



## Research Article

# A Population based Study on Self Medication Practice in Pakistan

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## ABSTRACT

### Article history:

Received 8 May 2022

Accepted 29 July 2022

Available online 31 August 2022

<https://doi.org/10.47723/kcmj.v18i2.847>

**Keywords:** Self-medication, over the counter, Antibiotics, urban and rural.



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**Background:** The risk of antibiotics resistance (AR) increases due to excessive of antibiotics either by health care provider or by the patients.

**Objective:** The assessment of the self-medication Practice of over the counter drugs and other prescription drugs and its associated risk factor.

**Subjects and Methods:** Study design: A descriptive study was conducted from “20th December 2019 to 08th January 2021”. A pre validated and structured questionnaire in English and Urdu language was created to avoid language barrier including personal detail, reasons and source and knowledge about over the counter drugs and Antibiotics. Sample of the study was randomly selected. Data was analyzed by software SPSS version 22.

**Results:** Out of n=3388 respondents, the prevalence of self-medication practice of over the counter (OTC) drugs and antibiotics as self-medication practice in all of the respondents is 88% and 85.9% respectively. Knowledge of the respondents about the use of the antibiotics as well as side effects of antibiotics was 40.7% and 15.3% respectively. Headache, fever, cough and stomach problem were the minor ailments for which majority of OTC drugs and antibiotics used respectively. The commonly used OTC drugs and OPDEA were Paracetamol and Omeprazole. The commonly used antibiotics were Metronidazole, Amoxicillin and Clavulanic acid and Ciprofloxacin.

**Conclusion:** Government should make policies to train pharmacist in the community for antibiotics stewardship and standard treatment guidelines through educational workshops. Our future study will be on how to minimize antimicrobial resistance in the developing countries.

## Introduction

The Self-medication is a taking of medicine (drug), herb or home remedies to treat self-evaluated recurrent symptoms or minor health problems without the prescription or instruction of a physician. The practice of self-medication (PSM) is worldwide challenge. Over the counter drugs are not harmful for minor ailments thus encourage the self-medication practice among people all over

the world. The inappropriate use of antibiotics is one of the basic problems of health of public globally [1]. In Pakistan PSM is very common because the community and retail pharmacies provide easy accessibility of drugs to public without prescription. The frequency of self-medication in previous studies in Islamabad and Karachi was 76% and 42% respectively. There was no study on the practice of self-medication in rural population of Chahi Samahni District

Bhimber Azad Kashmir Pakistan previously. The prevalence of PSM depends mainly on the health care system policies and their implementation as well as awareness of public related to drugs indication, side effects and accurate dose. The common determinants of PSM are easy accessibility of drugs from pharmacies, media advertisements, previous experience of treating similar illness and symptoms, socioeconomic status, patient attitude, knowledge and education level, time saving, high fees of consultant, inadequate enforcement of regulatory policies [2]. On contrary, the inappropriate use of these medicines OTC and prescription drugs without seeking medical advice is becoming a very serious problem in developing countries exposes patients to dangers, adverse drug reaction, prolong suffering, drug interaction, morbidity, mortality, and treatment cost. Particularly in developing countries, antimicrobial resistance is an alarming problem worldwide where antibiotics can be obtained without any prescription. The common sources of self - medication are taking suggestion from families, friends, media, the pharmacist and previous prescription.

The aims of this paper are

‘The assessment of the PSM of OTC and other Prescription drugs and its associated risk factors, common types of ailments in the society, reasons and causative factors of PSM and aware general public and health regulatory authority to resolve this health problem in students, rural and urban population of Pakistan.

## Subjects and Methods

### Study design: -

A descriptive cross-sectional study was conducted from “20th December 2019 to 08th January 2021”. A pre validated and structured questionnaire in English and Urdu language was created to avoid language barrier. First section was demographics include gender, age, marital status, religion, country, city, occupation, education, family members, socio economic status. Second section focused on the disease, minor ailments, source of information related to medicines, causes and reasons of PSM of drugs. Third section consists of knowledge about the use and side effects of antibiotic. Sample was randomly selected from different universities, pharmaceutical industries as well as rural and urban areas of Pakistan.

### Participants and Setting

The total participants were 3388 include 885 Peoples of rural area of Chahi Tehsil Samahni Bhimber Azad Kashmir Pakistan (CSB), 747 Peoples of urban area of Lahore Punjab Pakistan (LPP), 775 students (Pharmacy, Nursing and Doctor of Physiotherapy) University in Province Sindh Pakistan (USP), 620 National and 30 Foreigners Pharm D students of Punjab University Province Punjab Pakistan (PUCP), 208 employees of Pharmaceutical Industry Lahore (PIL) and 101 employees of Homeopathic Industry Lahore (HIL).

