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Assessment of Knowledge, Attitude and Practice Regarding Self-Medication Among MBBS and Pharm-D Students in Mirpur District, AJK

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Abstract *Self-medication is a common practice among medical and pharmacy students, and it can compromise public trust in this profession. This cross-sectional study determined the self-medication practices among PHARM-D and MBBS students in Mirpur, AJK, through a self-designed questionnaire. The study was performed on a sample of 200 students (mean age =23.60 ±1.30 years), 55% (110) were males and 45% (90) were females, out of the 100 were medical students and 100 were pharmacy students. The self-medication prevalence was as high as 75%. Knowledge of MBBS students regarding self-medication was better than PHARM-D students. The common source of advice was textbooks in 56% MBBS and 55% PHARM-D students. The major cause of self-medication was a previous experience, and the most common indications were pain and fever. Therefore, self-medication prevalence was high among students, and potentially harmful drugs sale should be restricted and monitored.*

Key Words: Self-Medication, Knowledge, Attitude, Practice

Introduction

"According to the World health organization's definition, self-medication is the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent diseases or symptoms"(Lukovic et al., 2014). "Self-medication is defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, prescription or surveillance of treatment"(Zafar et al., 2008). The previous studies reveals that factors affecting the self-medication are age, advertisement of drugs, lacking in legislation regulating sale of drugs and dispensing, family attitude, past experiences with the same symptoms or disease, home pharmacy, drugs and financial status of respondents(Lukovic et al., 2014). One of the major reason of self-medication is depression and anxiety(Hofmeister et al., 2010).Other factors that promoting the self-medication are socio-economic status, lifestyle, easy access to medicine, the more capability to manage certain diseases through self-care, and the patient placidity with the physician, large waiting period and price of the medicine. Another prominent factor that promotes self-medication is the high consultation fee of physician and it makes the condition more worse in rural and side areas, where the people have low socio economic status and illiterate with inadequate health facilities(CHOUHAN & PRASAD, 2016).Although, OTC drugs are intended to be used as self-medication and are of established safety profile but misuse use of medicines because of less knowledge of the side effects and drug interactions could pose a significant consequence, especially in children, elderly, pregnant, and lactating mothers(Hughes et al., 2001).Most important sources of self-medication are families, friends, neighbors, the pharmacist, previous prescribed medicines, or from print media (Bennadi, 2013). Self-medication practice got increased in Mexico in recent years due to the easy availability of OTC drugs, mainly due to those which were formerly accessible only by prescription(Pagan et al., 2006).

Self-medication prevalence is now on alarming level even in European countries it is up to 68% and worse condition in developing countries with highest rate of 92% in Kuwait. India and Nepal having prevalence rate of 31% and 59% respectively. In

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Pakistan limited studies are conducted regarding self-medication showing high prevalence rate i.e. approximately 51%. (Zafar et al., 2008). Data reveals that the antibiotic self-medication practice is higher in poor countries as compared to developed world. (Napolitano et al., 2013). Medical students belong to highly educated part of community that has a sound knowledge regarding healthcare that is why it is very important to review self-medication in this class. Medical students are future practitioner so they have prominent impact on community in case of self-medication practice (Lukovic et al., 2014). A study conducted in Karachi, shows that the practice of self-medication among university students was very high i.e. prevalence rate was 77.7 % and 83.3% among medical students and non-medical students (Mumtaz et al., 2011).Self-medication results in the devastation of the capital, elevation in resistance of pathogens and commonly give rise to fatal health issues such as ADRs, prolong suffering and addiction to drugs (Badiger et al., 2012). This increase in trend of self-medication can be controlled by Pharmacist (Alam et al., 2015).There is a lack of data on the prevalence of self-medication among MBBS and PHARM-D students and their attitude towards the same in Pakistan. Hence this study was conducted to evaluate the knowledge, attitude and practice of self-medication among MBBS and Pharm-D students in Mirpur Azad Kashmir.

