

A CROSS SECTIONAL STUDY ON SELF-MEDICATION WITH ANALGESICS AMONG PHARMACY STUDENTS OF LAHORE, PAKISTAN

Sadia Amin¹, Farah Abid¹, Aqeel Javeed¹, Muhammad Ashraf¹, Amjad Riaz²,
Muhammad Hassan Mushtaq³, Aamir Ghafoor⁴, Muhammad Anees⁵, Muhammad Yaqoob⁶

¹Department of Pharmacology & Toxicology, University of Veterinary and Animal Sciences, Lahore, Pakistan

²Department of Theriogenology, University of Veterinary and Animal Sciences, Lahore, Pakistan

³Department of Epidemiology and Public Health, University of Veterinary and Animal Sciences, Lahore, Pakistan

⁴University Diagnostic Lab, University of Veterinary and Animal Sciences, Lahore, Pakistan

⁵Department of Microbiology, University of Veterinary and Animal Sciences, Lahore, Pakistan.

⁶Department of Clinical Sciences, PMAS Arid Agriculture University, Rawalpindi, Pakistan.

Contact: E-mail: aamir.ghafoor@uvas.edu.pk

ABSTRACT: This cross sectional study was done on a sample of 400 undergraduate pharmacy students (mean age=22 ±3 years) from a university of Pakistan to determine the frequency of self-medication with analgesics. A validated questionnaire was designed and dually approved by concerned authorities. Permission was also acquired from the Head of the University. The data were analyzed using descriptive statistics. The data revealed that 312(78%) students used self-medicated themselves for the pain treatment. It was observed that the most common reason for self-medication with analgesics was previous experience to use the particular analgesic(61.54%). The most common symptom was headache/migraine(51.60%). The commonly used analgesic was paracetamol(38.78%). The most prevalent reason for self-medication with analgesic among students was the previous recommendation by physician(51.92%) and the concept among students regarding self-medication with analgesics was that they had a complete knowledge of pharmacology of drug including its adverse reactions (53.21%). 82.5% students thought that it was necessary to consult a doctor only before taking a new medicine. Study showed that there is high frequency of Self-medication with analgesics among undergraduate pharmacy students. There is also a need to educate students to ensure safe practices.

1. INTRODUCTION

Self-medication is considered as to acquire drugs without a prescription used to recover earlier, getting close social circles drugs, using drugs accumulated in the homes, prolong or discontinue medical treatment and increase or decrease the dose of the prescribed treatment[1]. Self-medication is a phenomenon of increasing relevance, motivated by a complex set of factors that are associated with values that predominate in modern society. Most drugs for self-medication are used to relieve pain, diarrhea, constipation, gastric acid hyper secretion, or allergic diseases. They are generally well-tolerated at recommended dose. Self-medication may lead to risks such as misdiagnosis, use of excessive drug dosage, prolonged duration of use, drug interactions[2]. Different people will behave differently in response to a minor symptom and encouraging people to self-care relies on the careful design of interventions in order to change health seeking behavior. Some will self-medicate at the first sign, whereas others do so after the symptoms have developed further. Some will treat with modern medicine, possibly after consulting a pharmacist or general practitioner, others will prefer alternative or non-pharmacological remedies and some will decide to do nothing. Therefore, understanding people's self-medication habits is becoming increasingly important[3]. Considering the self-medication with analgesics, people prefer to self-medicate themselves and are getting more affordable and responsible for their health as they have more choices of drug for the treatment of pain. Self-medication can sometimes be hazardous for health by producing harmful effects. Therefore, drug prescription has been

reserved only for these qualified, graduated doctors [4]. In developing countries like Pakistan, self-medication of analgesic is increasing day by day. The factors for self-medication of analgesics in Pakistan include limited people resources for treatment from a qualified doctor, the increase of different company's product in market, over the counter (OTC) availability of analgesic drugs, the source of drug information especially media, friends and family and the past experience for a pain management. This approach of self-medication saves the government in matters of health and pharmaceutical industries benefit. However, no study addressing the issue of self-medication with analgesics have been carried out in Pakistani context, particularly among pharmacy students. Therefore, the present study focuses on self-medication of analgesics among pharmacy students in Pakistan.

The purpose of this study is to estimate the attitude of pharmacy students towards self-medication with analgesics. For this purpose, the behavior of undergraduate pharmacy students towards the use of analgesics was investigated. In the present study, we chose the pharmacy students as they are more concerned about drug knowledge. Also, they can provide the valid assessment of the doses of analgesics they used during last 4 months.