### Consent to Participate

Universities have permitted the Researcher (KK, AZ, RK) to conduct the research study of PSM in their Institution. Participants were interviewed so taking oral consent before filling the questionnaire needed for the study.

### Ethical approval

Ethics committee of University College of Pharmacy, University of the Punjab, Lahore, Pakistan (PUCP) has approved this study on self - medication practice.

### Data analysis

Data of this research project was analyzed by the software SPSS version 22. Results were expressed by using descriptive statistics (frequencies and percentages). 30 Incompletely filled questionnaires and 200 pilot study questionnaires were excluded from the study.

## Results

Out of n=3388 respondents, the prevalence of PSM of OTC drugs and antibiotics in all of the respondents (in December 2018-January 2020) is 88% and 85.9% respectively. The majority of PSM drugs and antibiotics in Peoples of rural area of CSB were 95% and 93% as compared to Peoples of urban area of LPP were 91.6% and 90.6% respectively. The majority of self - medication practice drugs and antibiotics in employees of Pharmaceutical Industry Lahore (PIL) were 98% and 95.7% as compared to employees of Homeopathic Industry Lahore (HIL) were 91.1% and 84.2% respectively. Whereas the majority of self - medication practice drugs and antibiotics in students (Pharmacy, Nursing and Doctor of Physiotherapy) University in Province Sindh Pakistan (USP) were 91.5% and 87% as compared to National Pharm D students of Punjab University Province Punjab Pakistan (PUCP) were 68.5% and 66%. The PSM of OTC drugs and antibiotics in Foreigners Pharm D students of PUCP were found to be 86.5% and 82.7% respectively (see table 1).

**Table 1:** Self-medication practice among general population as well as in all study groups

Variables	self - medication practice of over the counter drugs % (N)	self - medication practice of Antibiotics % (N)
General population	88% (2981)	85.9% (2910)
Rural people of CSB	95.7% (818)	93% (795)
Urban people of LPP	91.6% (684)	90.6% (676)
Students of USP	91.5% (709)	87% (674)
National Students of PUCP	68.5% (424)	66% (409)
Employees of PIL	98% (203)	95.7% (199)
Employees of HIL	91% (91)	88% (88)
Foreigner Students of PUCP	86.5% (25)	82.7% (24)

### Demographic Detail

Of the total 3388 sample, (n=2193) 64.7% were females and (n=1195) 35.3% were males. There were (n=2573) 75.9% single and (n=815) 24.1% were married. The occupation of the participants were pre- medical students (n=173) 5.1%, arts students (n=601)

17.7%, employees (n=215) 6.3%, house wife (n=385) 11.4%, labors (n=299) 8.8%, Pharmacy students of Pharm D (n=620) 18.31%, DPT students of USP (n=486) 14.3%, Nursing students of USP (n=131) 3.9%, pharm D students of USP (n=158) 4.7%, Pharmaceutical employees (n=208) 6.1%, Homeopathic employees (n= 101) 3% retired (n= 2) 0.1% and others (n=9) 0.3%. The education level of total sample includes illiterate (n=600) 17.7%, Primary School (n=75)2.1%, High School (n=250) 7.3%, Intermediate (n=751) 22.1%, Graduation (n=1630) 48.1%, Master (n=78) 2.3% and PhD (n=4) 0.1%. The relationship between demographics of general population (GP) and self - medication as well as self - medication within the demographics (D) (see table 2). Illiterate were more self - medicated than literates. Females were more self - medicated as compared to males as well as married were more self - medicated as compared to single. House wife and labors were more self - medicated as compared to students in our study.

**Table 2:** Self-medication practice among general population as well as in all study groups

Demographic	Sample in total % (N)	self - medication practice over the counter and prescription drugs % (N)	self - medication practice of Antibiotics % (N)
Gender			
Male	35.3% (1195)	89.6% (1071)	86.8% (1038)
Female	64.7% (2193)	88.3% (1938)	85.3% (1872)
Marital status			
Single	75.9% (2573)	86.9% (2237)	84.1% (2165)
Married	24.1% (815)	94.7% (772)	91.4% (745)
Education			
Illiterate	17.7% (600)	99.3% (596)	96.1% (577)
Graduate	48.1% (1630)	82.5% (1346)	79.2% (1291)
Age			
18-24 years	72.8% (2467)	86.5% (2136)	83.6% (2063)
25-30 years	12% (309)	93% (288)	92% (284)
31-40 years	9% (234)	96% (225)	94% (219)
41-60 years	5.4% (184)	95.1% (175)	93.4% (172)
61-80 years	2% (53)	90% (48)	80% (42)
Occupation			
House wife	11.3% (385)	98.4% (379)	96.8% (373)
Labors	8.8% (299)	97.6% (292)	94.9% (284)
PUCP students	18.2% (620)	68.3% (424)	66% (408)
Employees	6.3% (215)	91.6% (197)	86.9% (187)

