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Commonly employed push and pull factors for self-medication among the general population of Karachi, Pakistan

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ABSTRACT

Background: Self-medication (SM) is a major global health problem and refers to the use of medicine for self-diagnosed diseases. Although SM has some paybacks, inappropriate SM results in disease masking, adverse reactions, an increase in antibiotic resistance, and wastage of healthcare resources.

Methods: This epidemiological, cross-sectional study was conducted at the polyclinic hospital in Karachi from November 2022 to March 2023. A pre-validated questionnaire was used to collect data. A total of 500 participants of both genders ranging in age from 18 years and above were included in this study. A total of 360 questionnaires were filled in the clinics by physicians and a total of 140 Google survey responses were collected. Data were analyzed using Microsoft Excel 2010 and Google spreadsheet.

Results: A total of 80.6% of participants practiced SM in the last six months. The SM was practiced mostly by males (62%), ranging in age from 18-30 years (43.8%). SM is commonly practiced by married persons (62.8%), office workers (44.6%), and university graduates (81%). The majority of people rely on diagnosing their disease with convenience feeling (44.2%), laboratory tests (22.6%), and the internet (19.8%). The most common diseases for which SM is practiced are headache (72.4%), fever (67.2%), and cold/cough (64.2%). Pharmacies were the most frequent sources (87%) from where people get SM. Analgesics (60.6%), antipyretics (53.4%), and anti-allergy medicines (38.8%) were the most often used SM. The most common pull factors for SM were easy-to-access medical stores (43.8%), quick and time-saving (40.2%), patients ought to get well soon (31.4%), and low cost of medicine (28.6%). In contrast, fear of adverse medicine reactions (27.8%), disease severity (27%), high cost of medicine (18.2%), and lack of knowledge/no confidence in self-diagnosis (14.6%) were the leading push factors.

Conclusion: A very high prevalence of SM is observed in Karachi. Most people use SM for headaches and fever. Analgesics are the most frequently used SM. People prefer SM due to access to pharmacies and avoid it due to fear of drug reactions.

Keywords: self-medication, push factors, pull factors, prevalence

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INTRODUCTION

Self-medication (SM) refers to the consumption of medicines by individuals without the prescription or advice of a medical physician (1). The definition of self-medication can be further extended to the use of medicines for the treatment of family members, friends, students, or neighbors with symptoms or diseases without consultation with a

registered medical physician (2). Furthermore, consumption of leftover medicines, prior prescriptions, home-based supplements, remedies, concoctions, or usage of medications on the advice of parents, relatives, friends, or neighbors are all examples of SM (3). SM is a major global health concern in both developing and developed countries (4). It has been estimated, SM is practiced by 32.5-

81.5% worldwide (5). In Pakistan, despite the drug regulation authorities the practice of SM is a common and overlooked entity (6). Recently the prevalence of SM for OTC (over-the-counter) drugs and antibiotics have been reported 88% and 85.9% respectively in Pakistan (7). Alarming high consumption of analgesics (93%), antipyretics (69%), and antibiotics (52%) has been reported in Pakistan (8). SM is a risky practice and is discouraged due to the high chances of inappropriate drug selection, misuse of medicine, inadequate dosage, and addictive tendency (9). Wastage of money and medical resources, increase in antibiotic resistance (10), adverse reactions and incorrect diagnosis are further deleterious consequences of SM. In Pakistan, several factors could be attributed to the high prevalence rate of SM such as ease of access to medicines, availability of medicines at local stores, kiosks, and transports, illiteracy, high consultation, and laboratory charges, and excessive promotion of pharmaceuticals (11). Prescription of medicine by pharmacists at local medical stores often results in misdiagnosis and incorrect treatment (12). The consequences of SM are increased financial burden, resistance development, adverse effects, and delay in treatment. SM practices based on personal experiences or previous prescriptions may also lead to misdiagnosis, delay in management, incorrect treatment, and subsequent health issues (6). Pakistan has a large informal healthcare sector and a lack of public awareness programs about health and medicines. The private sector offers the most healthcare (79%) in Pakistan. Studies from rural and urban areas and among university students suggest that education and socioeconomic status also have roots in practicing SM. Appropriate self-medication on the other hand can save time and money and boost the public decision in choosing SM in the future (13). Furthermore, suitable SM courage the public to share their knowledge with others and stimulate others to SM practice. Social and digital media and publicity of medicines at local transport and street walls are other contributing factors that influence and boost the public decision for SM (8). The most frequent disease for which SM is practiced is a headache and other body pains, followed by flu and diarrhea. The most frequently used medicine is paracetamol, ibuprofen, herbal medicine (Joshanda) and metronidazole in Pakistan (14). Due to language, cultural and financial barriers and limited access to medicine in developed countries, most of the immigrants leave Pakistan loaded with Over-the-counter (OTC) medicines (11). Self-medication products account for approximately 20% of the total international pharmaceutical market. A recent study