2. SUBJECTS AND METHODS

Participants

Pharmacy students (N=400) studying at the University of Lahore, Pakistan were participated in this study. Study design and procedures

A cross-sectional survey was carried out on undergraduate pharmacy students of Pharm-D. Students of both sex and age below 26 were selected. All students who enrolled showed their willingness to participate in this study. Nature of study and procedure to complete the questionnaire was briefly explained to the students. A well-structured, self-directed questionnaire was designed and developed to study five items. This questionnaire was developed to study the use, awareness and knowledge of self-medication with analgesics. The questionnaire was distributed personally to the students. Only those students were requested for their participation who have taken OTCs twice or more per month. The students who did not wish to complete the questionnaire were asked to return the questionnaire blank.

Each student was asked to respond to each item by replying correctly. Additionally, a section was added to collect data on demographic characteristics of the respondents. These were sex, age, marital status and professional year. About 400 questionnaires were distributed to the student majority of the students showed their responses by completing the questionnaire. According to exclusion criteria the data of students who did not self-medicate themselves, incomplete information and unfilled questionnaires were excluded from the result. Amongst 400 students who did not self-medicate themselves but relied on physicians for their medication of pain relief and did not properly fill the questionnaire were 88 while 312 students self-medicated themselves in response to pain. So, the further study was done among those 312 students.

Assessments:

To estimate the attitude about medicines and self-medication behaviors in response to minor pains such as headache, backache and pain in body due to cough, cold and fever.

The identified items among the students were:

- (i) A high tendency to self-medication
- (ii) A preference for the body to cope with minor ailments naturally
- (iii) Preference of famous brand for self-medication
- (iv) Preference to oral administered drugs
- (v) Use of medicines according to the severity of pain

For the assessment of the self-medication among students, the questionnaire was focused entirely in response to pain during last 4 months and included the following questions and respective response options:

- Which pain/ illness you experienced past 4 months or you used to experience often? (Tick as many as applicable): Headache/ migraine, cough/ cold, fever, back pain, muscle pain, sports injury, others (please specify)?
- Which one of them is the major factor which leads to self-medication with analgesics: previous experience, advice from friend or family member, convenience, lack of time, cost of consultation?
- Which pain killer you mostly prefer as self-medication: Paracetamol, Aspirin, Diclofenac sodium/potassium, Ibuprofen, Mefenamic acid, Panadol CF/Disprin CF, or herbal remedy including joshanda, rest, warm milk, warm water or balm?

- What is your source of information regarding problems: physician, pharmacist, friends and family, media (T.V, newspaper) and internet?
- In general, different questions were included in the questionnaire to analyze the concept of people regarding self-medication.

This type of questionnaire was adapted to explore student's self-medication and OTC analgesics taking behaviors.

DATA ANALYSIS

Data were collected and percentage (%) frequency test was used for categorical variables.

3. RESULTS

In all 400 students, respondent to the questionnaire the demographic characteristics showed a typical profile of these students, age range was from (22+3 year), including male 232 (58%) and the females 168 (42%). All of the students participated in the study were single. Amongst 400 students, 88 were first year students, 75 were of second year students, 87 of third year students, 82 of fourth year students and 68 of fifth year students. Data of 88 students was excluded according to exclusion criteria while considering 312 student data valid key for result analysis.

Reason of self-medication

The most common factor that lead to self-medication was previous experience of analgesics (61.54%, n=192), and was advised from friend or family member (19.87% n=62), as shown in Table 1.

It was a point of interest to know the most common reasons that lead to self-medication in students. For this purpose, different symptoms of the students were observed such as Headache, body pain and flu etc. as shown in Table 2. This data showed that the ratio of the students suffering with headache/migraine was (51.60%).

Frequency of the drug used for self-medication

It was also investigated the attitude of the students towards common drugs of analgesics as self-medication. It was found that majority of the students used paracetamol as analgesic (38.78%, n=121) as shown in Table 3.

Source of information about the drug

During this study, the source of information, which leads to the decision for the self-medication with analgesics, was also analyzed. It was found that previous recommendation by physicians (51.92%, n=162) was main source of information for pharmacy students. Other sources of information used by students are shown in table 4.

As shown in Table 5, students were asked close ended random questions to observe different concepts for use of medication and to evaluate different data regarding their knowledge of drug, prescription to others, pain severity, brand preference etc. These were important observations among students which may also reflect the attitude of the public towards self-medication.

