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Prevalence and Patterns of Self-Medication with Antibiotics among People Visiting Dental Clinic, Kabul, Afghanistan

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ABSTRACT

Background: Self-medication with antibiotics is a global public health issue particularly in developing countries where over 50% of antibiotics are dispensed over the counter. This class of drugs, which is the most important success of modern medicine, and saved millions of lives, is now losing its effectiveness owing to microbial resistance. It is an emergency alarm for developing countries which are in the top of morbidity and mortality list of infectious diseases. This study aimed to determine the prevalence and patterns of self-medication with antibiotics among people attending the Dental Teaching Clinic of Kabul University of Medical Sciences, Kabul, Afghanistan, in 2020.

Materials and Methods: A descriptive cross-sectional study was conducted among clients of the Dentistry Teaching Clinic of Kabul University of Medical Sciences. A census sampling method was used to select the participants for one month, November 2020. Data collection was done using a researcher-developed questionnaire to collect data on the prevalence and patterns of self-medication with antibiotics. Data were analyzed using IBM SPSS Statistics (Version 24).

Findings: The prevalence of self-medication with antibiotics was 30.1% in the past twelve months. The common reasons for self-medication with antibiotics were having a successful experience with medication, cost-saving, and lack of time. Toothache, sore throat, and cough were common health conditions that were self-medicated with antibiotics. Amoxicillin, metronidazole, and azithromycin were common antibiotics that were used for self-medication.

Conclusion: The prevalence of self-medication with antibiotics is high among people attending the Dental Teaching Clinic of Kabul University of Medical Sciences. Patterns of self-medication indicate the irrational practice of antibiotics.

Keywords: Self-Medication, Antibiotics, Dental Clinic, Microbial Resistance

INTRODUCTION

Self-medication (SM) refers to treating oneself without a prescription to address self-diagnosed symptoms or previously diagnosed chronic conditions (WHO, 2000). The World Health Organization (WHO) recommends SM if certain responsible conditions are met. These conditions include utilizing non-prescription, safe, quality medicines for health issues that can easily be self-diagnosed or have already been diagnosed by a doctor previously. Information should also be provided about properly using the medication (WHO, 1998).

Easy access to medications in emergency conditions, active involvement of patients in the management of minor health conditions, preventing from wasting of scarce resources of health facilities, saving money and time are among the many reasons for SM, to name a few (Noone and Blanchette, 2018). Despite having benefits, SM has many risks for patients and community, including; the wrong diagnosis, which may result in masking severe conditions and failure of medical treatment. Moreover, adverse effects, drug interaction, incorrect route of administration, inadequate dosage, independence, and choosing wrong medications are disadvantages of SM (WHO, 2009; Barros et al., 2020; Abduelkarem et al., 2019).

However, the practice of self-medicating with antibiotics (SMA) can result in more severe consequences mainly the microbial resistance due to inappropriate practice of medicines with SM (Rather et al. 2017). SMA is a significant concern for public health worldwide, especially in less developed nations where over 50% of antibiotics are dispensed without a prescription (Mukokinya et al., 2018; Al-Qahtani et al., 2018). This class of drugs, which is the most important success of modern medicine, and saved millions of lives, is now losing its effectiveness owing to microbial resistance (Rather at al., 2017). It is an emergency alarm for developing countries which are in the top of morbidity and mortality list of infectious diseases (Ocan et al., 2015).

Antibiotic resistance has emerged as one of the biggest public health threats globally and one of the primary contributors to the growing resistance is the overuse, misuse and unnecessary use of antibiotics (Ventola, 2015). A direct correlation has been established between antibiotic consumption and emergence of resistance in bacterial populations (Livermore, 2003). Studies show that when antibiotics are prescribed commonly in a geographic region, resistant strains of bacteria are more likely to emerge and spread in that area (Goossens et al., 2005).

To be specific, dentistry involves various procedures where antibiotics are prescribed frequently for infection prevention and treatment (Dar-Odeh et al., 2010). A survey of general dental practitioners in the UK reported that antibiotics were among the most commonly prescribed drugs (Thornhill et al., 2019). While antibiotic use in dentistry aims to reduce the risk of systemic infections after invasive procedures, in many cases they may not be absolutely needed (Thoudam et al., 2021). Over-prescription of antibiotics in dental care can promote the growth of resistant oral microflora (Patini et al., 2020).

