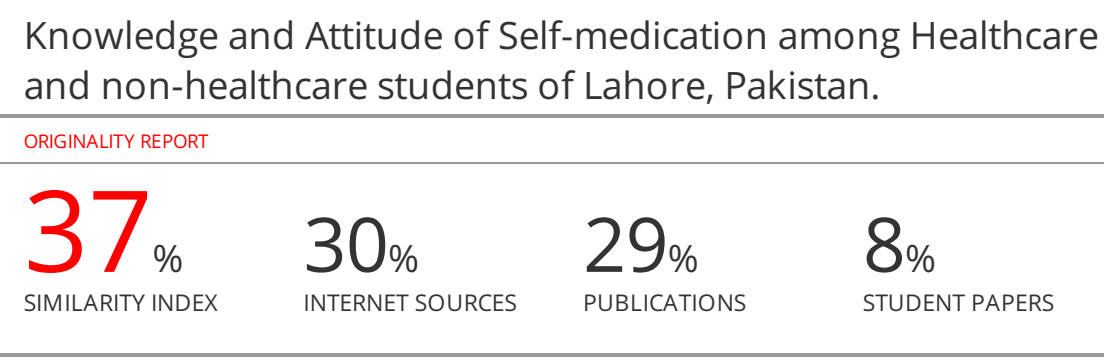
**Original Research Article**

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**Knowledge and Attitude of Self-medication among Healthcare and non-healthcare students of Lahore, Pakistan .**

**ABSTRACT**

**Introduction:**Self-medication is the process of taking medication without the consultaion of licensed medical practitioner. Self-medication leads to the irrational use of drugs which is hazardous for health. The prevalence of self-medication is rapidly increasing worldwide. The present study aimed to ~~access~~ the pattern of self-medication among healthcare and non-healthcare students of Lahore, Pakistan.

**Methods:** A cross-sectional survey based study was conducted to evaluate the knowledge and attitude of medical and non-medical students towards self-medication. The study settings included different universities and medical colleges of Lahore, Pakistan. A total of 301 students from medical department and other disciplines were included in the study. A validated self-medication assessment questionnaire was used to evaluate the knowledge and pattern of self-medication among healthcare and non-healthcare students.

**Results:** The results of the present study presented that medical students are more aware of the potential adverse reactions of the self-medicated drug as compared to the non-medical students. Whereas, the trends of self-medication was slightly higher in healthcare students as compared to the non-healthcare students. Moreover, the frequency of antibiotic use was more frequent in medical students as compared to the non-medical graduation students. Whereas, the use of painkillers without prescription was more prevalent in non-medical students as compare to the medical students.

**Conclusion:** There is a significant difference in the knowledge of healthcare students and non healthcare students of Lahore, Pakistan. Although both healthcare and non healthcare students have high prevalence of self-medication but differences have been observed in case of drugs taken. Healthcare students practice self-medication more as compared to the non-healthcare students.

**KEYWORDS**: Antibiotics; Health-care students; Non-healthcare students; Painkillers, self-medication

**INTRODUCTION**

Self-medication is the process of taking medication without consulting the physician. Self medication is a common practice among the general populations all over the world. The people may take a medication to cure minor ailments which may affect their health[1].Self medication leads to “irrational use of drugs” which means the patient is taking medication that is inappropriate for his clinical needs and in doses that do not meet his requirement.

The Prevalence of self-medication is high all over the world i.e., about 68% in Europe, 92% in Kuwait, 31% in India and 59% in Nepal. Very few studies have been conducted in Pakistan and it has been confirmed that prevalence of self-medication in Pakistan is around 51%[2]**.**

Self-medication leads to the irrational use of drugs which is hazardous for health. The WHO defines self-medication as “use of over-the-counter (OTC) drugs to treat self diagnosed symptoms or the continuous use of previous prescription medication for current diseases. Self-medication is not done only in the form of medicines as tablets, capsules or syrups. Many people use herbs to cure themselves without any proper guidance. This leads to health problems[3].

Self-medication may be considered significant if done appropriately for mild ailments. WHO has introduced the term “responsible self-medication”. Responsible self-medication is the phenomenon of obtaining OTC drugs and taking them to treat minor ailments as directed. In this way self-medication proves to be beneficial for health[4]. It is considered a form of self care. OTC cessation products help people quit smoking, about 300,000 people avoid emphysema, lung cancer risk and stroke[5].

The non-healthcare students are not well informed of antibiotics as compared to healthcare students so they may take antibiotic as self-medication. The antibiotics acquired as self-medication is causing a major problem i.e. antimicrobial resistance. The students are unaware of the indication of antibiotic and may take it for minor or self limiting infections leading to pathogenic resistance[1].