4. DISCUSSION

The specific sample study on pharmacy students is a good reflection of the general population in terms of

behavior. Headache was the most commonly reported commonly used analgesic by pharmacy students was symptom (51.60%). According to this study the most paracetamol (38.78%) which was in consistent with other

Table 1. Factors that lead to self medication among undergraduate Pharmacy students (n=312)

Factors	Number of students	Percentage(%)
Previous experience	192	61.54
Advice from friend/ family member	62	19.87
Lack of time for consultation	32	10.26
Cost of consultation	15	4.81
Convenience	11	3.52

Table 2. Symptoms leading to self-medication among undergraduate Pharmacy students.

Symptoms	Number of students	Percentage (%)
Headache / migraine	161	51.60
Cough/cold/fever	47	15.06
Muscle/abdominal pain	31	9.93
Sports injury	25	8.02
Muscle Fatigue	19	6.09
Back pain	16	5.13
others pain	13	4.17

Table 3 commonly used analgesics as self medication in undergraduate pharmacy students (n=312)

Medicines	Number of Students	Percentage (%)
Paracetamol	121	38.78
Asprin	69	22.12
Pseudoephedrine (HCl) + Chlorpheniramine (Maleate) + Paracetamol	42	13.45
Flurbiprofen	20	6.41
Ibuprofen	18	5.13
Diclofenac sodium / Potassium	16	5.77
Herbal Therapy (Joshanda, Balm, etc)	14	4.48
Mefenamic acid	12	3.85

Table 4. Source of drug information regarding self-medication among undergraduate Pharmacy students (n=312)

Source of drug information	Number	Percentage (%)
Physician	162	51.92
Pharmacist	75	24.04
Friends and family	53	16.99
Media (T.V, newspaper)	15	4.81
Internet	7	2.24

Table 5 Concept of the undergraduate Pharmacy students regarding self-medication of analgesics (n=312)

Different Concepts	Number of students	Percentage %
I do have all the knowledge (side effects) about the drug I am taking	166	53.21
I also prescribe others for self-medication	97	31.09
I believe more pain more drug should be taken	98	31.41
I believe to take 2 tablets instead of one	150	48.08
I prefer famous brand for the treatment	240	76.92
I prefer oral route for drug administration instead of intravenous and topical	268	85.89
I mostly try to ignore my pain and let my body fight it	131	41.99
I do not hesitate to take any pain killer and mostly use it when I am in pain	44	14.10
I always take drug when it is necessary or I am suffering in severe pain	146	46.79
It is necessary to consult a doctor before taking a new medicine.	257	82.5

studies[5-7]. It was also observed in this study that females showed a higher tendency to self-medicate than males and this has been shown in previous studies where the reasons have been attributed to females experiencing a greater frequency of pain conditions than men and are possibly more

likely to admit that they are in pain and therefore more likely to take an analgesic[8].

The prevalence of self-medication among university students has been reported as 45% in Turkey [9, 10], 88% in Croatia [11] and 94% in Hong Kong [12]. In the

present study, prevalence of self-medication with analgesics was 78% among university students of Lahore, Pakistan. This high prevalence of students towards self-medication with analgesics signals that there is a need for policy and regulatory interventions. A previous history of using the same medication or adequate past experience with the medicines for any particular symptom were the most commonly reported drivers for self-medication in Pakistan [13, 14].

Although it is true that self-medication can help to treat minor ailments that do not require medical consultation and hence reduce the pressure on medical services particularly in the underprivileged countries with limited health care resources [12], the availability of the more complex drugs groups without prescriptions is a source of great concern [15]. In general, the practice of self-medication often has many adverse effects and can lead to many problems, including the global emergence of multi-drug resistant pathogens [16], drug dependence and addiction [17], masking of malignant and potentially fatal diseases [18], hazard of misdiagnosis [19], problems relating to over and under dosing [20], drug interactions [21] and tragedies relating to the side-effects of specific drugs [22].

It was also observed that the attitude for the use of medication is different in different students. Amongst students, 41.99% preferred to ignore pain and let their body fight it. 14.10% students had opinion that they did not hesitate to take any medication as a pain killer and 46.79% students thought that they should take analgesic in case of severe pain only. In this situation the students who showed the attitude that they did not hesitate to take any drug need more knowledge. The students, who took medication of analgesic only in severe pain, should consult doctor before taking any medication because they are unaware of side effects of the drugs and the disease for which they are taking the drug.