found that 95% of mothers attending the Outpatient Department (OPD) self-medicated their children. Furthermore, there was a positive relationship between the level of mothers' education and SM practice (15). Over time, as mothers become more knowledgeable and familiar with medicines' brand names, they may identify and treat children with different medications before consulting their family physician.

The epidemiological data have revealed a high prevalence of SM all over the world; up to 59 % in Nepal, 92 % in adolescents in Kuwait, 31 % in India, and 17–67 % in European countries (Sweden, Finland, and the Netherlands) (14). However, few studies that were conducted in Pakistan have revealed the prevalence of SM at 51 % among children. Moreover, studies conducted in Karachi revealed a very high frequency of 80.4 % of SM among university students (16). SM frequency among non-medical students was 83.3 % while for those in medical school, it was 77.7 % (17).

It is believed that public awareness along with a reduction in consultation fees and laboratory charges may reduce the practice of SM. Furthermore, implementing and imposing laws regarding halting SM can greatly decrease the rate of this snag.

METHODS

This epidemiological, descriptive, cross-sectional survey was conducted at the polyclinic hospital serving the highly populated metropolitan area of Karachi from November 2022 until March 2023. Data was collected using a semi-structured, pre-validated close-ended questionnaire from 500 participants of both genders ranging in age from 18 years and above. The questionnaire was self-developed for the purpose of the study and checked for validity and understanding and pilot-tested. Where found complications, a questionnaire was improved in accordance. While some questions had a single option, many require selecting multiple options, making the sum total of percentages not always equal to 100%. Prior to administering the questionnaires, a short briefing on the study background, purposes, advantages, methodology, privacy, constraints, the procedure for filling out the questionnaire, and rights to opt out of the study was given. Only the agreed and voluntary participants were considered and it was made clear that the participation is without compensation. Data were analyzed anonymously and with the utmost confidentiality. Consent was sought and only those who filled out the form and agreed with physicians to answer were considered to participate in this study in accordance with Helsinki Declaration

(18). Only the completely filled questionnaires were selected for final analysis.

A total of 360 questionnaires were filled in the clinics by physicians asking outpatient department (OPD) patients their socio-demographic status, means of diagnosis, common diseases for which SM is practiced, sources of medicines, SM history, and the pull and push factors for SM. A google survey form comprising of same questions was also randomly online distributed among inhabitants of Karachi. The convenience sampling method was used to select online participants of both male and female workers, students, and all others 18 years and above. A total of 140 google survey responses were collected.

