Original Research Article

Self-medication practices among university students from Karachi, Pakistan

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ABSTRACT

Background: Self-medication, practiced globally is an important public health problem. Research studies have indicated inappropriate self-medication results in adverse drug reactions, disease masking, antibiotic resistance and wastage of healthcare resources. The objectives of the study were to explore overall self-medication and antibiotic self-medication prevalence among students of university students in Karachi, Pakistan along with probable reasons, indications, and sources of advice for self-medication.
Methods: A descriptive, cross-sectional, questionnaire-based study was carried out among students from university of Karachi, Pakistan during the time period of September to November 2016. Pretested questionnaire was distributed to 320 students, collected data was analyzed using IBM SPSS version 24.
Results: From 320 students, 311 (83 male and 228 female) students participated in the study giving a response rate of 97%. Prevalence of self-medication was 66%. Belonging to higher monthly family income group was associated with likelihood of self-medication. Antibiotic self-medication prevalence was 39%. Lack of time (39%), and old prescription (35%) were the main reasons for self-medication. Pharmacy shop (75%) was the main source for self-medication. In case of antibiotics, 44% students changed the dosage of antibiotic and 50% students stopped antibiotics after the disappearance of the symptoms.
Conclusions: Antibiotic self-medication (39%) and self-medication with other drugs among university students of Karachi is a worrisome problem. Our findings highlight the need for planning interventions to promote the judicious use of general medicines as well as that of antibiotics.

Keywords: Self-medication, Antibiotics, Antibiotic resistance, Karachi, Pakistan, Students

INTRODUCTION

Self-medication (SM) is defined as use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent disease or symptoms.[1] SM is reported worldwide especially in developing countries where people treat most episodes of illness by self-medication.[2-4] Among European countries reported SM prevalence is 21% in Lithuania, 19.8% in Romania, 15.2% in Spain, 21% in Portugal, and 31% in Czech Republic.[5-7] In developing countries much higher prevalence rates are reported, 79% in India, 84% in Pakistan, 78% in Saudi Arabia, 67% in Nigeria.[8-11] High prevalence rates of SM

have been reported among university student population from Asian countries.[12-16] We conducted this study with the objective to determine the prevalence of SM among the students from university of Karachi, Pakistan.

METHODS

Questionnaire design and pilot study

Our study questionnaire in English language was designed based on the previous studies. It consisted of close and open ended questions. Recall period for this study was 3 months. Self-medication for this study was defined as "use of medicines in last 3 months without the prescription of medical practitioner". Content and face validity was checked in our department by a team consisting of epidemiologist, pharmacy professors, statistician and also a student representative. We conducted a pilot study in 20 students from university of Karachi to determine: understanding of the questions by the participants, time required to complete the questionnaire. Based on this pilot study we did some modifications in questionnaire which helped us in interview process. Pilot study population was not a part of the main study.

Study design and setting

A descriptive, cross-sectional, questionnaire-based study was carried out among students from university of Karachi, Pakistan during the time period of September to November 2016.

Inclusion and exclusion criteria

All volunteer male and female students having at least one episode of disease in last 3 months, were enrolled in undergraduate or postgraduate programs in university of Karachi, Pakistan and who understood English were eligible to participate in the study.

Ethical consideration

The study was approved by the Institutional Ethics Committee of University of Karachi, Pakistan. The purpose of the study was explained in details before the survey and only participants voluntarily willing and ready to sign the informed consent were included in the study. The participants were assured of the confidentiality and anonymity of the information.

Sample size calculation

We used the prevalence based sample size formula $n=Z^2 \times p(1-p)/e^2$, where Z=value from standard normal distribution corresponding to desired confidence level (Z=1.96 for 95% CI)

P is expected true proportion (0.75 based on previous studies); e is desired precision (0.05). Calculated sample size was n= (1.962×0.75(0.25))/0.0025=289. We decided to use convenient sampling method to interview 320 students i.e. 10% more students to take care of possible low response rates. 311 students agreed to participate in the study (88% response rate).

Data collection procedure

After obtaining the written informed consent from the participants, face to face interviews were conducted by a team of 5 trained pharmacy doctoral students. Data was collected and entered directly in the Microsoft excel. Each interview lasted for average of 15 minutes.

Statistical analyses

Data analyses were done by IBM SPSS version 24. We did descriptive analysis, Chi square test to find association of different variables to SM. The statistical significance was set at p≤0.05.

RESULTS

There were total 311 (83 male and 228 female) subjects in our study. Overall self-medication prevalence was 66%, while 57 (69%) males and 148 (65%) females practiced self-medication. Among 261 graduates and 50 post graduate students, 167 (64%) graduate students and 38 (76%) post graduate students practiced self-medication. Out of 311 students only 83 students had health insurance. 53 (64%) students having health insurance and 152 (67%) not having health insurance practiced self-medication. 111 (73%) students belonging to monthly income group of >50,000 rupees, practiced self-medication. Monthly income was found to be associated with self‑medication.