It was observed that 31.41% of the students had their views that they believed more pain more drug should be taken and 48.08% students believed that 2 tablets were more effective than one tablet for any disease situation. This also shows the lack of knowledge and wrong concept about medication. These views are incorrect. The main risk was seen that 31.09% students who stated that they had also prescribed to others for self-medication of analgesic. To avoid this prescription behavior, medical ethics should start as early as the first year students as majority of students who prescribed these medicines were junior students. Many students have the concept that it was alright to diagnose and treat medical illness without the supervision of a medical doctor. Such an attitude needs to be distinguished. Students should also be taught to eliminate this kind of behavior. The effectiveness of teaching of medical ethics early on is a proven intervention [23] but sadly not many institutions in Pakistan follow this practice [24].

Although self-medication of analgesics has the advantage of more freedom to patients in taking care of minor ailments, and making patient more health conscious. It reduces treatment burden on health care facilities and curtails the

cost and time of gaining access to treatment but it increases risks such as excessive use of medication, extended duration of consumption, incorrect diagnosis and drug interactions. The limitation of this study was that the findings were based on data collected by a self-reported questionnaire; hence the practices regarding self-medication were subjectively explored. This could lead to under-reporting of the problem as social desirability bias is a common problem with this type of questionnaires.

5. CONCLUSION

This study provides a useful tool to explore whether pharmacy students self-medicate themselves, and what type of OTC is most commonly used for self-medication. The availability of OTC analgesic drugs is unlikely to be the major reason for this self-medication problem. The control of analgesic use and misuse is a complicated issue, especially in developing countries like Pakistan. However, we recommend that a holistic approach must be taken to prevent this problem from escalating which would involve educational programs for the general public and to develop a strong relationship among physicians, pharmacists and consumers. Strict measures should be adopted to monitor the use of OTC drugs. In addition, attention should be focused to overcome the practice of selling analgesics without consultation to a physician or pharmacist, as this might pose a hazard to the population health. Further strict rules regarding advertisement of the pharmaceutical analgesic drugs should be implemented.

6. REFERENCES

1. Loyola Filho, A.I.d., Lima-Costa, M.F., and Uchôa, E., Bambuí Project: a qualitative approach to self-medication. *Cadernos de Saúde Pública*, **20**(6): p. 1661-1669 (2004).
2. Hughes, C.M., McElnay, J.C., and Fleming, G.F., Benefits and risks of self medication. *Drug Safety*, **24**(14): p. 1027-1037 (2001).
3. James, D.H. and French, D.P., The development of the Self-Medicating Scale (SMS): a scale to measure people's beliefs about self-medication. *Pharmacy World and Science*, **30**(6): p. 794-800 (2008).
4. Han, W.H. and Maxwell, S.R., Are medical students adequately trained to prescribe at the point of graduation? Views of first year foundation doctors. *Scottish Medical Journal*, **51**(4): p. 27-32 (2006).
5. Paulose-Ram, R., et al., Frequent monthly use of selected non-prescription and prescription non-narcotic analgesics among U.S. adults. *Pharmacoepidemiology and drug safety*, **14**(4): p. 257-66 (2005).
6. Roumie, C.L. and Griffin, M.R., Over-the-counter analgesics in older adults: a call for improved labelling and consumer education. *Drugs & Aging*, **21**(8): p. 485-98 (2004).
7. Turunen, J.H., et al., How do people ease their pain? A population-based study. *Journal of Pain*, **5**(9): p. 498-504 (2004).

