy of the treatment (e.g. contraception pills or asthma treatments). Thus, easy access to medication can also provide psychological support to chronic patients, reducing anxiety related to the possibility of running out of medication and helping to develop self-reliance in preventing or relieving symptoms. From a social perspective, self-medication moves patients towards greater independence in making decisions about management of minor health conditions, which is in line with the modern ideal of a well-informed patient actively involved in health and disease management. Self-medication saves scarce medical resources from being wasted in minor conditions; public expenditure in health may then be redirected to more severe disorders. It also helps better use of physicians' and pharmacists' skills. From an economic perspective, SM helps avoiding unnecessary medical consultations; it lowers the cost of community-based health programs (which may be regarded as an advantage or a disadvantage depending on the social scenario) and reduces absenteeism from work due to minor health disorders.

However, self-medication is also linked to several risks for the self-medicated patient and, in some cases, for the community [19, 20, 21]. Many of these risks are not limited to self-medication and may also occur in the prescription situation (although they are often less likely if correct medical protocols are observed by the physician). Other

risks constitute particular dangers of the self-medication practice. Among the dangers of self-medication we may quote incorrect self-diagnosis; masking of an underlying severe health condition and consequent failure to seek medical advice promptly; rare but severe adverse effects; failure to recognize contraindications and potential drug-drug and drug–food interactions; incorrect route or manner of administration; inadequate dosage; risk of dependence or abuse; storage in incorrect conditions and; incorrect choice of therapy. At the community level, improper self-medication produces an increment in drug-induced disease with the consequent increase in public health expenditure.

The use of SM reported as being on the rise in the recent years especially among adolescents and young adults worldwide [3].This behaviour varies among countries, age groups, and between the sexes [4].
Previous studies from the Middle East region revealed a high prevalence of self-medication by university students, ranging from 98% in a study from Palestine [5] to 55% in a study from Egypt [6]. The students in this region used analgesics and herbals, often followed by vitamins and antibiotics, while opioids, stimulants and tranquilizers were used rarely [7,8]. However, in a study carried out among university students in Jordan, antibiotics were the main SM used by 67.1% of the study sample [8]. It is widely practiced worldwide in urban and rural population including developing countries like India because many drugs are dispensed over-the-counter without prescription and it provides a low cost alternative for people [9].

It largely includes the use of over-the-counter (OTC) medications; however, it may also involve prescription-only medicines (POM), which might have been generally procured by reutilizing/submitting a previous prescription or consuming leftover medicines already available at home [10, 11].
The phenomenal increase in Self-Medication practices is because it is regarded as a better option for the costly and time-consuming clinical consultations [12]. Despite rules and regulations, many pharmacy outlets sell drugs and antibiotics without valid medical prescriptions. In most cases, SM leads to serious consequences such as drug resistance, an increased risk of misdiagnosis, adverse drug reactions (ADRs), delay in diagnosis of illness, development of comorbidities, and even death [13,14,15].

University medical students are most vulnerable to SM because of their ability to find information about medications through the internet, especially pharmacy students, as their curriculum includes rational use of medicines and the consequences of irrational use. These future pharmacists may find themselves counseling patients on the safe use of medicines and play a significant role in patient care, especially regarding this practice later in their life. Hence, understanding the practice and self-beliefs related to SM in this population is of paramount importance. Moreover, precise estimates of SM frequency may also help policymakers in designing programs aimed at preventing

abuse of SM. Thus, this study aims to understand the existing prevalence of SM and finds underlying circumstances among medical students of the university [15].

Medical students during their study contacts with diseases and their treatments which make it easier for them to obtain various informations with accessibility to drugs [16], this is why – from our point of view, this issue should be taken in consideration because it is double edged sword.
Healthcare services in Iraq, including medication, is open and free; despite this, the practice of self-medication is prevalent [17]. To the best of our knowledge there have been few if any existing studies conducted in Iraq about self-medication use, especially among university students. The results of this study are important to build baseline data for Iraq [17].

MATERIALS & METHODS

Our cross-sectional, self-administered, questionnaire-based research was conducted from December 2022 to January 2023. The target population for participants was all medical college students (Medicine, Dentistry, Pharmacy, and Nursing) in Iraq. The calculation of the sample size was according to the rates of knowledge of self-medication among university students as determined in previous studies conducted at various universities in Iraq and other countries.