Karachi is the most populous city in Pakistan and 12th most populous city in the world, with a population of over 20 million. Karachi is situated at the southern tip of the country along the Arabian Sea coast and highly metropolitan with people from diverse social, cultural and economic backgrounds. Karachi serves as a transport hub, and contains Pakistan's two largest seaports, as well as Pakistan's

busiest airport. More than 87% of population in Karachi use mobile phones and internet. Being an urban city most of the pharmacies open in the day and many are operational in night at hospital vicinities. For administration purpose, Karachi has been divided into seven districts

(East, West, South, Central, Korangi, Malir, and Keamari). District Malir is the largest whereas District Central is the most populated. Participants in this study were included from each district for systemic randomization. Data was collected, stored and analyzed using Microsoft Excel 2010 and google spread sheet. Counts, frequencies and percentages were determined and expressed in tables and bar charts.

RESULTS

According to this survey total 500 subjects participated in this study. Most of the participants were male 310 (62%) and ranged in age from 18-40 years 416 (83.2%). Majority were married 314 (62.8%) and were office workers 223 (44.6%) and university graduates 405 (81%) which are shown in **Table 01**.

Table: 01. Demographic characteristics of people getting Self-medication

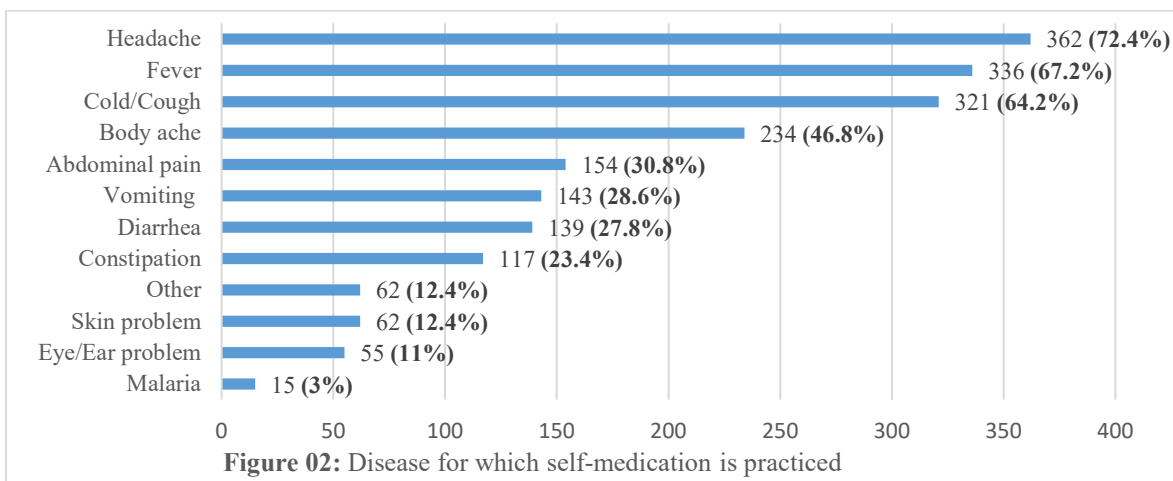
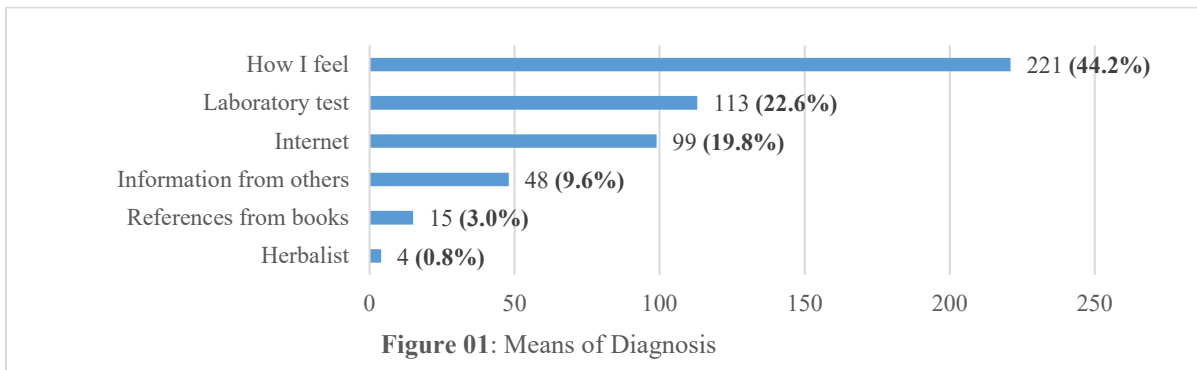
Demographic characteristic	Number	%
Gender		
Male	310	62
Female	190	38
Age (years)		
18-30	219	43.8
31-40	197	39.4
41-50	59	11.8
>51	25	5
Marital status		
Single	186	37.2
Married	314	62.8
Profession		
Un-employed	15	3
Daily wages	33	6.6
Self-employed/Business	29	5.8
Office work	223	44.6
Freelancer	2	0.4
House wife	15	3
Retired	4	0.8
Government employee	91	18.2
Student	88	17.6
Education		
Primary	4	0.8
Secondary	15	3
Intermediate	66	13.2
University	405	81
Vocational	10	2

