

SELF-MEDICATION WITH ANALGESICS AMONG MEDICAL AND PHARMACY STUDENTS OF UNIVERSITY OF DUHOK - KURDISTAN REGION, IRAQ

RABIE GABRIEL ABDULLAH*, MANHAL AHMED ABDULKADER**, SARA AKRAM AHMED, DALAL JAED ALI, LEILA SALEEM SHAREEF, DALAL SAEED YOUSIF and LAITH MURAD RASHEED

*Dept. of Pharmacology, College of Pharmacy, University of Duhok, Kurdistan Region-Iraq

**Dept. of Clinical Pharmacy, College of Pharmacy, University of Duhok, Kurdistan Region-Iraq

(Received: October 18, 2020; Accepted for Publication: January 12, 2021)

ABSTRACT

Self-medication refers to the use of medications without any medical consultation. It is a prevalent practice among the general population and university students according to many studies in Europe, United States and in the neighbor countries in our region. Analgesics are the most popular medications used for self-medication. Few studies have been conducted in our area.

The study aims to evaluate self-medication trends with analgesics among medicine and pharmacy students at Duhok University in Duhok, Kurdistan Region, Iraq.

Between November 2017 and April 2018, a cross-sectional questionnaire-based analysis of undergraduate medical and pharmacy students at University of Duhok was performed. In the questionnaire, 267 students engaged and filled in. The data were processed using Statistical Package for Social Sciences.

Self-medication was highly prevalent among medical and pharmacy students (85 %). The most prominent factor for self-medication with analgesics was the prior experience with using the same analgesic (56.9 %). Headaches were the most frequent symptom that lead to self-medication (51.3 %). Paracetamol was a widely applied analgesic (38.3 %). The internet (44.6 %) was the most prevalent source of information for self-medication. Approximately 86% of students chose to take the analgesic only where there is serious pain.

KEYWORDS: self-medication, analgesics, students, pharmacy, medical.

1. INTRODUCTION

As per William Osler, the urge to take medication is probably the main attribute that separates man from animals (Cushing, 1925). Self-medication includes the usage of drugs for those who wish to handle self-recognized conditions on their own. Self-medication is also an integral aspect of self-care, including non-drug self-treatment, social help for sickness, and first aid in daily life (Alam et al., 2015).

The use of medications without any medical consultation may result in adverse drug reactions and drug toxicity. Self-medication, as it is called, is not only restricted to the use of over-the-counter (OTC) drugs, but it may also involve the use of prescription drugs. This practice is associated with an increased possibility of antibiotic resistance, polypharmacy, drug interactions and drug abuse (Alsous et al., 2018).

The prevalence of self-medication is high, especially in countries where no forceful controls exist, and prescription drugs are widely circulated (Sharif et al., 2012). The explanations listed in the publications for self-medication are minor disease, prior involvement in managing related illnesses, economic concerns, and lack of access to healthcare services. Numerous reports have found that the biomedical education of students affects their self-medication habits. Medical and pharmacy students can vary from the general public since they are subjected to disease and drug awareness (Alsous et al., 2018).

A Scottish research estimates that the incidence of non-prescription analgesic use is 37% (Porteous et al., 2005). A prevalence of 25% and 41% were identified in other researches utilizing the same timeline (Antonov and Isacson, 1998; Segall, 1990). Experienced side effects can vary among various persons, and overuse can be dangerous. Concerns over the potential for excessive usage of non-prescription

analgesics have been identified, but the magnitude of the concern remains unclear (Abbott & Fraser, 1998; Porteous et al., 2005).

In the United Kingdom (UK), paracetamol, aspirin, and ibuprofen are analgesics that may be bought without a prescription, with certain drugs even providing low-dose opiates such as codeine phosphate. The improper usage of these analgesics, for example, the using while contraindicated or through drug-drug interactions, may result in severe side effects. The former investigation has demonstrated that, with reports of drug interactions, inappropriate dosing, and cases of contraindicated use, OTC analgesics are not necessarily utilized optimally (Porteous et al., 2005).