As shown in the Table 2, the top 2 reasons for self-medication were– it saves time (39%), and having old prescription (35%). Headache (90%), eye infection (68%) followed by ear pain (37%) were the top three indications for self-medication. Medicine brand (158; 77%) followed by pharma company (55; 42%) were the top 2 variables considered while selecting drug for self-medication. Pharmacy shops (154; 75%) was the major source to obtain drugs for self-medication. 35 (17%) participants never checked the prescribing information before taking self-medication. When asked about adverse events, 176 (86%) participants never experienced adverse event after consuming self-medication.

Overall antibiotic self-medication prevalence was 40%. Antibiotic self-medication prevalence among the subjects who self-medicated was 60%. 37 (65%) males and 85 (57%) females practiced antibiotic self-medication. 100 (60%) graduates and 21 (55%) post graduates practiced self-medication. 21 (58%) students having health insurance and 91 (60%) not having health insurance practiced self-medication. 61 (55%) students belonging to monthly income group of >50,000 rupees, practiced self-medication. We did not find any socio-demographic variable associated with self‑medication (Table 3).

Table 1: Sociodemographic characteristics of self‑medication (n=311).

Socio-demographic characters	Use of self-medication		χ^2 value	P value	Odds ratio	95% Confidence Interval
	Yes n (%)	No n (%)				
Gender						
Male	57 (69)	26 (31)	0.3834	0.5358	1.18	0.692-2.029
Female	148 (65)	80 (35)				
Qualification						
Graduate	167 (64)	94 (36)	2.539	0.1111	0.57	0.28-1.14
Postgraduate	38 (76)	12 (24)				
Health insurance						
Yes	53 (64)	30 (36)	0.214	0.6436	0.88	0.522-1.494
No	152 (67)	76 (33)				
Monthly income (Rupees)						
10000-19999	26 (70)	11 (30)				
20000-49999	68 (56)	52 (43)	8.085	0.01756		
≥50000	111 (73)	43 (27)				

Table 2: Self-medication variables (n=205).

Variable	Category	n (%)
Reason for SM	Doctor/clinic away from home	31 (15)
	Saves time	79 (39)
	High Fees	12 (6)
	Old Prescription	71 (35)
	Doctor busy	7 (3)
	Medicines of family member	28 (14)
	No trust in doctor	9 (4)
	Pharmacist advice	31 (15)
Indication for SM	Headache	185 (90)
	Eye infection	139 (68)
	Ear pain	76 (37)
	Running nose	64 (31)
	Fever	65 (32)
	Muscle pain	53 (26)
What do consider while selecting drug for SM?	Price	16 (8)
	Pharma company	55 (42)
	Type of medicine:	59 (29)
	Brand	158 (77)
Where do you obtain drugs for SM?	Pharmacy shop	154 (75)
	Online shopping	2 (1)
	Primary healthcare center	8 (4)
	Medical representative	6 (3)
	Friends/family	41 (20)
Do you check Prescribing info before SM?	Yes, always	87 (43)
	No, never	35 (17)
	Yes, sometimes	83 (40)
How much you understand of prescribing information?		Sample size=170
	Fully	50 (29)
	Partially	108 (64)
	Not at all	12 (7)
Have you ever experienced adverse events with SM?	Yes	29 (14)
	No	176 (86)
What did you do for adverse event?		Sample size=29
	Private Doctor	15 (52)
	Pharmacist	2 (7)
	Stop medication	12 (41)

Table 3: Socio-demographic characteristics of antibiotic self-medication (n=205).

Socio-demographic characters	Use of antibiotic Self-Medication		χ² value	P value	Odds ratio	95% Confidence Interval
	Yes n (%)	No n (%)				
Gender						
Male	37(65)	20(35)	0.955	0.3283	1.37	0.72-2.58
Female	85(57)	63(43)				
Qualification						
Graduate	100(60)	67(40)	0.302	0.5823	1.22	0.59-2.48
Postgraduate	21(55)	17(45)				
Health insurance						
Yes	31 (58)	22 (42)	0.030	0.4302	0.94	0.5-1.78
No	91 (60)	61 (40)				
Monthly income (Rupees)						
10000-19999	14 (54)	12 (46)				
20000-49999	46 (68)	22 (32)	3.139	0.2082		
≥50000	61 (55)	50 (45)				

Table 4: Antibiotic self-medication variables (n=205).