Study Material and Methods

Design

It was a cross sectional survey in which data was collected among 4th and final year students of medical and pharmacy colleges of Mirpur through questionnaire. A self-administered questionnaire was distributed amongst the students after briefing about the purpose of the study and taking consent form.

Study Location

Study was conducted in medical and pharmacy colleges of Mirpur AJK.

Study Population

Study population was 4th and final year students of medical and pharmacy colleges of Mirpur.

Study Duration

Duration of our study was three months.

Date Collection Tool

The initial portion of the questionnaire assessed the demographic data of the participants. Section-A includes knowledge about the self-medication, section-B and C focused on the attitude and practice of self-medication respectively.

Data Collection Procedure

The questionnaires were distributed to the MBBS and PHARM-D students of 4th and final year of Akson College of Pharmacy, Mohtarma Benazir Bhutto Shaheed Medical College, and Mohi-Ud- din Medical College after getting permission from the Principal of the Institutions. The students were briefed about the aim and objectives of the survey and a written consent form was obtained from those who were ready to participate in the survey.

Sample Size Calculation

Sample size was calculated using Raosoft online sample size calculator (http:// www.raosoft.com/samplesize.html0), with 5 % margin of error, 50 % response rate and 95 % confidence interval and 200 participants were calculated as to be sufficient for the study.

Inclusion and Exclusion Criteria

All volunteers of 4th and final year male and female students of MBBS and Pharm-D in district Mirpur. A convenient sample of 200 participants was taken from the students enrolled at these colleges by approaching students sitting in the class rooms.

The MBBS and PHARM-D Students other than 4th and final professional year was excluded. Students not willing to take part in the study were also exluded.

Data Analysis

After collection of the data, the data was analyzed by using the SPSS version 25.

Ethical Consideration

Although there was no ethical issue in our study however verbal consent was taken by the participants and they were made assure that data will be kept confidential.

Results

The data was collected from 200 numbers of students including 55% males 45% females from Akson College of Pharmacy, Mohtarma Benazir Bhutto Shaheed Medical College, and Mohi- Ud- Din Medical College with min. age of 21 years and max. age of 28 years and mean age 23.60± 1.30 years. Demographic data is given in table 1.

Table 1. Demographic Characteristics of Students n=200 (MBBS 100, PHARM-D 100)

Demographic characteristics		Frequency	Percentage (%)
Gender	Male	110	55
	Female	90	45
Category	Medical (MBBS)	100	50
	Pharmacy (Pharm-D)	100	50
Institute	Akson College of Pharmacy	60	30
	Mohtarma Benazir Bhutto Shaheed Medical College	50	25
	Mohi-Ud-Din Medical College	90	45
Class	4th year	100	50
	Final year	100	50
Mean age & S. D	(23.60 ±1.30) years		

Table 2 shows that out of 200 students 100 were MBBS students and 100 were PHARM-D students all of these students have heard about self-medication 21% medical and 15% pharmacy students thought that self-medication is safe for their health. Among total, 64% MBBS students and 58% PHARM-D students' having the view that self-medication is part of self-care.

Table 2. Knowledge of Students about Self-Medication n=200 (MBBS 100 PHARM-D 100)

S. NO	Particulars	Response				Chi-square (p-value)
		Yes		No		
		Medical (MBBS)	Pharmacy (Pharm-D)	Medical (MBBS)	Pharmacy (Pharm-D)	
Q1.	Did you hear about self-medication?	100 (100%)	100 (100%)	0 (0%)	0 (0%)	
Q2.	Do you think self-medication is safe for your health?	21 (21%)	15 (15%)	79 (79%)	85 (85%)	0.269
Q3.	Self-medication is a part of self-care?	64 (64%)	58 (58%)	36 (36%)	42 (42%)	0.384