The efficacy of antibiotic is greatly affected because of antimicrobial resistance. According to a survey of 2014, the mortality because of antimicrobial resistance in 700,000 and may increase to 10 million by 2050 if the inappropriate use of antibiotics is not corrected. Medical students may have a better attitude toward self medication because of their knowledge. Other student’s lack of knowledge leads to antibiotic misuse[6].

If self-medication is not appropriate, it may cause serious health problems.Taking OTC medications for minor ailments maybe beneficial for those whose problem is not so serious e.g. for a minor headache or a migraine, the students takes paracetamol. But if he took an inappropriate medication, it may have harmful effects by delaying a hospital visit or increasing the misuse of the drug[7].The OTC drugs stand for over-the-counter drugs and these are sold at pharmacy without a prescription. The availability of OTC drugs encourages the self-medication in a way. The OTC drugs are safe to use, they are used to treat minor to moderate illness and are very efficacious.

Two factors contribute to self medication i.e. economic reluctance and behavior of the population. The OTC drugs are easily available to public. In addition to that, some of the prescription drugs are also available without prescription in Pakistan. This is another major factor for increasing self-medication practices[8].

Self-medication with antibiotics is always inappropriate. No antibiotic should be taken without physician’s advice, the drug may be taken in inadequate dosage and the drug could be invalid for the presented indication which increases the risk of antimicrobial resistance[9].

The aim of this study is to determine of pattern of self-medication among healthcare and non-healthcare students.

**MATERIALS AND METHODS**

*Study approval, design & Settings and study subjects*

Ethical approval from Institutional Ethical Review Board and Bio-Ethical Committee (BEC) ofLahore Pharmacy College, LMDC was ~~attained~~ before conducting this study.

A cross-sectional survey based study was conducted to evaluate the knowledge and attitude of medical and non-medical students towards self-medication. The study settings included different universities and medical colleges of Lahore, Pakistan.

The Medical colleges had students that were studying in different professional years and belonged to different medical fields i.e. MBBS, BDS, Pharm-D and DPT. The non-healthcare students data was collected from universities that had students studying in Engineering, Business, Accountancy and Commerce.

The duration of the research was of 3 months approximately, from; June, 2022 to August, 2022.

*Inclusion & exclusion criteria*

The healthcare students studying in 1st, 2nd, 3rd, 4th and final professional year of medical sciences (MBBS, BDS, Pharmacy & Physiotherapy) belonging to different medical colleges, willing to particiate in this study were included. Moreover, the non-medical students of miscellaneous discipilines willing to participate in this study were included. However, the students with chronic illnesses taking drugs on regular basis were excluded from this study along with the students who were not willing to participate in this study.

*Study Sample*

The a-level was set at 5% and the confidence interval was set at 95% with 5% precision. Based on that assumption the number of subjects was 301 including male and female students from medical and non-medical colleges**.**

*Data collection method*

Data was collected from healthcare and non-healthcare students. A signed consent form was provided to the study subjects and data was collected after consent to participate. The questionnaire consisted of two parts, first one was demographic data and the second one dealt with the practice of self-medication.

Data collected from study participants was kept confidential in such a way that study subjects could not be identified. Assessment results were not disclosed to study subjects under evaluation. Written consent was obtained from students, prior to data collection. However, demographic data of the students was kept confidential.

*Data collection tool:*

The study tool: “Self-medication questionnaire” developed by Al-Wora*et al.*[10]was used to access theknowledge and attitude towards self-medication among students*.*

Three professors from clinical department revised the survey for validation of the contents. A pilot study was conducted to check survey reliability, it was administered to 10 faculties and 20 students and the study was repeated. Crohnbach’s alpha coefficient had a value of 0.73 so the questionnaire was eligible to be used in this study. We emailed the author and asked for permission to use his questionnaire and the permission was granted [10]**.**

*Statistical analysis*

The collected data were analyzed ~~by~~ usingStatistical Package for Social Sciences program software (SPSS Inc., version 21.0, IBM corp., Armonk, NY, USA). Descriptive and inferential statistics were applied to summarize outcome variables. Categorical variables were presented as percentages and frequencies whereas quantitative variables were demonstrated as mean and Standard Deviations (SD). To find factors, chi-square tests were appliedto calculate p-values. The*p-values<0.05* were considered statistically significant.

**RESULTS**

*Demographic Characteristics of Study Subjects:*

Table 1 demonstrates the demographic characteristics of the study subjects included in the present study. A total of 301 students were included belonging to different universities and colleges of Lahore, Pakistan.