Regarding analgesic self-medication among university students, Sarahroodi et al. (2012) revealed that the prevalence is very high among Iranian students in Qom city (76.6%), and about half of the respondents reported headache as the problem. Recent findings have shown that self-medication among undergraduate medical and pharmacy students was substantial and increased with medical experience (Amin et al., 2014; Ibrahim et al., 2015; Kumar and Vandana, 2016; Shivamurthy et al., 2017; Tanwar and Mathur, 2017). Anyway, Sarahroodi et al. (2012) demonstrated a non-significant distinction between medical and non-medical students.

The self-medication level reported in Iraq and comparable countries is high (Jasim et al., 2014; Sarahroodi and Arzi, 2009; Sawair et al., 2009). However, to our knowledge, the reports on self-medication of analgesics in Iraq – if any, were very limited and few, especially among the medical students. This study aims to estimate undergraduate medical and pharmacy students' attitude at University of Duhok towards the self-medication with analgesic.

2. METHODS

Medical and Pharmacy students (N=267) at the University of Duhok, Duhok city, Kurdistan Region, Iraq have participated in this study. The students were in their third-, fourth-, and fifth-year study of the correspondent colleges (i.e., College of Medicine and College of Pharmacy).

By utilizing Raosoft online sample size calculator (Raosoft, 2004), with a 5% error margin, a 50 percent answer rate and a 95 percent confidence interval, and a population size of 450 (the maximum estimated number of

registered students), 208 respondents were determined as adequate for the analysis as an internal survey. The total number of respondents (267) was higher than the acceptable number, which would render the results more representative.

A questionnaire-based cross-sectional study of undergraduate medical and pharmacy students at the University of Duhok was performed. Students of both sexes in their third-, fourth-, and fifth-professional years were selected due to their essential knowledge of medications and diseases. Students who enrolled showed their willingness to engage in this study. A questionnaire developed by Amin et al. (2014) was adopted for this purpose. The survey was carried out during the period from December 2017 to April 2018.

The students received clarifications regarding the study purpose and the procedure to complete the survey. This questionnaire was created to research the use, perception, and understanding of self-medication with analgesics. The survey was administered to the students directly. The students who did not want to complete the questionnaire were required to return the questionnaire blank. Each student was requested to reply correctly to each item. Uncomplete details were omitted as well as unfilled questionnaires. Besides, data on the demographic features of the respondents have been compiled in a section. These were sex, age, marital condition, and studying year. The answer options in the questionnaire were randomized to eliminate the order bias and minimize the influence on the respondent's choices.

The questionnaire was based entirely on pain responding over the last four months for the evaluation of self-medication among students and given the following questions and responses:

- What pain/sickness have you endured or sometimes encountered over the past four months? headache/migraine, cough/cold, flu, back pain, sports injury (check as many as necessary). Others? Please define.
- What is the primary factor that encourages self-medication with analgesics? Past practice, friend or family member guidance, ease, time shortages, consulting costs (check as many as necessary).
- What pain killer do you use to self-medicate mostly? Paracetamol, diclofenac, aspirin, mefenamic acid, ibuprofen, Panadol CF /

Disprine CF, herbal treatment, rest, warm milk, hot bath, or balm.

• What is the source of information for you about issues? Physicians, pharmacists, relatives and friends, media (TV, newspaper), and the internet (check as many as necessary).

Overall, the questionnaire contained numerous questions to examine students' concept of self-medication.

Statistical Package for Social Sciences (SPSS) version 23.0 (SPSS Inc., Chicago, Ill., USA) evaluated data for frequency, percentage, and

comparative estimates. The statistical significance was set at $p \leq 0.05$.

3. RESULTS

A total number of 267 medical and pharmacy students in University of Duhok participated in this questionnaire-based cross-sectional study. Age range was (21-24 year), including males 82 (30.7%) and the females 184 (69.3%). Other features represented in Table (1).

Table (1): General characteristics of participants

Features	Number of Students	N (%)
Marital Condition		
- Single	248	(92.9)
- Married	19	(7.1)
College		
- College of Medicine	134	(50.2)
- College of Pharmacy	133	(49.8)
Academic Study Year		
- 3 rd year Medical	38	(14.2)
- 4 th year Medical	51	(19.1)
- 5 th year Medical	45	(16.9)
- 3 rd year Pharmacy	46	(17.2)
- 4 th year Pharmacy	42	(15.7)
- 5 th year Pharmacy	45	(16.9)

The vast majority of students (85%) practiced self-medication with analgesics. More than half of students experienced headache past 4 months

(51.3%, n=137), while 109 students (40.8%) had cough/cold, as shown in Table (2).