Table 3 shows that out of all the respondents who participated willingly in the research 73% MBBS students and 77% PHARM-D students practiced self-medication. About 93% MBBS students and 53% PHARM-D students have knowledge regarding hazards of change of drugs timing. 93% MBBS and 77% PHARM-D students had knowledge regarding hazards due to increase drug dose. Among all respondents 88% MBBS and 96% PHARM-D students have knowledge regarding drug adverse reactions while 82% MBBS and 83% PHARM-D students have knowledge about completing the dose of drug. Knowledge about antibiotics among MBBS and PHARM-D students was 100% and 89% respectively. All the MBBS students had knowledge about analgesics while 92% PHARM-D students had knowledge about it. In case of antacids 97% MBBS students and 91% PHARM-D students were well aware about it. In case of anti-pyretic (MBBS students100% and PHARM-D students 94%), anti-spasmodic (MBBS students 97% and PHARM-D students 84%), Vitamins (MBBS students 94% and PHARM-D students 95%), Herbal (MBBS students 75% and PHARM-D students 77%), anti-allergic (MBBS students 98% and PHARM-D students 93%) have knowledge about these classes of drugs.

Table 3. Knowledge of Students about Self-Medication n=200 (MBBS 100 PHARM-D 100)

S. No	Particulars	Response				Chi-square (p-value)
		Yes		No		
		Medical (MBBS)	Pharmacy (Pharm-D)	Medical (MBBS)	Pharmacy (Pharm-D)	
Q4.	Do you practice self-medication?	73 (73%)	77 (77%)	27 (27%)	23 (23%)	0.514
Q5.	Do you have Knowledge about					

I	Hazards due to change in timing of drug	93 (93%)	53 (53%)	07 (7%)	47 (47%)	0.00
II	Hazards due to increase drug dose	93 (93%)	77 (77%)	07 (7%)	23 (23%)	0.02
III	Drug adverse reaction	88 (88%)	86 (86%)	12 (12%)	14 (14%)	0.674
IV	Completing dose of drug	82 (82%)	83 (83%)	18 (18%)	17 (17%)	0.852
Q6.	Do you have Knowledge about					
I	Antibiotics	100 (100%)	89 (89%)	0 (0%)	11 (11%)	0.001
II	Analgesics	100 (100%)	92 (92%)	0 (0%)	08 (8%)	0.004
III	Anta-acids	97 (97%)	91 (91%)	03 (3%)	09 (09%)	0.074
IV	Anti-pyretic	100 (100%)	94 (94%)	0 (0%)	06 (6%)	0.013
V	Anti-spasmodic	97 (97%)	84 (84%)	03 (3%)	16 (16%)	0.002
VI	Vitamins	94 (94%)	95 (95%)	06 (6%)	05 (5%)	0.756
VII	Herbal	75 (75%)	77 (77%)	25 (25%)	23 (23%)	0.741
VIII	Anti-allergies	98 (98%)	93 (93%)	02 (02%)	07 (7%)	0.088

There were sixteen questions regarding knowledge section. To each correct answer one score was given. The total knowledge score was calculated for each respondent, on the basis of which knowledge of respondent was categorized as good, average and poor. The table 4 shows that 71% of MBBS students and 61% PHARM-D students have good knowledge about self-medication. While 29% MBBS students have average knowledge and almost 39% of PHARM-D students have average knowledge and no one lies in the category of poor knowledge. The p-value indicated that there was no statistical significant difference in knowledge among MBBS and PHARM-D students.

Table 4. Level of Knowledge regarding self-medication among MBBS and PHARM-D students n=200 (MBBS 100, PHARM-D 100)

Level of Knowledge	Frequency and Percentage		Chi-square (p-value)
	Medical (MBBS)	Pharmacy (Pharm D)	
Good (>12)	71 (71%)	61 (61%)	0.214
Average (6-12)	29 (29%)	39 (39%)	
Poor (<6)	0	0	

It is evident from the data that prevalence of self-medication among respondents was 75%.