**Self - medication practice among urban and rural population**

Majority of PSM of antibiotics used in the rural population of CSB for diarrhea (n=499) 56.4% and running nose (n=512) 57.9%, whereas in the urban population of LPP for sore throats (n=297) 39.8% and running nose (n=242) 32.4%. The common reasons for PSM in rural people of CSB was easy accessibility of drugs from pharmacies without prescription (n=404) 45.4% and doctor clinic far from home (n=369) 41.7% whereas in urban people of LPP was friends and family advice (n=213) 28.5% and easy accessibility of drugs from pharmacies without prescription (n=78) 10.4%. The common source of knowledge and information for PSM in rural people of CSB was friends (n=490) 55% whereas in urban people of LPP was advice of family member having similar problem (n=291) 39%. The Knowledge of the respondents of rural people of CSB about the use of antibiotics and side effects of antibiotics were (n=193) 21.8% and (n=107) 12.1% whereas in urban people of LPP were (n=219) 29.3% and (n=128) 17.1% respectively.

**Self - medication practice among university students**

The common source of knowledge and information for PSM in the students of USP was advice of family member having similar ailment/problem (n=449) 57.9% whereas in the students of PUCP was pharmacist (n=178) 28.7%. The Knowledge in the students of PUMHS about the use and side effects of antibiotics was (n=307) 39.6% and (n=89) 11.5% whereas in the students of PUCP was (n=607) 97.9% and (n=160) 25.8% respectively.

**Self - medication practice among employees**

The commonly used OTC and other prescription drugs in the employees of PIL were Paracetamol (n=196) 94.2% and Omeprazole (n=90) 43.5% whereas in the employees of HIL were Paracetamol (n=74) 73.3% and homeopathic medicine (n=68) 67.3% respectively.

**Self - medication practice among general population**

The easy accessibility from community and retail pharmacies and consultation of family member having same symptoms were common reasons for PSM and source of information for self - medication practice respectively. Knowledge of the respondents about the use of the antibiotics as well as side effects of antibiotics was 40.7% and 15.3% respectively.

**Table 3:** reasons for self-medication practice

Reason	Frequency % (N)	Reason	Frequency % (N)
Old prescriptions	25.2% (855)	Doctor clinic far from home	21.4% (726)
Easy accessibility	26.8 % (909)	High fees of Doctor	16.5% (558)
Save time	27.9% (944)	Doctor busy	10.4% (353)
Take from friends and family member with similar ailment	24.3% (822)	Others	5.9% (199)

Headache, fever, cough and stomach problem were the minor ailments for which majority of OTC and other prescription drugs used respectively. Sore throats, running nose and wounds were the minor ailments for which majority of Antibiotics used respectively. The commonly used OTC and other prescription drugs were Paracetamol and Omeprazole.

The commonly used antibiotics were Metronidazole, Amoxicillin and Clavulanic acid in combination with Ciprofloxacin.

**Table 4:** OTC drugs and OPDEA commonly used as self-medication

Over the counter Drugs and other prescription drug	Frequency N (%)	Over the counter Drugs and other prescription drug	Frequency N (%)
Paracetamol	2859 (77.5%)	Aspirin	935 (27.6%)
Multivitamin	1317 (38.9%)	Nutrition supplements	812 (24%)
Omeprazole	1233 (36.4%)	Homeopathic medicine	764 (22.6%)
herbal medicine	1158 (34.2%)	Antiemetic	577 (17%)
Ibuprofen	1158 (34.2%)	Synthetic glucocorticoids	492 (14.5%)
Methyl Salicylate	844 (24.9%)	Whitening creams	466 (13.8%)
Antitussive	808 (23.8%)	Antihypertensives	433 (12.8%)

**Table 5:** Antibiotics used as self medication

Antibiotics	Frequency N (%)	Antibiotics	Frequency N (%)
Metronidazole	2153 (63.5%)	Levofloxacin	617 (18.2%)
Amoxicillin + Clavulanic acid	1580 (46.6%)	Bacitracin + Polymyxin B	580 (17.1%)
Ciprofloxacin	1229 (36.3%)	Penicillin	530 (15.6%)

## Discussion

The present study found high prevalence of self-medication of OTC and other prescription drugs in Pakistan. This is the first study of self - medication on the rural people of CSB. This study includes three geographical areas (3 states of Pakistan include Punjab, Sindh and Azad Kashmir). The prevalence of self -medication of OTC and other prescription drugs in our study was found to be 88% which is less than those studies conducted in Saudi Arabia 98.7% [4] Lahore 95% [5], Yemen 93% [6], Eritrea 93.7% [7] and higher than that Germany 27.7% [8], India Rajpur Punjab 80% [9], Turkey 19.1% [10], Cyprus 30.7% [11], Malaysia 80.9% [12], Cameroon 73.8%

[13], Nepal 48.2% [14], Iraq 84.8% [15], Peshawar 64.8% [16], Vietnam 83.3% [17]. The commonly used OTC and other prescription drugs are Paracetamol 77.5%, Multivitamin 38.9% and Omeprazole 36.4%.

