

# Self-medication among people visiting outpatient clinics of a Tertiary care hospital, Karachi

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## ABSTRACT

**Background and Aim:** “Self-medication” is the self-use of medicines for treatment of illnesses. Inappropriate use of medicines without prescription leads to unwanted adverse effects, harmful drug interactions, and antibiotic resistance which is an emerging concern in developing countries due to escalating burden of infectious diseases. This study aims at identifying the frequency and contributing factors of self-medication, nature of illness, and types of medicines used without doctor’s prescription. **Material and Methods:** This cross sectional study was conducted at Indus Hospital Karachi between March 2017 and December 2018. Two hundred and forty people of any age visiting the outpatient clinics of the Indus hospital consenting to participate were included. Whereas all clinicians including medical officers, specialists and consultants were excluded from the study. **Results:** Three-fifth (n = 147; 61.3%) of the participants reported that they did self-medication either for themselves or for their children in the past one year. The most common symptoms for which self-medication was done were fever (n = 82, 55.8%), cough/cold (n = 38; 25.8%) or diarrhea (n = 22; 15.0%). Out of which, 122 (83%) did self-medication based on their previous experience, 18 (12.2%) used previous doctor’s prescriptions, whereas 22 (15%) reported that other people advised them. Education, presence of unused medicines at home, and those who have heard of antibiotic were found to be the significant risk factors associated with self-medication. **Conclusion:** Among Pakistani population, the frequency of self-medication is very high, with most people practicing self-medication on the basis of their previous experiences. It puts them at risk of experiencing adverse reactions and most importantly antibiotic resistance.

**Keywords:** Antibiotics, self-medication, without prescription

## Introduction

Self-medication is defined as occasional or continuous use of drugs for treatment of self-diagnosed disorders without consulting physician.<sup>[1]</sup> It includes using non-prescribed medicines, left over medicines at home, purchasing them by reproducing old prescriptions or on advice of relatives or others.<sup>[2]</sup> It also includes consuming herbal products or any

alterative home remedy.<sup>[3]</sup> WHO encourages community-based self-treatment of common diseases if it is done responsibly in developing countries to help reduce the burden on health institutes.<sup>[4,5]</sup> It includes the use of over the counter approved medicines for minor problems which is not harmful for health.<sup>[6]</sup> It is a convenient way of solving minor problems saving time and money.<sup>[7]</sup> Although “responsible self-medication” is beneficial for the community, it has to abide by drug legislation of a country to avoid misuse and unwanted consequences regarding community health.

Self-medication practices have become common worldwide.<sup>[8-11]</sup> A hospital-based study done in Nigeria reported that approximately 85% of the patients admitted to self-medication.<sup>[12]</sup> A study conducted among general population of UAE showed that 52.1%

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of respondents did self-medication.<sup>[13]</sup> A much higher percentage of students doing self-medication for acute illnesses was found in Oman.<sup>[14]</sup> A review of literature also supports the same conclusion.<sup>[5]</sup> This study concluded that more than three-fifths of the participants had done self-medication for themselves or their children in the past one year. Similar results were found in a study conducted among urban and rural population of Islamabad, Pakistan.<sup>[15]</sup>

Most common drugs used for self-treatment are analgesics and antibiotics.<sup>[4,16,17]</sup>

Cost issue, lack of insurance, nonavailability of time in working hours, mild nature of illness, previous experience of managing similar condition are a few reasons behind self-medication.<sup>[13,18,19]</sup>

Inappropriate use of non-prescription medicines leads to loss of resources, adverse effects and unwanted drug interactions. It may also mask severe diseases, timely consultation with health care practitioners and increase risk of drug dependency.<sup>[11,20]</sup> Irrational use of antibiotics can lead to antibiotic resistance which is a growing concern in developing countries due to the increasing burden of infectious diseases.<sup>[21-23]</sup> Misdiagnosis of symptoms and wrong selection of drugs for treatment can lead to challenging consequences later as well as contribute to polypharmacy.<sup>[7]</sup>

Hence the aim of conducting this study was to explore the current status of self-medication in our population, the types of medicines used and the factors promoting this practice. Primary care physicians dealing with most of the common health issues of the community play an important role in educating the masses and guiding them rightly.