For the purpose of the research, certain operational terms were defined. *Self-medication* was defined as the use of over-the-counter or prescription drugs, whether modern or traditional, for self-treatment, without prior consultation with a healthcare provider. A *doctor* was defined as any person who is medically qualified to prescribe medications. It included practitioners of modern scientific medicine as well as practitioners of other healthcare systems. *Medication* was defined as any substance used for treatment or prevention of disease. It included modern scientific medications as well as medications from other healthcare systems.

Study Design

A prospective cross-sectional population-based descriptive study was designed using a well-structured and validated self-reporting questionnaire.

Inclusion Criteria

All registered students at medical college from different universities in Iraq. Samples were selected in a stratified, random sampling design from all stages of undergraduates medical students colleges in Iraq including all stages (1st, 2nd, 3rd, 4th, 5th, 6th year) and postgraduate students (MSC. and PhD.), of both genders and of any age. Students were included if they provided consent to participate anonymously in the study.

Sample Size Determination

All registered students at medical college (Medicine, Dentistry, Pharmacy, and Nursing) from different universities in Iraq. Students were invited to complete the questionnaire anonymously only once. We allowed 4 weeks for data collection.

Ethics

This study is a survey based on an anonymous questionnaire and it conforms to the Declaration of Helsinki for Human Rights.

The Questionnaire

An online, self-administered, anonymous, questionnaire-based, cross-sectional survey was conducted via Google Forms for 4 weeks among medical students in Iraq. The questionnaire was divided to sections A, B, C and D. Section A was about demographic data, age, gender, college affiliation, year of study, residence status, and section B involved all students who practiced self-medication, medication types, clinical information, history and pattern of physician visits, students' knowledge and beliefs of OTC medications and practice of the consumption of OTC and prescribed

drugs (self-medication), reasons for the self-prescribed practice, sources of advice, and frequent symptoms prompting self-medication, side effects and the reasons behind this practice, and section C was about role of the pharmacists in self-medication, and section D include characteristic of medications use. The survey included primarily close-ended questions. Some of the questions may tolerate more than 1 answer (example: reasons for self-medication).

Statistical Analysis

The responses from the participants were sent directly to an Excel spreadsheet and imported the version 22.0 of the Statistical Package for the Social Sciences (SPSS). Qualitative data were processed as frequencies and percentages. A chi-squared test was used to compare the male and female students' responses to the questionnaire items. Some of the questions had multiple options to choose from, therefore the sum total of percentages is not always 100%.

RESULTS

This study was conducted in (440). The socio-demographic characteristic of the study population of (440) medical students was presented in Table (1) and included in our analysis. Most of the responding students 365 (83%) were aged > 20 years, of whom 132 (30%) were males and 308 (70%) were females. The majority were singles 417 (94.8%), and married was 23 (5.2%), and living in urban areas 80 (18.2%), and living in rural areas 360 (81.8%). When split by study year, the majority were in the 4th stage 125 (28.41%) or 5th stage 129 (29.32%) professional year of their academic study. The colleges of study were: Medicine (20.5%), Dentistry (10.7%), Pharmacy (56.8), and Nursing (12%). The following sociodemographic and clinical characteristics were significantly different between medical college and between male and female students: gender, nationality, age, the area of living, college year, monthly income, availability of transport, and medical history.

Although it was found that gender plays a significant role in self-medication for certain conditions. Female students used medications more commonly than male, as shown in Table (2). The differences among male and female for self-medication may be related to the most prevalent of types of complications in female and not related to more attitude of female to self-medication.

Table (2) shows the prevalence of practicing SM as reported by the studied participants. The majority of students were reported practicing SM, 319 (72.5%) of infrequent of practicing self-medication, while 53 (12%) were frequently used SM in the past.

In Table (3) shows the results of the methods that medical students resort to in management of some cases or problems, and "going to the doctor" 136 (30.9%) is the most preferred method for students, while "Take the treatment available at home when needed without medical advice" 117 (26.6%) is the second method in management of

medical conditions, according to the students' opinion, while 114 (25.9%) of students preferred SM in treatment of some cases. Group of students 52 (11.8%) see a doctor after SM, this portends danger of some complications after SM, as in the table (3) below.