There were sixteen questions regarding knowledge section. To each correct answer one score was given. The total knowledge score was calculated for each respondent, on the basis of which knowledge of respondent was categorized as good, average and poor. The table 5 shows that 39% of male students and 27% female students have good knowledge about self-medication. While 16% male students have average knowledge and 18% female students have average knowledge and no one lies in the category of poor knowledge.

Table 5. Level of Knowledge Regarding Self-Medication among Males and Females n=200

Level of Knowledge	Frequency and Percentage	
	Male	Female
Good (>12)	78 (39%)	54(27%)
Average (6-12)	32 (16%)	36 (18%)
Poor (<6)	0	0

Study showed that among 100 MBBS students, 58% students recommended self-medication to the others and 42% have not recommended self-medication to any person while among 100 PHARM-D students, 38% students recommended self-medication to others and 62% of them have not recommended the self-medication to anyone. The p-value indicated that there was significant statistical difference between MBBS and PHARM-D students regarding recommendation of self-medication to others.

Results have shown that in case of MBBS student's majority of the respondents agreed (64%) and (36%) disagreed to the statement on self-medication are acceptable for MBBS/ PHARM-D students and in case of PHARM-D students (70%) agreed and (30%) disagreed to the above-mentioned statement. No significant statistical difference was seen among MBBS and PHARM-D students regarding above mentioned statement according to p-value. Another statement that MBBS and PHARM-D students have good ability to diagnose the symptoms in case of MBBS students (61%) agreed while (39%) disagreed and in case of PHARM-D students (59%) agreed while (41%) disagreed and no significant statistical difference found between two categories regarding this statement. Similarly, statement medical/pharmacy students have better approach to treat symptoms (60%) MBBS students agreed while (40%) disagreed and (63%) PHARM-D students agreed while (37%) disagreed and significant statistical difference was not found. Another statement self-medication would be harmful if they are taken without proper knowledge of drugs and disease, MBBS students (76%) agreed and (24%) disagreed while PHARM-D students (89%) agreed and (11%) disagreed to the above-mentioned statement and significant statistical difference was found among MBBS and PHARM-D students according to p-value (<0.05). Majority of the MBBS students agreed (63%) towards the statement that the course of medicines should be complete although the symptoms subside while (37%) disagreed and in case of PHARM-D students (72%) agreed while (28%) disagreed. No significant statistical difference was seen among MBBS and PHARM-D students regarding above mentioned statement according to p-value (see table 6).

Similarly, the statement medical/pharmacy students should be careful with non-prescribed over the counter medicines majority of the MBBS students (70%) agreed while (30%) disagreed and in case of PHARM-D students (77%) agreed while (23%) disagreed. No significant statistical difference was seen among MBBS and PHARM-D students according to p-value. Other statement medical/pharmacy students likely to bother their doctors with minor problems always majority of the MBBS students (51%) disagreed while (49%) agreed and in case PHARM-D students' majority (53%) disagreed while (47%) agreed. No significant statistical difference was seen among MBBS and PHARM-D students according to p-value (see table 6).

Table 6. Students Attitude Towards Self-Medication n=200 (MBBS 100, PHARM-D 100)

S. No	Statement	Response				Chi-square (p- value)
		Agree		Disagree		
		Medical (MBBS)	Pharmacy (Pharm-D)	Medical (MBBS)	Pharmacy (Pharm-D)	
Q2.	Self-medication is acceptable for medical/pharmacy students.	64 (64%)	70 (70%)	36 (36%)	30 (30%)	0.367
Q3.	Medical/pharmacy students have good ability to diagnose the symptoms.	61 (61%)	59 (59%)	39 (39%)	41 (41%)	0.773