## Methodology

This cross-sectional study was performed at The Indus Hospital, a free of cost tertiary care facility in Karachi between March 2017 and December 2018. Anyone (of any age) visiting the outpatient clinics of The Indus Hospital who agreed to participate in the study was included. Whereas all clinicians including medical officers, specialists and consultants were excluded from the study. A prior sample size was calculated using open epi calculator (<http://www.openepi.com/SampleSize/SSPropor.htm>) with the following assumptions: Prevalence of self-medication – 57.3%,<sup>[10]</sup> margin of error – 7% and confidence level – 95%, 20% non-response rate, and the estimated sample size was 240.

An interviewer based questionnaire was used as data collection tool consisting of a set of questions about personal demographics of the participant and the self-medication practices over the past 12 months. To the convenience of participants and interviewees, the questionnaire used had questions in both English and Urdu languages and it took 5-10 min to complete. Participants were kept anonymous by using serial numbers in place of their names.

Data were analyzed using SPSS version 26.0. Mean  $\pm$  SD/Median (IQR) was computed as appropriate for all the quantitative variables like age, and years of education. Frequency and percentage were computed for all the categorical variables like, gender, disease symptoms, types of drugs, guidance regarding dosage, self-medication, etc. Mann-Whitney U test was applied to assess difference in age and years of formal education between self-medication. Chi-square/Fisher-exact was used to assess significant association of gender, disease symptoms, occupation, education, type of drugs etc. with self-medication. *P* value < 0.05 was considered statistically significant.

## Results

Total 240 participants were enrolled in the study with approximately equal distribution of both the genders (male: 124; 51.7% and female: 116; 48.3%). The median (IQR) of age and years of formal education of all the participants was 37 (28-47) years and 10 (5-12) years, respectively [Table 1]. Forty-three (17.9%) of the participants were illiterate, 65 (27.1%) had primary education (1-8 years), 93 (38.8%) obtained secondary education (9-12 years), and 39 (16.3%) had tertiary education (>12 years).

Approximately half of the participants reported that they could read basic prescription (*n* = 117; 48.8%). On inquiring from those who could not read basic prescription, 59 (48%) reported that shopkeeper and 56 (45.5%) reported that relatives reads prescription for them [Table 1]. Moreover, four-fifth of the participants reported that they stored medicines at home (*n* = 193; 80.4%).

On asking if they were familiar with the word antibiotic, three-fourth (*n* = 183; 76.3%) of the participants reported that they were familiar with this word [Table 1]. However, on probing further, if they had ever been prescribed any medicine by a doctor for 5 or 7 days course, out of 57 who were not familiar with the word of antibiotic, 25 (43.9%) responded affirmatively to this question [Table 1]. Of those who replied that they were familiar with word antibiotic, three-fourth (*n* = 110/183; 76.3%) answered the question about naming some of the antibiotics positively. Of these 110 participants, only 20 (20%) named all the antibiotics correctly while 56 (50.9%) named at least one antibiotic correctly [Table 1].

Three-fifth (*n* = 147; 61.3%) of the participants reported that they did self-medication either for themselves or for their children in the past one year out of which, 107 (81.1%) did self-medication on the basis of their previous experience, whereas 19 (14.4%) reported that other people advised them [Table 2]. Eleven (57.9%) and 14 (73.7%) of those 19 participants indicated that they had not been told of the duration and dosage of the drug, respectively [Table 2].

Four-fifth of the participants (*n* = 138; 81.2%) had children of age  $\leq$  18 years. Fifty-seven (41.6%) responded affirmatively

**Table 1: Characteristics of the study participants**

Variable	n (%)	Variable	n (%)
Gender		Do you have any unused medicine at home right now	
Male	124 (51.7)	Yes	95 (39.6)
Female	116 (48.3)	No	143 (59.6)
Age in years		Not reported	2 (0.8)
Median (IQR)	37 (28-47)	Have ever heard the word antibiotic	
Years of formal Education		Yes	183 (76.3)
Median (IQR)	10 (5-12)	No	57 (23.8)
Can read basic prescription		If no, have ever been given any medicine that you are instructed to complete the course of 5 or 7 days, n=57	
Yes	117 (48.8)	Yes	25 (43.9)
No	123 (51.3)	No	32 (56.1)
Who reads your doctor's prescription, n=123		Can you name some antibiotics, n=183	
No one	4 (3.3)	Yes	110 (60.1)
Relatives	56 (45.5)	No	73 (39.9)
Shop keeper	59 (48)	Antibiotics knowledge, n=110	
Friends	4 (3.3)	Correctly named all	22 (20)
Have any medicine at home for fever, cough, diarrhea, others?		Correctly named at least one (not all)	56 (50.9)
Yes	193 (80.4)	All incorrectly named	30 (27.3)
No	47 (19.6)	Not reported	2 (1.8)