The above table (5) also shows the perceptions of the medical students who participated in this study toward the aspects of self-medication. The most common elements approved by the students, including the increasing drug dose (94.5%), concomitant use of drugs (72%), can be dangerous, and it follows by (94.5%) of participants think that SM can be dangerous when increase the dose of Self-Medication drug(s). Also, they approved that seeing the doctor in case of adverse effects is mandatory (68.9%) and that all medications (OTC, POM, and herbal) can cause adverse effects. The knowledge of potential ADRs among medical students when using drug(s) in SM was high (66.8%). There were approximately (66.6%) of the participants, medical students, who think that medicines are harmful even if they are taken according to a doctor's advice and (96.1%) of them think physician help must be sought if any ADRs developed. However, (72.5%) of the participants think that SM is safe, and it was found (59.8%) of medical students prescribe medication(s) for their families or friends, while (77.5%) of the participants think that OTC aren't completely safe. The medications were bought from a pharmacy by 362 (82.3%) users. Other sources are detailed in Table (6).

According to table (7), The percentage of students who support self-medication (39.54%), while (60.45%) of participants are against Self-medication.

The main reasons, according to thought of participants, for self-medication were the health problem not serious is desired (71.1%), and minor illness (44.1%), respectively (Table 8). The main reasons against self-medication were adverse effects risk (67.3%) and misdiagnosis risk (66.7%), respectively (Table 9).

The reasons for using self-medication help were investigated, and the responses of the students were the highest in cases of when there are symptoms (58.2%) and when there symptoms are moderate and sustained for > 3 days (32.3%), respectively (Table 10).

In the table (11) below, the response of 440 medical students was received in terms of the lack of effect of their use of self-medication, and what they do in case of failure of self-medication, and the results were that the overwhelming majority agreed to stop self-medication and consult specialists (physician and pharmacist), about 232 (52.7%)

of participants stop taking the medication(s) and consult the physician, while 151 (34.3%) of participants stop taking the medication(s) and consult the pharmacist. Also, some of medical students stop the SM by themselves without medical advice.

Table (12), shows a response was received from medical students about their understanding of the role of the pharmacist in self-medication, and what the community pharmacist does. The result of asking the pharmacist about recommendation dose of medication(s) used in SM was the highest (93.9%), and (78.2%) of participants think that the pharmacy is the minor health problems. Attitudes toward the role of the pharmacist as a drug information consultant for drug dose (93.9%), duration (70.2%), side-effects (84.5%), use multiple drugs (79.5%), …etc., are shown in Table (12).

The response of medical students was presented in the table (13) about the use of antibiotics as self-medication, and it was found that (63.63%) of participants use antibiotic as self-medication, and (80.9%) of participants have knowledge about bacterial resistance.

DISCUSSION

Self-medication is a common practice worldwide and the irrational use of drugs is a cause of concern. In this representative sample, many medical students reported that they are using Self-medication.

Gender is considered as an important factor in self-medication patterns among young adults including students. The prevalence of self-medication was observed to be higher among females in our study (73.35% vs. 26.64% among male students). Table (1) in our research participation among female more than male. This is a normal finding of our college society since already female counts more than male when registered. Majority of them were more than 20 years old as most of the students in medical college fell in that age category.

The most important self-medications used by students in this study were antibiotics (69.8%), analgesics (66.6%), anti-flu (45.9%), skin treatment (45.2%), and supplements (43.2%).

Similar observations were found as antibiotics were the most common group of drugs for self-medication. Antibiotics were the most frequent drugs that used by the participants as self-medication for treatment of common symptoms, which was consistent with what reports of studies from Egypt, where the using of antibiotics was

reported by (41.5%) of the students [26] and in United Arab Emirates where 32% of medical students of Sharjah University used antibiotics as self-medications [27]. Similarly, 46.2% of university students in Oman gave a history of self-medication with antibiotics [28].

Students living in the urban area showed a significantly higher association with self-medication. Availability of medicines in stores and the high number of pharmacies with increases in advertisement for new medicines might be the cause.
According to the results of our research, self-medication prevalence was slightly higher among pharmacy students than other medical students, however, this difference was not statistically significant. Moreover, in Iraq, most of the pharmacy students are working as assistants in private or public pharmacies, giving them the knowledge that the pharmacy is the only trustable source of medications. Surprisingly, (80.9%) students aware of the risk of bacterial resistance, yet this did not prevent about (63.63%) of them using antibiotics for self-medication without a prescription.

Other studies also reported the same results which are most probably due to increase in the level of medical knowledge and public health clinical training. Also, older students feel that they are able to self-medicate themselves as they studied pharmacology. Among our other results, most students reported knowing that the medications that they were consuming needed a prescription (82.3%). Although these information may not be enough at this level of study to judge and give decisions regarding medication. Important disadvantages of self-medication would be the risk of making a wrong diagnosis, inappropriate drug use and its adverse effects. We additionally found that the leading reported cause of practicing self-medication is no serious health problem.