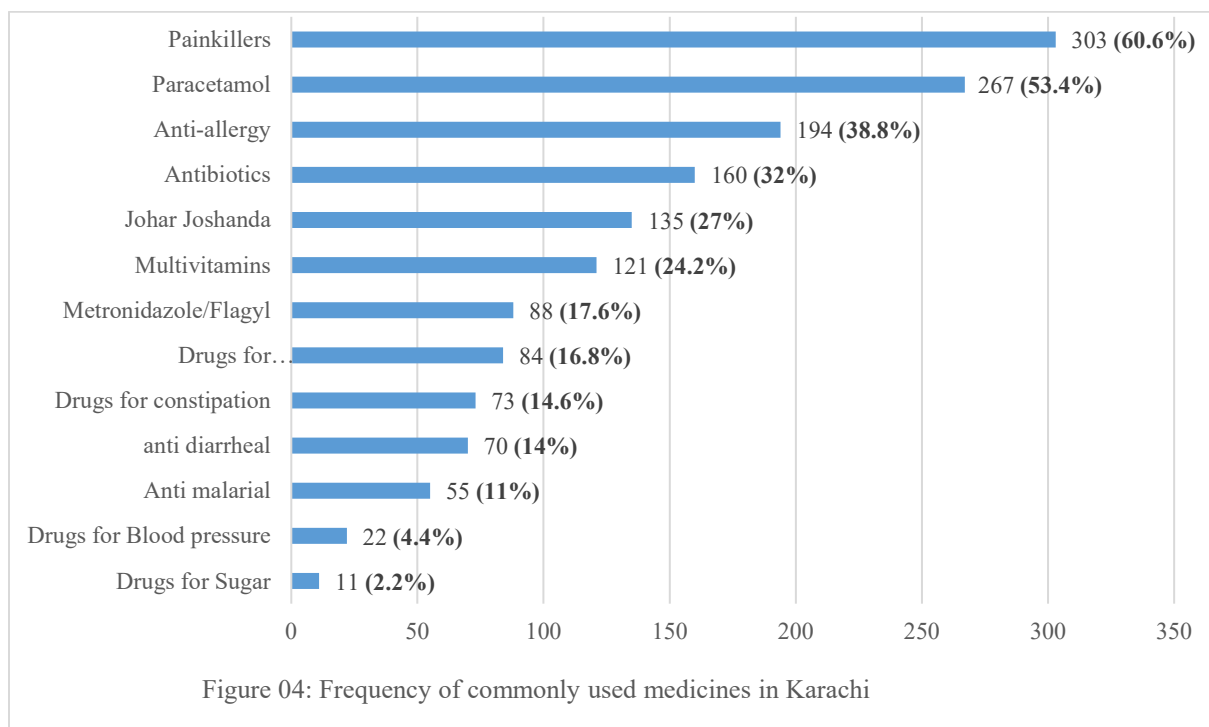
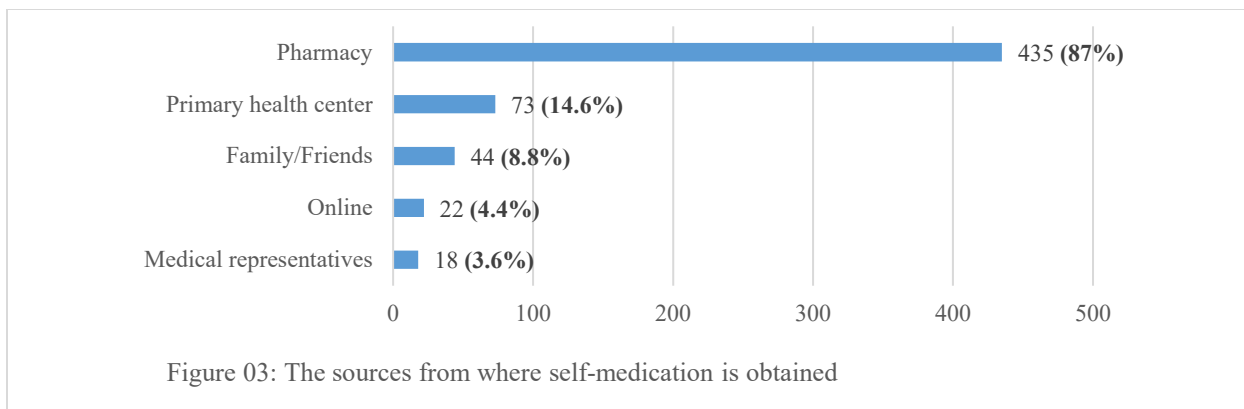
The most common way evaluated for disease diagnosis was their convenience feeling 221 (44.2%), laboratory tests 113 (22.6%) and internet 99 (19.8%). Some people also get help from others 48 (9.6%) to diagnose their disease and other use books as reference 15 (3.0%) or advise from herbalist 4 (0.8%) as shown in **Figure 01**.