Table (2): Pain/Illness experienced by students

Pain/illness experienced past 4 months	N (%)
Headache/migraine	137 (51.3)
Cough/cold	109 (40.8)
Fever	54 (20.2)
Back pain	57 (21.3)
Sports	23 (8.6)
Others	32 (12)

Preceding encounter with analgesic (56.9%, n=152) was the most common factor leading to self-medication, and recommendation by a

friend or relative come in the second rank (22.8% n=61), as shown in Table (3).

Table (3): Reason(s) of self-medication

Reason	N (%)
Past practice with analgesics	152 (56.9)
Friend or family member guidance	61 (22.8)
Ease	37 (13.9)
Time shortages	37 (13.9)

Consulting costs 25 (9.4)

The students' attitude towards various analgesic drugs as self-medication was examined, and paracetamol tended to be the

traditional analgesic favored by the participating students (38.3%, n=102), as mentioned in Table (4).

Table (4): Preferred analgesic for self-medication

analgesics	N (%)
paracetamol	102 (38.3)
aspirin	6 (2.2)
diclofenac	18 (6.7)
ibuprofen	33 (12.3)
mefenamic acid	5 (1.9)
Herbal	2 (0.6)
Rest	58 (21.7)
Warm milk	22 (8.4)
Hot bath	20 (7.3)
Balm	2 (0.6)

The sources of evidence that helped to make judgments regarding self-medication was analyzed in this study. A significant proportion

of students (44.6%) chooses internet as a preferred source of information (Figure (1)).

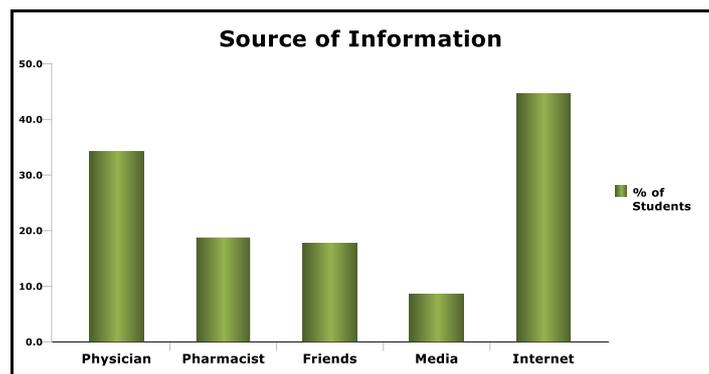


Fig. (1): source of information for self-medication

Students were asked close-ended random questions to perceive various medication usage principles and analyze multiple data on their analgesic medication experience, dosage, the

seriousness of pain, brand choice, etc., as shown in Table (5). There were notable findings among students that may also symbolize the public's approach to self-medication.

Table (5): Students' idea for the self-medication of analgesics.

Close ended random question about self-medication (analgesic)	N (%)
Owing enough knowledge for self-medication	114 (42.7)
Prescribing for others	84 (31.5)
Additional pain means additional drug	47 (17.6)
Doubling the dose will be better	40 (15)
Choose of well-known brands	182 (68.2)
Favoring oral medication instead of Intravenous & topical	204 (76.4)
Ignoring pain and let the body deal with it	155 (58.1)
Using any analgesic when in pain and without delay	151 (56.6)
Taking the medication as necessary or feeling extreme pain	230 (86.1)
The necessity for doctor consultation before taking a new drug	196 (73.4)

The percentage of pharmacy student that experienced headache (59.4 %) was more than that of medical student (43.3%), the difference was statistically significant ($p < 0.01$). Also, the pharmacy students prefer 'pharmacist' as source of information more than medical student (28.6% vs. 8.9%, $p < 0.001$), and higher percentage of the pharmacy students in comparison to medical student had chosen lack of time as reason for self-medication (19.5% vs. 8.2%, $p = 0.008$).