Moreover, they approved the fact that all medications, including herbal ones, have adverse effects and the necessity for physician visits in case of any side effects. The respondents had a fairly good knowledge of the advantages and disadvantages of self-medication. Many of them correctly perceived self-medication as time-saving and economical, doing away with the need to go to a doctor for minor illness and providing quick, easy and convenient relief.
These perceptions are similar to those reported by the WHO that self-medication provides a cheaper and convenient alternative for treating common minor illnesses [22, 23]. These are important factors favoring self-medication and have been reported in other studies [24, 25].

However, this could also mean that health services need to be improved so that treatment becomes more accessible and the patient's waiting time is minimized. Length of waiting time for medical consultation has been identified as one of the predictive factors for self-medication. The most important deterrents for self-

medication were fear of adverse drug reactions, risk of making a wrong diagnosis and risk of using a wrong drug (fear of the unknown), similar to an earlier study [25].

In the present research, the role of pharmacist in helping students to make the proper choice of drug in self-medication was high. Although, around 80% of the students consulted pharmacists about the drug doses, side-effects, proper duration of treatment and concomitant usage of drugs. This indicates that the students believed that the role of pharmacist as a source of information is more important after and not before getting the drug.

The present research appeared to have a number of strengths. The research questionnaire addressed almost all issues related to self-medication practice. However, this research has some limitations that can adversely influence the generalization of the findings. Although we used standard sampling method in the research, selection bias could be present because of the number of female medical students were more in the study.

CONCLUSION
Self-medication is common practice in the Iraqi community and there were significant differences for age and gender; the knowledge is moderate, and the views about the Self-Medication concept are generally appropriate. The practice of self-medication is alarming. They tend to use it correctly with little information.

The prevalence of self-medication was high medical students, including the antibiotics use despite their knowledge of its risks. The students showed moderate knowledge about the reasons for and against self-medication and generally appropriate views about the concepts of self-medication. This prevalence was with a statistically significant association between females and self- medication practice. Antibiotics were highly used as self-medication treatment which is considered as a critical issue due to side effects and emerging of bacterial resistance.

_____

Abbreviations
SM: Self-Medication
SPSS: Statistical Package for the Social Sciences
OTC: Over-the-Counter
POM: Prescription Only Medications
WHO: World Health Organization
ADRs: Adverse Drug Reactions

REFERENCES

1. World Health Organization (WHO). The Safety of Medicines. World Health Organization (WHO) 2005.
2. Montastruc JL, Bagheri H, Geraud T, Lapeyre-Mestre M. Pharmacovigilance of self medication. Therapie. 1997;52:105–10. [PubMed] [Google Scholar]
3. Potnis PS. Ohio pharmacists' perceptions of over-the-counter drug advertising. Toledo: University of Toledo, Theses and Dissertations; 2012:406.
4. Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE, Miech RA. Monitoring the future: national survey results on drug use, 1975–2009. Volume II: college students and adults ages 19–50. Bethesda, Maryland: National Institute on Drug Abuse; 2010.
5. Sawalha AF. A descriptive study of self-medication practices among Palestinian medical and nonmedical university students. Res Social Adm Pharm. 2008;4(2):164–72. PMID:18555969
6. El Ezz NFA, Ez-Elarab HS. Knowledge, attitude and practice of medical students towards self medication at Ain Shams University, Egypt. J Prev Med Hyg. 2011;52(4):196–200.
7. Almalak H, Albluwi AI, Alkhelb DA, Alsaleh HM, Khan TM, Hassali MA, et al. Students' attitude toward use of over the counter medicines during exams in Saudi Arabia. Saudi Pharm J. 2014;22(2):107–12. PMID:24648821
8. Suaifan GA, Shehadeh M, Darwish DA, Al-Ijel H, Yousef AM, Darwish RM. A cross-sectional study on knowledge, attitude and behavior related to antibiotic use and resistance among medical and non-medical university students in Jordan. Afr J Pharm Pharmaco. 2012;6(10):763–70.
9. Hussain S, Malik F, Hameed A, Riaz H. Exploring health seeking behavior, medicine use and self-medication in rural and urban Pakistan. South Med Rev 2010;3:32-4.
10. Hanafy SA, Gad ZM, El Bourgy MD, Wahdan IH. Self-medication among Alexandria University students and effect of an educational intervention on their self-medication knowledge, attitudes and practices. Int J Comm Med Pub Heal. 2020;7:1205–14. [Google Scholar]
11. Zafar SN, Syed R, Waqar S, Zubairi AJ, Vaqar T, Shaikh M, et al. Self-medication amongst university students of Karachi: Prevalence, knowledge and attitudes. J Pak Med Assoc. 2008;58:214–7. [PubMed] [Google Scholar]
12. Ruiz ME. Risks of self-medication practices. Curr Drug Saf. 2010;5:315–23. [PubMed] [Google Scholar]
13. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self medication. Drug Saf. 2001;24:1027–37. [PubMed] [Google Scholar]
14. Chalker J. Improving antibiotic prescribing in Hai Phong Province, Viet Nam: The "antibiotic-dose" indicator. Bull World Health Organ. 2001;79:313–20. [PMC free article] [PubMed] [Google Scholar]
15. Muhannad R. M. Salih and Arwa Y. Abd, Department of Pharmacy, Al-Rasheed University College, Baghdad, Iraq. Self-medication Survey among Pharmacy Students in Iraq, J Pharm Bioallied Sci. 2021 Jul-Sep; 13(3): 291–297. Published online 2021 PMCID: PMC8698082. PMID: 35017884.
16. James H, Handu SS, Khalid AJ, Khaja A, Otoom S, Sequeira RP.. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. Med PrincPract. 2006;15:270–275.[PubMed].
17. Rawa J.K. Al-Ameri, Husham J. Abd Al-Badri, and Riyadh K. Lafta, Prevalence of self-medication among university students in Baghdad: a cross-sectional study from Iraq, Eastern Mediterranean Health Journal, EMHJ, Vol. 23, No. 2 2017.
18. World Health Organization. National Policy on traditional Medicine and regulation of herbal medicines - Report of a WHO Global Survey. 2005.
19. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. 2000.
20. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self-medication. Drug Saf 24:1027-37 , 2001.