S. No	Statement	Response				Chi-square (p- value)
		Agree		Disagree		
		Medical (MBBS)	Pharmacy (Pharm-D)	Medical (MBBS)	Pharmacy (Pharm-D)	
Q4.	Medical/pharmacy students have good ability to treat symptoms.	60 (60%)	63 (63%)	40 (40%)	37 (37%)	0.663
Q5.	Self-medication would be harmful if it is taken without proper knowledge of drugs and disease.	76 (76%)	89 (89%)	24 (24%)	11 (11%)	0.016
Q6.	The course of medicines should be complete although the symptoms subside.	63 (63%)	72 (72%)	37 (37%)	28 (28%)	0.174
Q7.	We should be careful with non-prescribed over the counter medicines.	70 (70%)	77 (77%)	30 (30%)	23 (23%)	0.262
Q8.	Medical/Pharmacy students are likely to bother their doctors with minor problems always?	49 (49%)	47 (47%)	51 (51%)	53 (53%)	0.777

There were eight questions regarding attitude section. To each correct answer one score was given. The total attitude score was calculated for each respondent, on the basis of which attitude of respondent was categorized as positive and negative. The table 7 shows that 63% of MBBS students and 50% PHARM-D students have positive attitude while 37% MBBS students have negative attitude and almost 50% of PHARM-D students have negative attitude.

The most common factor that led to self-medication in case of MBBS students was previous experience (59%), followed by shortage of time (18%), advice from friend (14%), high cost of medical consultation (9%) and in case of PHARM-D students almost similar results were obtained most common factor was previous experience (66%), followed by shortage of time (16%), high medical consultation (12%) and advice from friend (6%). According to p-value there was no significant statistical difference among MBBS and PHARM-D students regarding reasons for practicing self-medication.

Table 7. Reasons for Practicing Self-Medication among MBBS and PHARM-D students n=200 (MBBS 100, PHARM-D 100)

Particulars	Frequency & Percentage		Chi-square (p-value)
	Medical (MBBS)	Pharmacy (Pharm-D)	
Previous experience	59 (59%)	66 (66%)	0.247
Shortage of time	18 (18%)	16 (16%)	
High cost of medical consultation	09 (9%)	12 (12%)	
Advice from friend	14 (14%)	06 (6%)	

Table 8 shows that among MBBS students the most common source described by the students for practicing self-medication was books 56%, own decision 22%, family 15% and friends 7% while among PHARM-D students most common reason described by the students for practicing self-medication also was books 55% , own decision 22%, family 15% and friends 8%.The p-value showed that there was no significant statistical difference between PHARM-D and MBBS students regarding sources of practicing self-medication.

Table 8. Sources of Advice for Practicing Self-Medication n=200 (MBBS 100, PHARM-D 100)

Particulars	Frequency & Percentage		Chi-square (p-value)
	Medical (MBBS)	Pharmacy (Pharm-D)	
Books	56 (56%)	55 (55%)	0.995
Family	15 (15%)	15 (15%)	
Own decision	22(22%)	22 (22%)	
Friends	07 (7%)	08 (8%)	

Table 9 shows that the most common indication that indulges MBBS students in self-medication was pain (49%), followed by fever (18%), cold and cough (14%), nausea & vomiting (7%) and allergy (6%) while in case of PHARM-D students most common indication was pain (58%), followed by fever (19%), allergy (10%), cold & cough (7%) and nausea & vomiting (3%). p-value indicated that there was no significant difference among MBBS and PHARM-D students regarding indications for practicing self-medication.

Table 9. Indications for Practicing Self-Medications n=200 (MBBS 100, PHARM-D 100)

Particulars	Frequency & Percentage		Chi-square (p-value)
	Medical (MBBS)	Pharmacy (Pharm-D)	
Pain	49 (49%)	58 (58%)	0.243
Fever	18 (18%)	19 (19%)	
Diarrhea	06 (6%)	03 (3%)	
Nausea and vomiting	07 (7%)	03 (3%)	
Allergy	06 (6%)	10 (10%)	
Cold and cough	14 (14%)	07 (7%)	

Class of drugs commonly used for self-medication by respondents is shown in table No. 10. Among the 100 MBBS students commonly classes of drugs used were analgesics 36%, antibiotics 31% antacids 15%, anti-pyretic 10% and in minimum percentage anti-allergic 8% agents were used. While among 100 PHARM-D students the analgesic class was used in higher percentage than MBBS students and it was about 66%. The other classes of drugs used were anti-pyretic 14%, antibiotics 14%, anti-allergic 3% and antacids 3%. And p-value (<0.05) indicated that there was significant difference between the MBBS and PHARM-D students regarding drugs used for self-medication.