Ibuprofen as analgesic used by females more than males (9% vs. 3.3%, $p = 0.002$). Female students also reported a higher prevalence of headache and back pain compared to males (57.1% versus 38.6%, and 26.6% versus 9.6%, $p = 0.005$ and 0.002 , respectively)

4. DISCUSSION

Self-medication is a behavior where a person uses medications to relieve self-diagnosed symptoms or disease without expert guidance (Bennadi, 2013). Numerous studies showed that self-medication, especially with analgesics, is prevalent worldwide and is influenced by several determinants (Papakosta et al., 2014; Sarahroodi et al., 2012). The degree of education and professional status is pointed to as predictor variables for self-medication. Among university students, self-medication has been recorded frequently. Several studies have shown that students' medical experience affects their self-medication habits, particularly relevant for medicine and pharmacy, because of their awareness of illnesses and medications (Alsous et al., 2018).

This cross-sectional research was performed among pharmacy and medical students at the University of Duhok in Duhok city, Kurdistan Region, Iraq, using a survey questionnaire. The goal was to report the incidence of using prescription and OTC analgesics among pharmacy and medical students and determine their self-medication attitudes. Choosing medical and pharmacy students as samples for this research offer an excellent behavioral index for the general public.

In this study, the headache was the most frequent pain/illness encountered by more than half of the students in the past four months, accompanied by cough & cold as the second common one. This study also showed that paracetamol was the most commonly used

analgesic. These findings are consistent with other studies (Amin et al., 2014; Paulose-Ram et al., 2005; Roumie and Griffin, 2004; Turunen et al., 2004).

In the current research, within this cohort of Duhok university students, self-medication was 85% compared to 45% in Turkey, 88% in Croatia, 94% in Hong Kong, and 75% in Pakistan (Aljinović-Vučić et al., 2005; Amin et al., 2014; Buke et al., 2005; Lau et al., 1995). The students' high propensity to self-medicate with analgesics is an example of interference and policy. While self-medication can help cure minor illnesses that need no medical consultation and, in particular, relieve burden in badly developing healthcare countries, there is a considerable amount of concern regarding the supply of more complicated drug classes with no prescriptions (Lau et al., 1995; Nordeng and Havnen, 2005). The process of self-medication also has several harmful consequences. It contributes to multiple considerations, including the worldwide proliferation of multi-drug resistant infections, drug dependency and abuse, covering up of malignant and possibly deadly diseases, misdiagnosis possibility, over- and under-dosing issues, drug interactions, and devastations due to the side-effects of particular medications (Ashina et al., 2006; Assael, 2006; Bauchner and Wise, 2000; Calabresi and Cupini, 2005; French et al., 2004; Neafsey, 2004; Tackett et al., 2006).

This study also suggests that the students' attitude toward medicine usage is diverse, and some of them showed conflicting choices. Most of the participating students opted to disregard pain and let the body deal with it and claimed that they should not hesitate to take any drug as a pain reliever, and the majority of them felt that only in the event of extreme pain could they take analgesics. The students who expressed the mindset that they would not hesitate to take any prescription need to be more informed regarding the dangers of drugs in this case. Before taking medicine, all students who take analgesics only in extreme pain should obtain a doctor's advice because they did not have adequate knowledge regarding the side effects of the medications and the condition for which they are taking medicine. The study also found that less than fifth of the students agreed that more pain means more drugs could be taken, and that two pills were more successful than one pill for any illness scenario. It often indicates a lack of

understanding and misconception about medications.

These attitudes may be spontaneous and expected. The biggest concern was that nearly third of the students claimed they had already prescribed analgesic self-medication to others. Most of the students who administered these medications were younger students. So, to prevent this form of thinking and behaving, medical ethics sessions could begin with students as soon as their first academic year. Unfortunately, most of the institutions in the Kurdistan Region have not implemented such a practice.

The internet was chosen by most of the students as a source of information for self-medication in this study, which is in disagreement with Amin et al., who emphasized that the previous physician recommendations were the primary source (Amin et al., 2014). The time difference between the two studies can play a role here. Students in the current time relied more on the internet, not only for self-medication but in many fields and aspects of everyday life.

The current study observed that males showed a stronger inclination toward self-medication than females, which is apparently in contrast to many studies (Amin et al., 2014; Cepeda and Carr, 2003; Fillingim, 2017; Rosseland and Stubhaug, 2004). However, experiencing pain and the decision to self-medication is not necessarily the same. Many females may prefer a non-pharmacotherapeutic approach to relieve the pain, especially the mild one, and the decision to self-medicate may be easier to be done by males. Besides, the low number of males in this study compared to females (less than the half) made the comparison challenging to predict, which could be one of the drawbacks in this study. The higher prevalence of headache and back pain reported in this study by female students compared to males supports this idea.