21. World Health Organization. Self-care in the context of primary health care. 2009.
22. World Health Organization: Report of the WHO Expert Committee on National Drug Policies 1995. http://www.who.int/medicines/library/dap/who-dap-95-9/who-dap-95.9.shtml.
23. Kafle KK, Gartulla RP: Self-medication and its impact on essential drugs schemes in Nepal: a sociocultural research project 1993. http://www.who.int/medicines/library/dap/who-dap-9310/who-dap-93-10.shtml.

24. Hughes CM, McElnay JC, Fleming GF: Benefi ts and risks of self medication. Drug Saf 2001; 24: 1027–1037.
25. Shankar PR, Partha P, Shenoy N: Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a question-naire-based study. BMC Family Practice 2002; 3: 17.
26. El Ezz NFA, Ez-Elarab HS. Knowledge, attitude and practice of medical students towards self-medication at Ain Shams University, Egypt. J Prev Med Hyg. 2011;52(4):196–200.
27. Sharif, S.I.; Mohamed Ibrahim, O.H.; Mouslli, L.; Waisi, R. Evaluation of self-medication among pharmacy students. Am. J. Pharmacol. Toxicol. 2012; 7, 135–140.
28. Rezahosseini O, Roohbakhsh A, Tavakolian V, Assar S. Drug abuse among university students of Rafsanjan, Iran. Iran J Psychiatry Behav Sci. 2014;8(2):81–5.
29. Sharif SI, Ibrahim OH, Mouslli L, Waisi R. Evaluation of self-medication among pharmacy students. American Journal of Pharmacology and Toxicology. 2012;7(4):135-40.
30. James H, Handu SS, Al Khaja KA, Otoom S, Sequeira RP. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. Med Princ Pract. 2006;15(4):270-5.
31. Sontakke SD, Bajait CS, Pimpalkhute SA, Jaiswal KM, Jaiswal SR. Comparative study of evaluation of self-medication practices in first and third year medical students. Int J Biol Med Res. 2011 Apr 30;2(2):561-4.
32. Olayemi OJ, Olayinka BO, Musa AI. Evaluation of antibiotic self-medication pattern amongst undergraduate students of Ahmadu Bello University (Main Campus) Zaria. Res J Appl Sci Eng Technol. 2010;2(1):35-8.
33. Ghosh S, Vikas V, Gupta A, Chaudhary R. Evaluation of the practice of self-medication among college students in west Uttar Pradesh. International Journal of Pharma Professional's Research 2010;1(1):14-8.