Majority of OTC and other prescription drugs used for headache (65.8%), fever (58.9%), cough (43.4%) and stomach problem (38.3%)

The prevalence of self - medication of antibiotics was found to be 85.9% which is higher than that in South India 81.6% [19], Kerala 66.2% [20], Iran 42.6% [21]. Majority of PSM of antibiotics were Metronidazole 63.5%, Amoxicillin + Clavulanic acid (46.6%) and Ciprofloxacin (36.3%) in the total sample. PSM of antibiotics used for sore throats (33.6%), running nose (31.7%), diarrhea 29.5% and wounds (20%) in our study.

Majority of antibiotics used in the rural population of CSB for diarrhea (n=499) 56.4% and running nose (n=512) 57.9% cause rising antimicrobial resistance (AMR) rates in Pakistan. Self-medication practice among people was due to misconception of the inappropriate use of antibiotics for runny nose and flu like symptoms of viral infection. In our study we observed that people mostly used broad spectrum antimicrobial agents like Amoxicillin + Clavulanic acid and fluoroquinolone for UTI which may increases risk of AMR of methicillin- resistant *Staphylococcus aureus*. The common reasons for self - medication were Old prescriptions 25.2%, easy accessibility of drugs from community and retail pharmacies (27.2%). The most common source of information for self - medication was consult by family member having similar symptoms (38.8%). Knowledge of the respondents about the use and side effects of antibiotics was 40.7% and 15.3% respectively. Most of the respondents were unable to distinguish between OTC drugs and Antibiotics as well as bacterial and viral infections respectively.

Limitations of our study were recall and memory bias and the effect of social norms. Our findings cannot be generalized to the whole of Pakistan but these give common determinant of self - medication practice like reasons, cause, source, commonly used drugs, knowledge of the participants about use and adverse drug reaction and antimicrobial resistance.

## Conclusion

In Pakistan, the prevalence of PSM is very high and an emerging challenge to health care providers as well as health regulatory authority. Our study indicates that government authorities should establish legislative framework as well as made changes in the policies and regulations for sale and dispensing of antibiotics. The common behaviors and attitude of the participants for self - medication practice was the incomplete course of antibiotics, low health literacy related to improper use of the antibiotics for supposed symptoms like infection caused by bacteria, adverse effects, dose and duration of therapy and AMR. Government health authority should enforce and implements laws and national guidelines on sale and dispensing of antibiotics strictly and also improves the healthcare infrastructure in rural areas. In rural areas of Pakistan, community pharmacist should provide patient awareness services on the inappropriate use of antibiotics for supposed bacterial symptoms and infections like cold and flu and resistance infections and counseling of the patients about the pros and cons of self - medication. Government should conduct intervention or seminars in the Universities and campaigns in society to aware students as well as the illiterate community to improve general public awareness

about the misuse of antibiotic and risks of antimicrobial resistance. Government should make policies to train pharmacist in the community for antibiotics stewardship and standard treatment guidelines through educational workshops. Our future study will be on how to minimize antimicrobial resistance in the developing countries.

### Acknowledgments

Punjab University College of Pharmacy, University of the Punjab, Lahore Pakistan, Other Universities included and all the participants who participated in the study are acknowledge by all Authors.

### Author's contributions

KK and AZ are the Project leaders of this research project. They communicated and consulted with other authors RK and FKH of the project. They also collected, compiled, interpreted and analyzed the data of this project. The project was supervised by FKH. The paper was reviewed and approved by FKH.

### Funding

Not applicable

### Ethics approval and consent to participate

Ethics committee of University College of Pharmacy, University of the Punjab, Lahore, Pakistan has approved this study on self-medication practice. Universities have permitted the Researcher (KK, AZ) to conduct the research study of Self Medication Practice in their Institution. Participants were interviewed so taking oral consent before filling the questionnaire needed for the study. The data was collected after the oral consent of each participant from students of different Universities, rural and urban peoples as well as employees of different Pharmaceuticals.

### Competing Interest

No competing interests.

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**To cite this article:** Khan K, Zaman A, Hashmi F, Khan R. A Population based Study on Self Medication Practice in Pakistan. *Al-Kindy College Medical Journal*. 2022;18(2):90-95.