The most common diseases for which self-medication is practiced were headache 362 (72.4%), fever 336 (67.2%), and cold/cough 321 (64.2%). A significant number of people also practiced self-medication for body ache 234 (46.8%), abdominal pain 154 (30.8%), vomiting 143 (28.6%), diarrhea 139 (27.8%) and

constipation 117 (23.4%). Few people also used self-medication for skin problems 62 (12.4%), eye/ear problems 55 (11%) and for malaria 15 (3.0%) as depicted in **Figure 02**.

In this study we found pharmacies were the most common sites 435 (87%) from where people trust and obtained medicines for self-medication. Some people also get medicines from dispensaries 73 (14.6%), friends 44 (8.8%) and medical representatives 18 (3.6%). Other people order medicine online 22 (4.4%) for self-medication purpose as indicated in **Figure 03**.

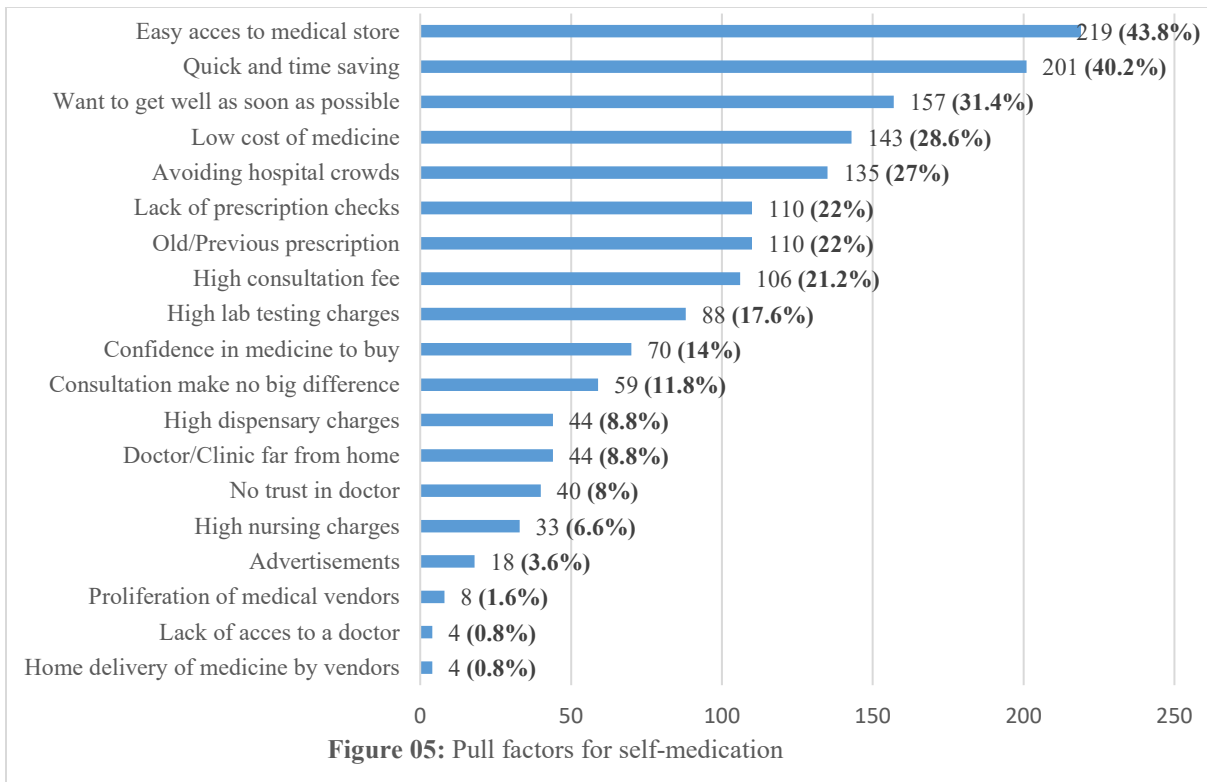




We found painkillers 303 (60.6%), paracetamol 267 (53.4%), anti-allergy 194 (38.8%) and antibiotics 160 (32%) the most favorite and commonly used medicines by people. Significant proportion of people also used johar joshanda 135 (27%), multivitamins 121 (24.2%), metronidazole 88 (17.6%), antacids 84 (16.8%), stimulants 73 (14.6%), and anti diarrheals 70 (14%). Anti malarial 55 (11%) and drugs for hypertension 22 (4.4%) and diabetes 11 (2.2%) were the least commonly used self-medicines as shown in Figure 04.

In this study the most common pull factor for self-medication was found easy access to medical stores 219 (43.8%). Other frequent pull factors were determined quick and time saving 202 (40.2%), patients want to get well soon 157 (31.4%), low cost

of medicine 143 (28.6%), avoiding hospital crowds 135 (27%), lack of prescription checks 110 (22%) and usage of previous medicine prescriptions 110 (22%). A significant number of people use self-medication due to high consultation 106 (21.2%) and lab charges 88 (17.6%). Other least common pull factors were confidence in buying medicine 70 (14%), consultation make no big difference 59 (11.8%), high dispensary charges 44 (8.8%), doctor far from home 44 (8.8%), no trust in doctors 40 (8.0%), high nursing charges 33 (6.6%), advertisements 18 (3.6%), proliferation of medical vendors 8 (1.6%), lack of access to a doctor 4 (0.8%), and home delivery of medicine by vendors 4 (0.8%) as depicted in Figure 05. In this study we found the fear of adverse medicine reaction 139 (27.8%), the most dominant factor avoid self-medication.