**Table 1: Demographic characteristics of Study Subjects (N=301)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Total responses** | **Medical students N (%)**  **N=155** | **Non-Medical students N (%)**  **N=146** | **P value**\* |
| **Gender** | | | | |
| Male  Female | 137  164 | 51 (37.2)  104 (63.4) | 86 (62.8)  60 (36.6) | <0.001\* |
| **Age in years** | |  | | |
| 18-23 years  24 years or above | 224  77 | 118(52.7)  37 (48.1) | 106 (47.3)  40 (51.9) | 0.483 |
| **Area of living** | | | | |
| Urban  Rural | 229  72 | 124 (54.2)  31 (43.1) | 105 (45.9)  41 (56.9) | 0.982 |
| **Nearness to hospital** | | | | |
| 5-25 min  25-60 min  >60 min | 214  62  25 | 124 (57.9)  22 (35.5)  9 (36.0) | 90 (42.1)  40 (64.5)  16 (64.0) | 0.002\* |
| **Socio-economic status** | | | | |
| Lower class  Middle class  Upper class | 15  257  29 | 4 (26.7)  134 (52.1)  17 (58.6) | 11 (73.3)  123 (47.9)  12 (41.4) | 0.115 |
| **Level of Study** | | | | |
| 1st year  2nd year  3rd year  4th year  5th year  Intern year | 23  48  50  75  66  39 | 12 (52.2)  29 (60.4)  24 (48.0)  32 (42.7)  47 (71.2)  11 (28.2) | 11 (47.8)  19 (39.6)  26 (52.0)  43 (57.3)  19 (28.8)  28 (71.8) | 0.000\* |
| **Medical History** | | | | |
| Positive  Negative | 144  157 | 77 (53.5)  78 (49.7) | 67 (46.5)  79 (50.3) | 0.511 |
| **History of self medication** | | | | |
| Once  Twice  3 times  >4 times | 93  43  17  97 | 51 (54.8)  22 (51.2)  9 (52.9)  54 (55.7) | 42 (45.2)  21 (48.8)  8 (47.1)  43 (44.3) | 0.263 |

Chi square test\*

*Knowledge of Study Subjects towards self-medication:*

Table 2 demonstrates the knowledge of study subjects (students) towards self-medication. The results of the present study presented that medical students are more aware of the potential adverse reactions of the self-medicated drug as compared to the non-medical students.

**Table 2: Knowledge of study subjects towards self-medication:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Questions** | | **Medical students**  **N (%)**  **N=155** | **Non medical students N (%)**  **N=146** | **P-value** |
| Do you know the medicines you consumed need prescription or not? | Yes | 136(62.4) | 82(37.6) | <0.05\* |
| No | 19 (22.9) | 64(77.1) |
| Do you know the potential adverse reaction of the drug by which you self medicated? | Yes | 114(70.8) | 47(29.2) | <0.05\* |
| No | 41(29.3) | 99(70.7) |
| When you treat yourself with a medication, do you read the leaflet before using it? | Yes | 113(57.7) | 83(42.3) | <0.05\* |
| No | 42(40.0) | 63(60.0) |
| Do you prefer antibiotic obtained as self-medication? | Yes | 55(46.2) | 64(53.8) | 0.139 |
| No | 100(54.9) | 82(45.1) |
| Do you think self-medication is safe? | Yes | 49(41.9) | 68(58.1) | <0.05\* |
| No | 106(57.6) | 78(42.4) |
|

Chi square test\*

*Frequency towards self-medication:*

Table 3 presents the frequency of self-medication drugs. The study results that the frequency of antibiotic use was more frequent in medical students as compared to the non-medical graduation students. Whereas, the use of painkillers without prescription was more prevalent in non-medical students as compare to the medical students.

**Table 3: Frequency of Self-medicated drugs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Medical students**  **N (%)**  **N=155** | **Non-medical students N (%)**  **N=146** | **P-value\*** |
| Painkillers | 102 (50.5) | 53 (53.5) | 0.620 |
| Antibiotics | 42 (53.8) | 36 (46.2) | 0.629 |
| Anti-allergy | 39 (45.9) | 46 (54.1) | 0.222 |
| Drugs for fever | 68 (60.7) | 44 (39.3) | 0.014 |
| Anti-emetic | 27 (64.3) | 15 (35.7) | 0.074 |
| Cough syrup | 71 (53.4) | 62 (46.6) | 0.560 |
| Topical agent | 20 (66.7) | 10 (38.5) | 0.08 |
| Cold & Flu preparation | 38 (52.1) | 35 (47.9) | 0.912 |
| Drugs for constipation | 16 (61.5) | 10 (38.5) | 0.284 |
| Drugs for diarrhea | 14 (58.3) | 10 (41.7) | 0.485 |
| Nasal/Eye/Ear drops | 14 (45.2) | 17 (54.8) | 0.456 |