Table 10. Class of Drugs Usually used for Self-Medication n=200 (MBBS 100, PHARM-D 100)

Particulars	Frequency & Percentage		Chi-square (p-value)
	Medical (MBBS)	Pharmacy (Pharm-D)	
Analgesics	36 (36%)	66 (66%)	0.00
Antipyretics	10 (10%)	14 (14%)	
Antibiotics	31 (31%)	14 (14%)	
Anti-allergic	08 (8%)	03 (3%)	
Antacids	15 (15%)	03 (3%)	

In case of type of self-medication commonly practiced by MBBS students were over the counter drugs (41%), vitamins and minerals (32%), drugs from home pharmacy (18%), herbs (6%) and least one was remedies for muscle mass gain (3%) while in among PHARM-D students the major type of self-medication practiced were over the counter drugs (69%) followed by vitamins and minerals (15%),

drugs from home pharmacy (9%), herbs (6%) and least one was remedies for muscle mass gain (1%). There was significant statistical difference among MBBS and PHARM-D students in case of type of self-medication practiced (p-value <0.05) (see table 11).

Table 11. Type of Self-Medication Commonly Practiced by Students n=200 (MBBS 100, PHARM-D 100)

Particulars	Frequency & Percentage		Chi-square (p-value)
	Medical (MBBS)	Pharmacy (Pharm-D)	
Over the counter drugs	41 (41%)	69 (69%)	
Herbs	06 (6%)	06 (6%)	
Vitamins and minerals	32 (32%)	15 (15%)	0.002
Remedies for muscle mass gain	03 (3%)	01 (1%)	
Drugs from home pharmacy	18 (18%)	09 (9%)	

Table 12 shows that among 100 MBBS students 54% students exchanged their medicine with others, 81% of them followed doctor's prescription, 45% students discontinued the prescribed medicine by themselves when symptoms are not relieved,85% students had reused the prescription when they experienced with similar symptoms, 63% students accepted that they increased the drug dose by themselves when symptoms are not relieved, 28% were habitual to a drug and 64% students shared their prescription with others with similar symptoms they had before and about 29% MBBS students used the combination of herbal medicine and western medicine while among the 100 PHARM-D students 50% students exchanged their medicine with others, 85% of them followed doctor's prescription, 44% students discontinued the prescribed medicine by themselves when symptoms are not relieved,53% students had reused the prescription when they experienced with similar symptoms, 29% students accepted that they increased the drug dose by themselves when symptoms are not relieved, 16% were habitual to a drug and 34% students shared their prescription with others with similar symptoms they had before and about 39% PHARM-D students used the combination of herbal medicine and western medicine. Among medical students 46% students had not exchanged their medicine with others, 19% of them had not followed doctor's prescription, 55% students had not discontinued the prescribed medicine by themself when symptoms are not relieved,15% students had not reused the prescription when they experienced with similar symptoms, 37% students had not increased the drug dose by themselves when symptoms are not relieved, 72% were not habitual to any drug and 36% students had not shared their prescription with others with similar symptoms they had before and about 71% MBBS students had not used the combination of herbal medicine and western medicine while in case of PHARM-D students 50% had not exchanged their medicine with others, 15% of them had not followed the doctor's prescription, 56% students had not discontinued the prescribed medicine by themself when symptoms are not relieved,47% students had not reused the prescription when they experienced with similar symptoms, 71% students had not increased the drug dose by themselves when symptoms are not relieved, 84% were not habitual to a drug and 66% students had not shared their prescription with others with similar symptoms they had before and about 61% PHARM-D students had not used the combination of herbal medicine and western medicine. The p-value indicated that there was significant difference between the MBBS and PHARM-D students in case reuse of prescription when experienced with similar symptoms, in case of increase of drug dose by themselves when symptoms were not relieved, in case of habitual to any drug, in case the prescription given to someone who having similar symptoms as they had before and in use of combination of herbal and western medicine.