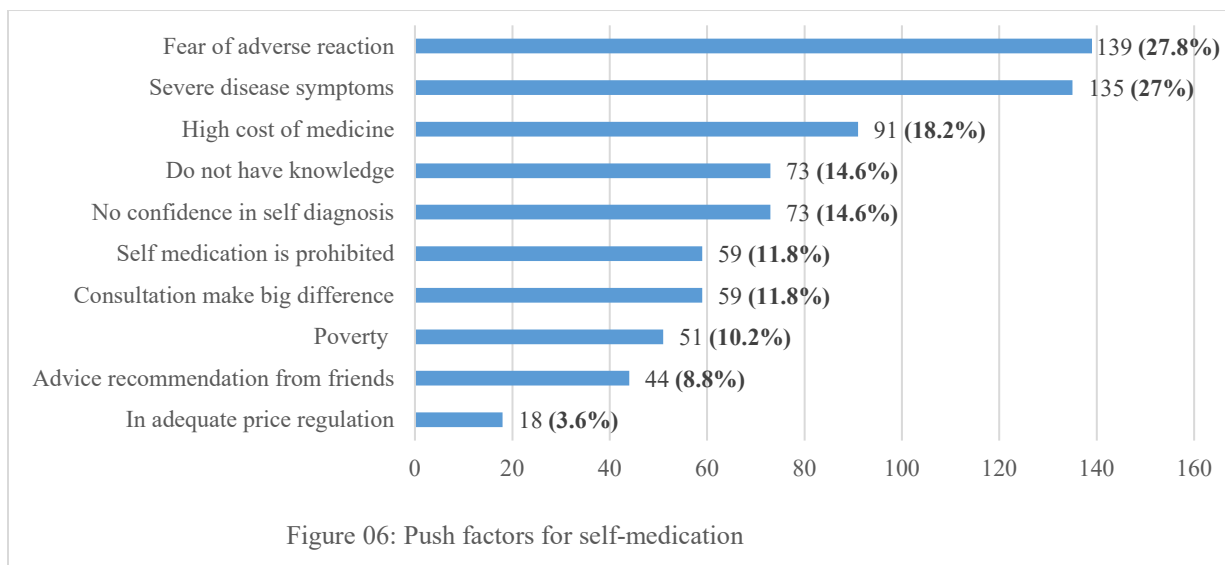


Second most common push factor was severe disease symptoms 135 (27%). Other common push factors were high cost of medicine 91 (18.2%), lack of knowledge 73 (14.6%), and no confidence in self-diagnosis 73 (14.6%). A significant number of people avoid SM as they think SM is prohibited 59 (11.8%) and consultation make big difference 59 (11.8%). Other people avoid SM due to poverty 51 (10.2%), advice recommendation from friends 44 (8.8%), and

in-adequate medicine price regulation 18 (3.6%) as shown in **Figure 06**.

DISCUSSION:

The results of this study indicate that very high proportion (80.6%) of people use self-medication in Karachi. Our results are similar from previous studies from Karachi where they reported the prevalence of SM 76% and 84.8% respectively (16, 19).



SM practice is more prevalent among males (62%) compared to females (38%) in our study population. A possible reason could be the complete hospital facilities are available in morning time and this time males are usually at their working places and find no time to visit doctors. A previous study from Karachi also reported self-medication practice more common among males (88.4%) (19).

According to our study, self-medication usage is more common (43.8%) among 18-30 years of age group, which is in agreement with the findings of a previous study conducted in Islamabad that a higher portion (63%) of young participants 15-30 years indulged in self-medication (9). This can be explained by the fact that as a person ages, they begin seeing a doctor more often. Although there was a statistically insignificant difference in self-medication usage between the various age groups.

The findings of this study reveal that married individuals (62.8%) indulged more in self-medication than single which is in contrast to a study who reported that unmarried participants were two times more utilizing self-medication compared to married respondents (20).

This study shows the highest prevalence rate of self-medication among office workers (44.6%). This might be due to office workers usually have busy duty hours and restrained schedule and they do not have enough time to frequently visit doctors/clinics. No such data is available for comparison within other studies.