Additional comparisons were also performed in the study. Compared to medical students, pharmacy students experienced headaches within the past four months more frequently, and a significantly larger proportion chose the lack of time as a reason for self-medication. According to the students, the stress due to condensed lectures and exams during the semester system compared to the annual system applied in the college of medicine may be a

possible reason. Also, the preference of 'pharmacist' as a source of information for self-medication was more among pharmacy students compared to medical students. This partiality could be attributed to the closer contact of pharmacy students with pharmacists as lecturers in the college or as supervisors in pharmacies where students practice.

This research method is realistic and retains confidentiality; however, one cannot ignore the usual drawbacks of the questionnaire-based research due to the bias of social desirability, discrepancies in perception and comprehension, and missed questions.

5. CONCLUSIONS

Self-medication among medical and pharmacy students is very high. Headache is the most common pain experienced by students in the past four months, and paracetamol is the main analgesic for self-medication for the majority of students. Most of the students selected 'internet' and 'physician' to be the primary sources of medication information. The attitudes of students toward self-medication are diverse, and some of these require attention.

6. REFERENCES

- Alam, N., Saffoon, N., & Uddin, R. (2015). Self-medication among medical and pharmacy students in Bangladesh. *BMC research notes*, 8(1), 763.
- Aljinović-Vučić, V., Trkulja, V., & Lacković, Z. (2005). Content of home pharmacies and self-medication practices in households of pharmacy and medical students in Zagreb, Croatia: findings in 2001 with a reference to 1977. *Croatian Medical Journal*, 46(1).
- Alsous, M., Elayah, E., Jalil, M. A., & Alhawmdah, E. (2018). Evaluation of Self-Medication Practice among Pharmacy Students in Jordan. *Jordan Journal of Pharmaceutical Sciences*, 11(1).
- Amin, S., Abid, F., Javeed, A., Ashraf, M., Riaz, A., Mushtaq, M. H., . . . Yaqoob, M. (2014). A cross sectional study on self-medication with analgesic among pharmacy students of Lahore, Pakistan. *Science International*, 26(3).
- Antonov, K. I., & Isacson, D. G. (1998). Prescription and nonprescription analgesic use in Sweden. *Annals of Pharmacotherapy*, 32(4), 485-494.
- Ashina, S., Zeeberg, P., Jensen, R., & Ashina, M. (2006). Medication overuse headache. *Ugeskrift for laeger*, 168(10), 1015-1019.
- Assael, L. A. (2006). The pill culture, the pill society. *Journal of oral and maxillofacial surgery*, 64(9), 1331-1332.