Variable	Category	n (%)
Which were the most recent disease for which you self-medicated with antibiotic?	Cold/running nose	47 (39)
	Cough/Sore Throat	50 (41)
	Fever	40 (33)
	Diarrhea	25 (20)
How did you know the dosage of antibiotic?	Prescribing Information	15 (12)
	Pharmacist	18 (15)
	Doctor	39 (32)
	Peers/ Friends/ Family	27 (22)
	Previous Experience	35 (21)
Did you change the dosage of antibiotic during self-medication?	Yes, always	17 (14)
	Yes, sometimes	54 (44)
	No, never	51 (42)
Why did you change the dosage of antibiotic during self-medication?		Sample size=71
	Health improved	54 (76)
	To reduce adverse events	22 (31)
	Disease worsened	6 (8)
Did you change antibiotic during self-medication?	Yes, always	12 (10)
	Yes, sometimes	52 (43)
	No, never	58 (48)
Why did you change antibiotic during self-medication?		Sample size=64
	Former didn't work	51 (79)
	Latter cheaper	5 (8)
	Former got over	8 (13)
When did you stop antibiotic during self-medication?	After few days	28 (23)
	After symptoms disappeared	62 (50)
	Got over	13 (11)
	Course completed	19 (16)
Which antibiotics you used in last three months?	Amoxicillin	50 (41)
	Ciprofloxacin	37 (30)
	Erythromycin	35 (29)
	Metronidazole	24 (20)

Cough / sore throat (50; 41%) followed by cold/running nose (47; 39%) were the top indications for self-medication with antibiotics. Doctor (39; 32%) followed by peers/friends/family (27; 22%) were quoted as main

sources of knowledge for deciding antibiotic self-medication dosage. 17(14%) and 54(44%) participants always or sometimes respectively changed the antibiotic dosage. 54(76%) participants replied health improvement as the main reason for changing the antibiotic dosage. 12(10%) and 52(43%) people always or sometimes respectively changed the antibiotic during the self-medication. 51(79%) participants quoted "former antibiotic did not work" as the reason for changing the antibiotic during self-medication. 62(50%) participants stopped the antibiotic after disappearance of disease symptoms. Amoxicillin (50; 41%), ciprofloxacin (37; 30%) followed by erythromycin (35; 29%) were the top 3 antibiotics used by participants for self-medication.

DISCUSSION

This study conducted among the students from University of Karachi, Pakistan showed 66% self-medication prevalence in preceding 3 months. Self-medication prevalence of 76% was reported by Zafar et al among students from University of Karachi.[12] Mumtaz et al reported a prevalence of 80.4% among university students from Karachi.[17] Studies from different parts of the world have shown much higher self-medication prevalence. A study done among university students from Rio Grande, Brazil showed self-medication prevalence of 86.4%.[18] While a study among medical and pharmacy students from Bangladesh reported self-medication prevalence of 100%.[19] A study among university students in Malaysia reported self-medication prevalence of 80.9%.[20] Our results are encouraging when compared to studies done in Pakistan or other parts of the world among university students. It was seen that saving time and presence of old prescription were the main reasons for self-medication. Similar results have been reported among university students from Brazil, Malaysia and Pakistan.[12,17,18,20] This suggests easy access to medications without prescriptions in Pakistan. Our study revealed that headache, eye infection and ear pain were the top reasons for self-medication. The results are similar to a studies done in Malaysia and Karachi where in students reported headache and flu like symptoms were the top indications for self-medication.[12,20] Pharmacy shops were the most common source to obtain drugs for self-medication in our study. Similar results have been reported in a study done among students in Malaysia and Nigeria.[16,20] It was encouraging to see that majority of the students checked prescribing information (always or at least sometimes).

Our study also observed that self-medication practices were more prevalent among higher monthly income group. Selvaraj et al also found that self-medication was more common among socio-economically better off compared with respondents belong to lower socio-economic status.[3] Access of the socioeconomically better off respondents to resources might be a contributing factor in their practice of self-medication.

Overall antibiotic self-medication prevalence was 40% and antibiotic self-medication prevalence among the population of students who self-medicated was 60%. Our results are similar to a study done by Shah et al in university of Karachi, which reported antibiotic self-medication prevalence of 47.6%.[21] A study done among university students in Islamabad has reported much higher (77.3%) prevalence of self-medication with antibiotics.[22] Similar to the above mentioned studies done in Karachi and Islamabad our study participants reported amoxicillin, ciprofloxacin, and erythromycin as most frequently self-medicated antibiotics.[21,22]

Our study assessed various factors that could be associated with the use of self-medication of antibiotics amongst the study population. No association could be established between the demographic factors such as gender, monthly family income, health insurance, level of education and with antibiotic self-medication. These findings are consistent with the previous studies which found no association between self-medication in general and socio-demographic factors.[21,23] More than half of the participants at least sometimes changed the antibiotic dosage and 50% stopped using antibiotic after disappearance of the symptoms. This is worrisome as it may lead and also add up to the global problem of antibiotic resistance.

CONCLUSION

We are of the opinion that this was the first study done in Pakistan to determine not only the overall self-medication prevalence but also to look specifically at antibiotic self-medication prevalence.

The results obtained highlight the menace of self-medication among the educated population. In the context of increasing antibiotic resistance these results should be carefully looked into and should be used for designing the awareness programs regarding the risks of self-prescribed antibiotics. There is an urgent need for governmental agencies to frame and implement laws to limit the purchase of prescription only drugs.

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