The current study found that university graduates (81%) were most frequently involved in consuming self-medication, which reflects the findings seen in another study that the likelihood of self-medication was high among literate participants (83.3%) compared to illiterate ones (23%) (9). The reason that educated people are more likely to self-medicated might be described in lieu of that university graduated can better read and comprehend the labels of the drugs they use. This finding that frequency of self-medication amongst university graduates is highest is alarming which warns that self-medication among the general population may be even a greater cause of concern.

In this study we found the most common diseases for which self-medication is practiced are headache (72.4%), fever (67.2%), and cold/cough (64.2%). Similar results have been reported from a previous study from Karachi where they reported the prevalence of self-medication for headache (72.4%),

flu (65.5%) and fever (55.2%) (16). However, another study reported the most prevalent symptoms cough (51%), headache/fever/malaria (25.5%), and diarrhea (21.5%) (21).

We found the pharmacies were the most frequent sources (87%) from where people buy and get self-medications. In another study, 73% of people obtained medicines from community pharmacies. According to this study pharmacy stores did not react to 78.5% respondents when they bought medicines without a doctor's prescription, indicating the country's inadequate regulatory affairs and insufficient control over the sale of medicines (3).

Our results show the most frequently used self-medicines amongst our study population were analgesics (60.6%), paracetamol (53.4%) and anti-allergy medicines (38.8%). Our results are in concordance with a previous study from Karachi who reported analgesics (28.6%), antipyretics (20%) and cough syrups (14.0%) the most frequently used self-medicines of choice in this city (19). Another study from Punjab reported the most often sold medicines for self-medication were analgesics and antipyretics (39.4%) (8). Another study from Islamabad reported that two-third (71%) of the respondents self-medicated themselves and the commonest condition for which they used antibiotic was sore throat (22). Our results are also in agreement with a study from Colombia who reported most commonly used medicines as analgesics and antipyretics (44.3%) and anti-histamine drugs (8.5%) (23).

According to our study the most dominant pull factors for self-medication were easy access to medical stores (43.8%) and quick and time saving (40.2 %). This might be explained by the fact that pharmacy profession is recognized as an important and respectable profession and has evolved and expanded significantly in past few years (24). In urban areas though authorities issue license for registering a pharmacy and only certified personals are allowed to sell drugs but a recent study from Pakistan reported the proportion of pharmacies meeting licensing requirements was 19.3% and they found discrepancy between knowledge and practice of drug sellers. Furthermore most drug sellers had fragmentary knowledge regarding drug storage and dispensing and they were selling drugs without prescriptions (25). Another study from Pakistan reported that the dispensing and counselling practices at pharmacies are not satisfactory and mostly unqualified salesmen handle the patients (26).

According to this study the most dominant issues people avoid SM are the fear of adverse drug reactions (27.8%) and disease symptoms severity (27%). The most dominant push factors for self-medication in our study are comparable with findings from other studies in developing countries. A previous study from Tanzania reported a very high proportion of people (98%) consider self-medication a malpractice due to harmful effects and 96% assumed it could lead to drug resistance and were in favor of seeking medical consultation (21).

CONCLUSION

Self-medication is a serious and rampant global phenomenon. In Pakistan self-medication is an overlooked entity and is mostly practiced by male, office workers and university graduates. Alarming high consumption of analgesics, antipyretics and anti-histamines have been noted in Pakistan. Easy access to illicit pharmacies is a major pull factor for self-medication, further compounded by a way of time saving and avoiding hospital crowds. Majority of the people in Pakistan get pulled to drug sellers who lack the expertise or do not check prescriptions. Headache, fever and cough/cold were the most common symptoms for which people use self-medication. Fear of deleterious consequences and the presence of serious and chronic symptoms were the most common push factors people avoid self-medication. Although intention to self-medication has some positive elements, its practice needs to be put under vigilance to avoid with long term health complications.

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