- Bauchner, H., & Wise, P. H. (2000). Antibiotics without prescription: "bacterial or medical resistance"? *The Lancet*, 355(9214), 1480.
- Bennadi, D. (2013). Self-medication: A current challenge. *Journal of basic and clinical pharmacy*, 5(1), 19.
- Buke, C., Hosgor-Limoncu, M., Ermertcan, S., Ciceklioglu, M., Tuncel, M., Köse, T., & Eren, S. (2005). Irrational use of antibiotics among university students. *Journal of infection*, 51(2), 135-139.
- Calabresi, P., & Cupini, L. M. (2005). Medication-overuse headache: similarities with drug addiction. *Trends in pharmacological sciences*, 26(2), 62-68.
- Cepeda, M. S., & Carr, D. B. (2003). Women experience more pain and require more morphine than men to achieve a similar degree of analgesia. *Anesthesia & Analgesia*, 97(5), 1464-1468.
- Cushing, H. (1925). The life of sir William Osler. *Bulletin of the Medical Library Association*, 14(4), 50.
- Fillangim, R. B. (2017). Sex, gender, and pain. In *Principles of Gender-Specific Medicine* (pp. 481-496): Elsevier.
- French, L., Horton, J., & Matousek, M. (2004). Abnormal vaginal discharge: what does and does not work in treating underlying causes. *Journal of family practice*, 53, 890-903.
- Ibrahim, N. K., Alamoudi, B. M., Baamer, W. O., & Al-Raddadi, R. M. (2015). Self-medication with analgesics among medical students and interns in King Abdulaziz University, Jeddah, Saudi Arabia. *Pakistan journal of medical sciences*, 31(1), 14.
- Jasim, A. L., Fadhil, T. A., & Taher, S. S. (2014). Self-medication practice among Iraqi patients in Baghdad City. *Am J Pharmacol Sci*, 2(1), 18-23.
- Kumar, A., & Vandana, A. N. A. (2016). Analgesics self-medication and its association with sleep quality among medical undergraduates. *Journal of Clinical and Diagnostic Research: JCDR*, 10(12), FC07.
- Lau, G. S., Lee, K. K., & Luk, M. C. (1995). Self-medication among university students in Hong Kong. *Asia Pacific Journal of Public Health*, 8(3), 153-157.
- Neafsey, P. J. (2004). Self-medication practices that alter the efficacy of selected cardiac medications. *Home Healthcare Now*, 22(2), 88-98.
- Nordeng, H., & Havnen, G. C. (2005). Impact of socio-demographic factors, knowledge and attitude on the use of herbal drugs in pregnancy. *Acta obstetrica et gynecologica Scandinavica*, 84(1), 26-33.
- Papakosta, M., Zavras, D., & Niakas, D. (2014). Investigating factors of self-care orientation and self-medication use in a Greek rural area. *Paulose-Ram, R., Hirsch, R., Dillon, C., & Gu, Q. (2005). Frequent monthly use of selected non-prescription and prescription non-narcotic analgesics among US adults. Pharmacoeconomics and drug safety*, 14(4), 257-266.
- Porteous, T., Bond, C., Hannaford, P., & Sinclair, H. (2005). How and why are non-prescription analgesics used in Scotland? *Family Practice*, 22(1), 78-85.
- Raosoft, I. (2004). Sample size calculator. Retrieved January 6, 2018, from www.raosoft.com/samplesize.
- Rosseland, L. A., & Stubhaug, A. (2004). Gender is a confounding factor in pain trials: women report more pain than men after arthroscopic surgery. *Pain*, 112(3), 248-253.
- Roumie, C. L., & Griffin, M. R. (2004). Over-the-counter analgesics in older adults. *Drugs & aging*, 21(8), 485-498.
- Sarahroodi, S., & Arzi, A. (2009). Self-medication with antibiotics, is it a problem among Iranian college students in Tehran. *J Biol Sci*, 9(8), 829-832.
- Sarahroodi, S., Maleki-Jamshid, A., Sawalha, A. F., Mikaili, P., & Safaeian, L. (2012). Pattern of self-medication with analgesics among Iranian University students in central Iran. *Journal of family & community medicine*, 19(2), 125.
- Sawair, F. A., Baqain, Z. H., Karaky, A. A., & Eid, R. A. (2009). Assessment of self-medication of antibiotics in a Jordanian population. *Medical Principles and Practice*, 18(1), 21-25.
- Segall, A. (1990). A community survey of self-medication activities. *Medical Care*, 301-310.
- Sharif, S. I., Ibrahim, O. H. M., Mousli, L., & Waisi, R. (2012). Evaluation of self-medication among pharmacy students. *American Journal of Pharmacology and Toxicology*, 7(4), 135-140.
- Shivamurthy, S., Manchukonda, R., & Gurappanavar, D. (2017). Evaluation of analgesic self-medication pattern among under-graduate medical students of Adichunchanagiri Institute of Medical Sciences, BG Nagar, Karnataka: a cross-sectional questionnaire-based study. 2017, 4(3), 4. Retrieved from <https://www.ijbcp.com/index.php/ijbcp/article/view/761>. doi:10.18203/2319-2003.ijbcp20150010
- Tackett, B. N., Smith, M. C., & Nedorost, S. T. (2006). Morbidity of over-the-counter topical steroids. *Journal of the American Academy of Dermatology*, 54(1), 182.
- Tanwar, K., & Mathur, S. (2017). To study the pattern, efficacy and tolerability of analgesic self-medication among undergraduate medical students: a questionnaire-based survey. *Int J Basic Clin Pharmacol*, 4(3), 3.
- Turunen, J. H., Mäntyselkä, P. T., Kumpusalo, E. A., & Ahonen, R. S. (2004). How do people ease their pain? A population-based study. *The Journal of pain*, 5(9), 498-504.