Table 12. Practice of Self-Medication Among MBBS and PHARM-D students n=200 (MBBS 100, PHARM-D 100)

S. No	Particulars	Response				Chi-square (p- value)
		Yes		No		
		Medical (MBBS)	Pharmacy (Pharm-D)	Medical (MBBS)	Pharmacy (Pharm-D)	
Q6.	Do you exchange medicines with others?	54 (54%)	50 (50%)	46 (46%)	50 (50%)	0.571

S. No	Particulars	Response				Chi-square (p- value)
		Yes		No		
		Medical (MBBS)	Pharmacy (Pharm-D)	Medical (MBBS)	Pharmacy (Pharm-D)	
Q7.	Do you follow doctor's prescription?	81 (81%)	85 (85%)	19 (19%)	15 (15%)	0.451
Q8.	Do you discontinue the prescribed medicines by yourself when symptoms are not relieved?	45 (45%)	44 (44%)	55 (55%)	56 (56%)	0.887
Q9.	Do you reuse the prescription when experienced with similar symptoms?	85 (85%)	53 (53%)	15 (15%)	47 (47%)	0.00
Q10.	Do you increase the drug dose on yourself when symptoms are not relieved?	63 (63%)	29 (29%)	37 (37%)	71 (71%)	0.00
Q11.	Are you habitual to any drug?	28 (28%)	16 (16%)	72 (72%)	84 (84%)	0.041
Q12.	Do you give your prescription to someone who is having similar symptoms as yours before?	64 (64%)	34 (34%)	36 (36%)	66 (66%)	0.00
Q13.	Do you combine herbal medicine and western medicine?	29 (29%)	39 (39%)	71 (71%)	61 (61%)	0.008

Discussions

In this study data was collected from three different medical and pharmacy institutions in Mirpur; Akson college of Pharmacy, Mohi-Ud-Din Islamic Medical College and Benazir Bhutto Shaheed Medical College. In our study among MBBS students, 71% have good knowledge about self-medication while among PHARM-D students 61% have good knowledge about the self-medication. Similar study was carried out by James, Handu, Khaja and Otoom (James et al., 2006) and also by Raj Kumar Mehta *et al,* which showed that 52% of students had good knowledge(Gyawali et al., 2015). This could mean that MBBS and PHARM-D students have knowledge about drug adverse reactions, hazards due to increased drug dose and side effects which they have learned from their course of study. The prevalence of self-medication among respondents was 75%. Similar results were obtained in the study carried out by Syed Nabeel Zafar *et al.* in Karachi which have 76% prevalence rate (Zafar et al., 2008). Nahla Khamis Ibrahim *et al,* conducted a questionnaire based cross sectional study about the practice of self-medication and found that 75.2% of participants used self-medication (Ibrahim et al., 2015). The most important reason for higher practice of self-medication might be the easy availability of medicines without prescription.

In our study the majority (63%) of the respondents among MBBS category have shown positive attitude towards self-medication while 50% of the PHARM-D students have positive attitude towards self-medication saying that it was acceptable while 37% of medical and 50% PHARM-D students felt that it was unacceptable and have a negative attitude towards self-medication. From the above findings it was indicated that 58% MBBS and 38% PHARM-D students recommended self-medication to other. Majority of the students have opinion that MBBS and PHARM-D students have good ability to diagnose and treat the symptoms. Raj Kumar Mehta *et al.* conducted a similar study among MBBS students and found that 50.7% students had positive attitude towards self-medication(Gyawali et al., 2015). P Ravi Shankar *et al.* also found that students had positive attitude towards self-medication(Shankar et al., 2016).