**Table 2: Information related to self-medication**

Variable	n (%)	Variable	n (%)	Variable	n (%)
Participants self-medicating themselves in the past 1 year		Self-medication for themselves or children		Medication, n=100	
Yes	132 (55)	Yes	147 (61.3)	Antipyretic	54 (54)
No, never without doctors' consultation	103 (42.9)	No	93 (38.8)	Painkillers	65 (65)
Never got sick in the last 1 year	5 (2.1)	Medicine advised by, n=147		Antacid	7 (7)
Medicine advised by, n=132		Previous experience	122 (83.0)	Anti-flu	8 (8)
Previous experience	107 (81.1)	Previous doctors' prescription	18 (12.2)	Antitussive	24 (24)
Previous doctors' prescription	13 (9.8)	Advised by other people (Friends/Relatives/Neighbors/Hakeem or other traditional healers/workers at pharmacy/Nurse)	19 (12.9)	Anti-emetic	5 (5)
Advised by other people (Friends/Relatives/Neighbors/Hakeem or other traditional healers/workers at pharmacy/Nurse)	19 (14.4)	Symptoms for which self-medication was done, n=147		Anti-diarrheal	7 (7)
If advised by other people, did they tell you how long to take the medicine, n=19		No response	45 (30.6)	Anti-histamine	5 (5)
Yes	11 (57.9)	Cough/cold	38 (25.8)	Antibiotic	31 (31)
No	8 (42.1)	Fever	82 (55.8)	Antimalarial	1 (1)
If advised by other people, did they tell you how much medicine you need to take, n=19		Diarrhea	22 (15.0)	Anti-allergy	1 (1)
Yes	14 (73.7)	Sore throat	4 (2.7)	Supplements	3 (3)
Yes	5 (26.3)	Skin rash	1 (0.7)		
Participants self-medicating their children in the past 1 year		Aches and pains	37 (25.2)		
Yes	57 (41.6)	Breathing difficulties	1 (0.7)		
No, never with doctors' consultation	75 (54.7)	Nausea/Vomiting	5 (3.4)		
They did not suffer any illness in the last 1 year	1 (0.7)	Burning/pain in urination	2 (1.4)		
Medicine advised by, n=57		Pain/burning in chest/abdomen	7 (4.8)		
Previous experience	51 (89.5)	Wound infection	2 (1.4)		
Previous doctors' prescriptions	6 (10.5)	Allergy	2 (1.4)		
Advised by other people (Friends/Relatives/Neighbors/Hakeem or other traditional healers/workers at pharmacy/Nurse)	3 (5.4)				

when asked whether they had done self-administered treatment for their children of age  $\leq 18$  years in the past year. Of these 57 participants, 51 (89.5%) of the participants did self-administered treatment for their children on the basis of their prior experience, 6 (10.5%) used previous doctor's prescriptions and 3 (5.3%) were advised by other people [Table 2]. Overall 142 (61.3%) reported self-administered treatment either of themselves or for their children [Table 2] with majority ( $n = 122$ ; 83%) self-medicating according to their prior experience, 18 (12.2%) used old doctor's prescriptions and 22 (15.5%) were advised by other people [Table 2]. Furthermore, when asked which symptoms they self-medicated for 45 (30.6%) did not address this question, while more than half of the participants reported self-administering fever care ( $n = 82$ ; 55.8%) followed by cough/cold ( $n = 38$ ; 25.8%) and aches and pains ( $n = 37$ ; 25.2%) Table 2.

Moreover, it was found that those who were practicing self-medication were more educated (Median (IQR): 10 (6-12) vs 8 (0-12),  $P = 0.041$ ), higher proportion of them stores medication at home (129; 87.8% vs 64; 68.8%,  $P < 0.00001$ ), they were familiar of word antibiotic (121; 82.3% vs 62; 66.7%,  $P = 0.006$ ) as compared to those who were not practicing self-medication [Table 3]. It was also observed that higher proportion of participants who were doing self-medication for themselves were also self-medicating their children as compared to those who were not self-medicating for themselves (42; 59.2% vs 15; 24.2%;  $P = 0.000$ , Table 3).