8. Isacson, D. and Bingefors, K., Epidemiology of analgesic use: a gender perspective. *European journal of anaesthesiology*, **26**: p. 5-15 (2002).
9. Bingefors, K. and Isacson, D., Epidemiology, co-morbidity, and impact on health-related quality of life of self-reported headache and musculoskeletal pain—a gender perspective. *European Journal of Pain*, **8**(5): p. 435-450 (2004).
10. Buke, C., et al., Irrational use of antibiotics among university students. *Journal of infection*, **51**(2): p. 135-139 (2005).
11. Aljinovic-Vucic, V., Trkulja, V., and Lackovic, Z., 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): p. 74-80 (2005).
12. Lau, G.S., Lee, K.K., and Luk, C.T., Self-medication among university students in Hong Kong. *Asia-Pacific journal of public health / Asia-Pacific Academic Consortium for Public Health* **8**(3): p. 153-7 (1995).
13. Zafar, S.N., et al., Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes. *Journal of Pakistan Medical Association* **58**(4): p. 214-7 (2008).
14. Haider, S. and Thaver, I.H., Self medication or self care: implication for primary health care strategies. *Journal of Pakistan Medical Association*, **45**(11): p. 297-8 (1995).
15. Nordeng, H. and Havnen, G.C., Impact of socio-demographic factors, knowledge and attitude on the use of herbal drugs in pregnancy. *Acta obstetrica et gynecologica Scandinavica*, **84**(1): p. 26-33 (2005).
16. Bauchner, H. and Wise, P.H., Antibiotics without prescription: "bacterial or medical resistance"? *Lancet*, **355**(9214): p. 1480 (2000).
17. Calabresi, P. and Cupini, L.M., Medication-overuse headache: similarities with drug addiction. *Trends in pharmacological sciences* **26**(2): p. 62-8 (2005).
18. French, L., Horton, J., and Matousek, M., Abnormal vaginal discharge: what does and does not work in treating underlying causes. *The Journal of family practice*, **53**(11): p. 890-4 (2004).
19. Ashina, S., et al., [Medication overuse headache]. *Ugeskrift for Læger*, **168**(10): p. 1015-9 (2006).
20. Assael, L.A., The pill culture, the pill society. *Journal of Oral and Maxillofacial Surgery*, **64**(9): p. 1331-2 (2006).
21. Neafsey, P.J., Self-medication practices that alter the efficacy of selected cardiac medications. *Home Healthcare Nurse*, **22**(2): p. 88-98; quiz 99-100 (2004).
22. Tackett, B.N., Smith, M.C., and Nedorost, S.T., Morbidity of over-the-counter topical steroids. *Journal of the American Academy of Dermatology*, **54**(1): p. 182; author reply 182-3 (2006).
23. Goldie, J., et al., The impact of a modern medical curriculum on students' proposed behaviour on meeting ethical dilemmas. *Medical education*, **38**(9): p. 942-9 (2004).
24. Moazam, F. and Jafarey, A.M., Pakistan and biomedical ethics: report from a Muslim country. *Cambridge Quarterly of Healthcare Ethics*, **14**(3): p. 249-55 (2005).

Table 1. Factors that lead to self medication among undergraduate Pharmacy students (n=312)

Factors	Number of students	Percentage(%)
Previous experience	192	61.54
Advice from friend/ family member	62	19.87
Lack of time for consultation	32	10.26
Cost of consultation	15	4.81
Convenience	11	3.52

Table 2. Symptoms leading to self-medication among undergraduate Pharmacy students.

Symptoms	Number of students	Percentage (%)
Headache / migraine	161	51.60
Cough/cold/fever	47	15.06
Muscle/abdominal pain	31	9.93
Sports injury	25	8.02
Muscle Fatigue	19	6.09
Back pain	16	5.13
others pain	13	4.17

Table 3 commonly used analgesics as self medication in undergraduate pharmacy students (n=312)

Medicines	Number of Students	Percentage (%)
Paracetamol	121	38.78
Asprin	69	22.12
Pseudoephedrine (HCl) + Chlorpheniramine (Maleate) + Paracetamol	42	13.45
Flurbiprofen	20	6.41
Ibuprofen	18	5.13
Diclofenac sodium / Potassium	16	5.77
Herbal Therapy (Joshanda, Balm, etc)	14	4.48
Mefenamic acid	12	3.85

Table 4. Source of drug information regarding self-medication among undergraduate Pharmacy students (n=312)

Source of drug information	Number	Percentage (%)
Physician	162	51.92
Pharmacist	75	24.04
Friends and family	53	16.99
Media (T.V, newspaper)	15	4.81
Internet	7	2.24

Table 5 Concept of the undergraduate Pharmacy students regarding self-medication of analgesics (n=312)

Different Concepts	Number of students	Percentage %
I do have all the knowledge (side effects) about the drug I am taking	166	53.21
I also prescribe others for self-medication	97	31.09
I believe more pain more drug should be taken	98	31.41
I believe to take 2 tablets instead of one	150	48.08
I prefer famous brand for the treatment	240	76.92
I prefer oral route for drug administration instead of intravenous and topical	268	85.89
I mostly try to ignore my pain and let my body fight it	131	41.99
I do not hesitate to take any pain killer and mostly use it when I am in pain	44	14.10
I always take drug when it is necessary or I am suffering in severe pain	146	46.79

It is necessary to consult a doctor before taking a new medicine.

257

82.5

*Corresponding author

Mailing address:

Dr. AamirGhafoor

Department of Pharmacology & Toxicology

University of Veterinary and Animal Sciences,

Abdul QadarJilani Road, Lahore 54600

Pakistan

Tel: +92-42-9211449