When the students asked about self-medication would be harmful if it is taken without proper knowledge of drug and disease, 76% MBBS and 89% PHARM-D students agreed while 24% MBBS and 11% PHARM-D students disagreed. The p-value (<0.05) indicated that there was a significant statistical difference among MBBS and PHARM-D students.

In our study the most common reason for self-medication quoted by respondents was previous experience, 59% by MBBS students and 66% by PHARM-D students followed by shortage of time 18% by MBBS students and 16% by PHARM-D students and other reasons were high cost of medical consultation and advice from friend. This result was almost similar to earlier study conducted by Syed Nabeel Zafar *et al.* among two medical & two non-medical university students (Department of Community Health Sciences, Aga Khan University) of

Karachi, Pakistan, as previous experience 50.1%, shortage of time 12.2%, high cost of medical consultation 6% , and advice from friend was 23.9% (Zafar et al., 2008).

Our study also shows that the most common source of self-medication was books 56% among MBBS students and 55% among PHARM-D students followed by own decision 22% for each category other less common sources of self-medication were family 15% for both groups and friends 7% in case of MBBS students and 8% in case of PHARM-D students. This study differ from prior study conducted by Marilia da Silva *et al.* at Universidad Federal do Rio Grande (FURG), Brazil, as books 12% , own decision 29.5%, & family was 53.1% (da Silva et al., 2012).

Our study also reveals that the most common indication that indulges MBBS and PHARM-D students to self-medication was pain having percentage 49% and 58% respectively. Other indications for practicing self-medication were fever 18% in case of medical and 19% in case of PHARM-D students. Cold & cough and nausea & vomiting were very less indications among both categories. Henry James *et al.* conducted a study having similar results. Study showed that the common indications for self-medication was pain (70.9%), fever(29.9%), sore throat(53.7%)t and stomachache(32.8%) (James et al., 2006). Nimitha Paul *et al. 2017* conducted a study in which the major indications for self-medication were aches and pain (28.9%), fever (22.8%) and chronic diseases (13.7%)(Paul et al., 2017).

Results of our study showed that the most commonly used class of drug was analgesics, 36% by MBBS and 66% by PHARM-D students. The p-value indicated that there was significant statistical difference between MBBS and PHARM-D students. While the use of antibiotics among MBBS students was more than PHARM-D students as it was 31% in case of MBBS students and 14% in case of PHARM-D students. Other less commonly used classes of drug as self-medication were anti-pyretic, antacids and anti-allergic. This is similar to earlier study of Sanjeev *et al.* in K.S. Hegde Medical Academy, Mangalore, India, as analgesics was 65%, & antibiotic 34% (Badiger et al., 2012).

Results of our study also showed that over the counter (OTC) drugs were used most commonly by the respondents, 41% by MBBS and 69% by PHARM-D students while vitamins and minerals were also excessively used by the respondents. Other less commonly used type of drugs was drugs from home pharmacy and very rarely used were herbs and remedies for muscle mass gain. Similar results were found in a study conducted by Naznin Alam *et al.* among medical and pharmacy students in Bangladesh. Their results showed that 65% students used drugs from home pharmacy and 62.4% used OTC drugs (Alam et al., 2015). The reason might be that the drugs are easily accessible to students without prescription.

Conclusion and Recommendations

The prevalence of self-medication practices in both MBBS and PHARM-D students is alarmingly high, due to easy access to drugs by them and information from books and seniors despite the majority accepted that it is inaccurate. Self-medication needs improvement through educational, regulatory and managerial strategies. We recommend that a comprehensive approach must be taken to prevent this problem from growing rapidly which would involve:

(i) Education and awareness about the outcomes of self-medication
(ii) Inflexible rules regarding pharmaceutical advertising
(iii) Regulation of pharmacies to prevent the supply of medicines without prescription
(iv) There is need to promote the image of the pharmacist in Pakistan as a provider of medication information.

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