## Discussion

Ease to access over-the-counter drugs, limited access to healthcare facilities, unaffordability to seek medical advice, saved previous prescriptions and left over drugs at home are some of the factors encouraging self-medication.<sup>[24]</sup>

Nearly all broad groups of medicines are taken by self without prescription. Be that supplements, anti-hypertensives, analgesics, or antibiotics.<sup>[3,25]</sup> A meta-analysis showed that analgesics, cough medicines, dermatological products, nutritional supplements, and antibiotics were the most frequently taken drugs among adolescents.<sup>[26]</sup>

Like other developing countries, populace in Pakistan has easy access to drug purchases without a prescription. Consequently, antibiotics are among over-the-counter drugs that are readily available and hence more likely to be misused.<sup>[21,27]</sup> A meta-analysis indicated that 78% of the non-prescribed purchase of antibiotics are made on patient request, whereas, 58% non-prescribed antibiotics are sold based on the recommendation from community pharmacy staff.<sup>[28]</sup>

Hoarding drugs at home is a big concern for healthcare legislation as medicines are stored at home beyond their expiry dates and many times are kept mixed with fresh medicines without separate identification which can lead to significant

misuse.<sup>[7]</sup> A study conducted by Belgian pharmacies concluded that large amounts of drugs were found stored at homes with only 34% prescribed drugs. Self-initiated treatment was found with 56% of all drugs.<sup>[29]</sup> There was a high proportion of analgesics and NSAIDS.

In our study, majority disclosed that they used medicines by themselves or their children based on previous experience while a few did using previous prescriptions by doctors or on advice of friends and relatives without being told about duration and dosages to be taken. This is in contrast to results found in a study regarding self-use of antimicrobials in Europe which showed that pharmacies and medicine left overs were the main sources of self-medication.<sup>[17]</sup>

In this study, the majority of the participants were able to name at least one antibiotic correctly indicating that people who self-administer antibiotics have some knowledge about it. On the contrary, out of those who reported that they have never heard of word antibiotic, 43.9% ( $n = 25/57$ ) reported that they had been prescribed a medicine by a doctor for 5 to 7 days course. Interestingly, they were either not being told that these medicines were antibiotics or they were not able to recall it.

The prevalence of self-medication with antimicrobials was found to be 31%. Similar findings were found in Bangladesh (26.7%) and Nigeria (24%).<sup>[30,31]</sup> Lack of legislation to the availability of over-the-counter drugs is a major contributing factor to self-medication of antimicrobials.<sup>[24]</sup>

There was no gender predominance found with respect to self-medication in this study. This result is supported by a study conducted among medical and non-medical University students in Iran regarding self-medication of antibiotics.<sup>[32]</sup> In contrast, statistically significant difference was found among male and female medical students of Egypt regarding self-medication of vitamins, analgesics and herbal products.<sup>[33]</sup>

Fever was the chief symptom for which self-medication was done by the participants followed by cough/cold and body aches. The most common medicines used were analgesics and antipyretics followed by antibiotics. A study conducted in Punjab, Pakistan regarding non-prescribed medications sold by pharmacists reported the similar results, where the most commonly non-prescribed drugs being purchased by the community were analgesics and antipyretics (39.4%).<sup>[34]</sup> This is supported by a study conducted in rural and urban population of Islamabad, which also showed that analgesics are the most common medicines used without prescription.<sup>[15]</sup>

Educational qualification, medicines stored at home and familiarity with the word antibiotic were found to be significantly associated with self-medication. This is supported by other studies, that also reflect that higher education is a predictor of self-medication.<sup>[17,21,22,35]</sup>