Chi square test\*

**DISCUSSION**

This study was conducted in Lahore among healthcare and non-healthcare students to assess their knowledge, attitude and practice towards self-medication. . This study can also serve as a baseline to assess the effectiveness of interventions, campaigns, and seminars on the judicious use of medications. About 97% of students were engaged in self-medication. These results are higher than the study conducted in Karachi University according to which 76% of the students self-medicated [2].Moreover, a study conducted in India showed the prevalence of self medication to be 76.3% [11]**.** A study conducted in Saudia Arabia in King Khalid University showed that 98.7% of students self-medicated[10].Another study conducted in Jordan showed the prevalence of self-medication among students to be 78.5% [4]**.**

The findings of this study presents that the medical students practiced self-medication more than non-medical students and this is partially explained by some of the variables such as the medical knowledge and exposure of the students, area of residence, availability of hospital facilities in their vicinity and their surroundings.The study conducted in Saudia Arabia showed that most commonly used drug classes as selfmedication by all students in the past 6 months were pain killers (81.4%), cold and flu preparations (29.4), antibiotics (28.2%), eye/nasal drops (26.7%), cough syrups (25.8%) and antipyretics (20.8%). Use of some of the drug classes were significantly higher among medical students such as painkillers (91.6%vs70.5%, p=0.000) and antihistamines (17.2 vs 9.8%, p= 0.014), whereas, the use of antibiotics (35.4 vs 21.5%, p=0.000), antipyretics (25.6 vs 16.4%, p=0.010) and appetizers (4.3 vs 0.7%, p=0.008) were higher with non-medical students[10]**.**The study conducted in karachi showed the pattern of self medication in students to be painkillers (88.3%), fever relieving medication (65.1%), anti-allergics (44.1%) and antibiotics (35.2%) were among the most commonly used drugs[2].

According to this study, 22.2% students self-medicated for headache, 19.2% for fever, 17.3% for cough and cold, 4.5% for infection, 14.9% for body pain, 3.0% for tooth pain, 3.1% students self-medicated for skin problems, 5.5% students had indications of GIT disorder.Headache (75.9%), cold (52.5.3%), fever (35.6%), body pain (24.6%) and tooth pain (22%) were the indications for which students self-medicated according to the study conducted in King Khalid University, Kingdom of Saudi Arabia[10]**.**

The current study reveals that the knowledge of healthcare students was better than non-healthcare students. 62.4% of healthcare students knew that a certain medication requires prescription or not whereas only 22.9%of non healthcare students knew about this. In addition to that, 70.8% of healthcare students knew the potential adverse effect of the medication that they took whereas only 29.3% of the non healthcare students knew the potential adverse effect. 41.9% of healthcare students considered self medication safe whereas 57.6% of non healthcare students considered self medication safe. This shows that the knowledge of medical students was better than non healthcare students. 53.8% of non health care students obtained antibiotic as self-medication which shows that they have poor knowledge about medicines.The findings of the study conducted in Saudia Arabia suggests that personal knowledge (51%), relatives (30%), pharmacists (26%) & friends (20%) were the sources of information about medicines[10].Other reasons such as quick relief (36.9%), cost of treatment (26.7%) and previous experience also play important reasons that drive the students towards self-medication.[10].Another study that was conducted in Nepal suggested that (25%)of respondents felt that the illness was too mild and did not require the services of a doctor. 19% of the respondents felt that they had previous experience of treating a similar illness and even if they go to a doctor they will be prescribed similar medications [12].

**CONCLUSION**

The findings of the present study conclude that there is a significant difference in the knowledge of healthcare students and non healthcare students of Lahore, Pakistan. Although both healthcare and non healthcare students have high prevalence of self-medication but differences have been observed in case of drugs taken. Healthcare students practice self-medication more as compared to the non-healthcare students.

**LIMITATIONS**

This is a single-center study, conducted in Lahore only. Due to which, the results cannot be generalized nationwide. Moreover, the sample size of the current study was not large. Comparatively greater sample size could have provided more accurate results.

**RECOMMENDATIONS**

Further studies with larger sample sizes should be conducted in other cities of Pakistan as well, to conclude these results nationwide.

**SOURCE OF FUNDING**

No grant or funding was received from any organization for this project.

**CONFLICT OF INTERESTS**

The authors have no conflict of interest.

**Author’s Contribution**

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**ABBREVIATION**

**OTC;** Over the Counter.

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