**Table 3: Association of various characteristics of study participants with self-medication**

	Self-medication done for either themselves or for their children			P
	No	Yes	Total	
Age in years				
Median (IQR)	35 (27-47.5)	38.5 (29.8-47.2)	37 (28-47)	0.421 <sup>m</sup>
Min-max	17-64	15-75	17-75	
Gender				
Male	48 (51.6)	76 (51.7)	124 (51.7)	0.989 <sup>c</sup>
Female	45 (48.4)	71 (48.3)	116 (48.3)	
Total	93 (100)	147 (100)	240 (100)	
Years of formal education				
Median (IQR)	8 (0-12)	10 (6-12)	10 (5-12)	0.041 <sup>*m</sup>
Min-max	0-20	0-18	0-20	
Education				
Illiterate	24 (25.8)	19 (12.9)	43 (17.9)	0.027 <sup>*c</sup>
Primary (1-8)	27 (29)	38 (25.9)	65 (27.1)	
Secondary (9-12)	27 (29)	66 (44.9)	93 (38.8)	
Tertiary (12+)	15 (16.1)	24 (16.3)	39 (16.3)	
Total	93 (100)	147 (100)	240 (100)	
Can you read a basic prescription written by your doctor				
Yes	46 (49.5)	71 (48.3)	117 (48.8)	0.861 <sup>c</sup>
No	47 (50.5)	76 (51.7)	123 (51.3)	
Total	93 (100)	147 (100)	240 (100)	
If no, Who reads your doctor's prescription for you				
No one	2 (4.3)	2 (2.6)	4 (3.3)	0.324 <sup>f</sup>
Relatives	25 (53.2)	31 (40.8)	56 (45.5)	
Shop keeper	18 (38.3)	41 (53.9)	59 (48)	
Friends	2 (4.3)	2 (2.6)	4 (3.3)	
Total	47 (100)	76 (100)	123 (100)	
Do you any medicine at home for fever, cough, diarrhea, others?				
Yes	64 (68.8)	129 (87.8)	193 (80.4)	0.000 <sup>*c</sup>
No	29 (31.2)	18 (12.2)	47 (19.6)	
Total	93 (100)	147 (100)	240 (100)	
Have you ever heard the word antibiotic				
Yes	62 (66.7)	121 (82.3)	183 (76.3)	0.006 <sup>*c</sup>
No	31 (33.3)	26 (17.7)	57 (23.8)	
Total	93 (100)	147 (100)	240 (100)	
Can you name some antibiotics				
Yes	38 (61.3)	72 (59.5)	110 (60.1)	0.815 <sup>c</sup>
No	24 (38.7)	49 (40.5)	73 (39.9)	
Total	62 (100)	121 (100)	183 (100)	
Antibiotics knowledge				
Correctly named all	5 (13.2)	17 (24.3)	22 (20.4)	0.305 <sup>f</sup>
Correctly named at least one ( not all)	20 (52.6)	36 (51.4)	56 (51.9)	
All incorrectly named	13 (34.2)	17 (24.3)	30 (27.8)	
Total	38 (100)	70 (100)	108 (100)	
Have you ever been given any medicine that you are instructed to complete the course of 5 or 7				
Yes	49 (52.7)	98 (66.7)	147 (61.3)	0.030 <sup>*c</sup>
No	44 (47.3)	49 (33.3)	93 (38.8)	
Total	93 (100)	147 (100)	240 (100)	
	Participants self-medicating themselves			
Participants self-medicating their children				
No	47 (75.8)	29 (40.8)	76 (57.1)	0.000 <sup>*c</sup>
Yes	15 (24.2)	42 (59.2)	57 (42.9)	
Total	62 (100)	71 (100)	133 (100)	

\*P<0.05, \*\*P<0.0001, <sup>m</sup>Mann-Whitney U Test, <sup>c</sup>Chi-square test, <sup>f</sup>Fisher-Exact test

## Limitations

Reasons for self-medication were not identified in this study.

## Recommendations

Efforts should be made by Government to make health care easily accessible and cost-effective in our country specially the rural areas where access to medical facilities is compromised. Strict rules and legislation should be implemented regarding availability of over-the-counter drugs so as to protect community from adverse effects, drug interactions, and antibiotic resistance. Healthcare system should also take charge of educating the masses through campaigns and social media to discourage self-medication without proper knowledge and understanding.

## Conclusion

Self-medication, due to its increasing prevalence, has become a major concern for healthcare worldwide. Among Pakistani population, the frequency of self-medication is very high, with most people practicing self-medication on the basis of their previous experiences. It puts patients at risk of developing adverse reactions and most importantly antibiotic resistance. If this is not addressed in time, our future generations would be left with no choices to treat infections due to pan-resistance. In addition, the adverse health outcomes resulting from self-medication can be an economic burden on our already overburdened health system.

## Ethical statement

Interactive Research Development- Institute Review Board (IRD-IRB) reviewed the protocol for human subjects and issued approval to the study ID # IRD\_IRB\_2018\_07\_013 Date of approval obtained on 19-10-2018.

Subjects have given verbal consent to participate in this study.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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