It is crucial that dental professionals closely follow evidence-based guidelines for judicious antibiotic use (Majumder et al., 2020). Antibiotics must only be prescribed after carefully assessing the risk of infection based on factors like patient's medical history and nature of the planned procedure. Alternatives to antibiotics like good oral hygiene practices and use of antiseptics can help control infection in many low-risk cases (Stein et al., 2018). Effective communication between dentists and physicians can avoid duplicative or unnecessary antibiotic courses (Sherman et al., 2021).

Patients also have a role in ensuring rational antibiotic consumption. They must complete the full prescribed course and not stop medication earlier thinking symptoms have resolved (Ventola, 2015). Sharing

leftover antibiotics with others or self-medicating with old prescriptions can cultivate resistance in community reservoirs (Goossens et al., 2005). Dentists need to educate patients about antimicrobial stewardship and the consequences of indiscriminate antibiotic use (Bansal et al., 2019).

The rate of SMA was estimated by a systematic review to be 39% in developing countries (Ocan et al., 2015). This public health problem is not only limited to developing nations, but also report reveal that at least 19% of antibiotics used through SMA, globally (Al Akhali et al., 2013). While much literature reports SMA rates and patterns across various countries, evidence is lacking regarding the issue in Afghanistan. In this low-income country, infectious diseases account for 46% of the disease burden (Okeke et al., 2005). Therefore, evidence is needed to address the problem in the country and prevent a crisis of having no medication options to fight infectious diseases.

This study aims to determine the prevalence and patterns of SMA (reasons, health conditions, sources of recommendation and antibiotics used for self-medication) among individuals attending the Teaching Clinic of Kabul University of Medical Sciences, Kabul, Afghanistan in 2020. The finding of this study can help to strengthen policies at the national or hospital level. The evidence provided by this study on SMA has the potential to engage stakeholders, develop evidence-based guidelines, enhance regulatory measures, and implement education and awareness programs targeting both healthcare providers and the general public.

MATERIALS AND METHODS

Study setting

A descriptive cross-sectional study was conducted among dental patients visiting the Dental Teaching Clinic of Kabul University of Medical Sciences in Kabul, Afghanistan. This clinic is located at the Aliabad Teaching Hospital. Around 15 to 20 patients visit the clinic daily. Participants were individuals receiving dental services at the clinic during the month of November 2020.

Sample Size

Due to the small number of daily patients, census sampling technique was employed to select participants over the one-month period. The study proposal was approved by the research committee of Kabul University of Medical Sciences “Abu Ali Ibn Sina”. Before data collection, participants were informed about the aim of the study. Anonymity and confidentiality of responses was preserved. Collected data was securely stored. A researcher-developed questionnaire was used to collect data on the prevalence and patterns of self-medication with antibiotics (SMA) as well as socio-demographic factors like age, marital status, education, gender and income. The questionnaire was translated to Persian and content validity, clarity and understandability, relevance and appropriateness of the tool assessed by a panel of six professors at Kabul University of Medical Sciences.

Before data collection, to protect privacy, written informed consent was obtained after clearly explaining the purpose of data collection and use, participation being voluntary, and how responses will be kept anonymous. For literate respondents, the questionnaire was self-administered and from illiterate participants structured interviews were conducted. Data was collected on working days from Saturday to Wednesday November 2020.

Statistical Analysis

Before data entry, questionnaires were carefully check and cleaned for errors or anomalies. Data analysis involved descriptive statistics using IBM SPSS Version 24, including frequency tables to create frequency tables for socio-demographic characteristics, rate and pattern of SMA.

RESULTS

Characteristics of the participants

Three hundred nine people (> 10 years old) responded to the questionnaire. Most participants were female (66.3%), unemployed (74.8%), and had insufficient income for expenditure (77.7%). Most participants fell within the age range of 19 to 30 years (51.8%), and nearly half of them were married (49.5%). The highest number of participants was illiterate (39.5%) (Table 1).

Table 1: The participant's demographic and socio-economic attributes

Characteristics		**No (%)**
Gender	Male	104 (33.7)
	Female	205 (66.3)
Age Group	10 – 18	45 (14.6)
	19 – 30	160 (51.8)
	31 – 45	62 (20.1)
	46 – 60	32 (10.4)
	61 – 80	7 (2.3)
	80>	1 (0.3)
Marital Status	Single	151 (48.9)
	Married	153 (49.5)
	Widow	2 (0.6)
Education	Illiterate	122 (39.5)
	School	77 (24.9)
	Diploma	62 (20.1)
	Bachelor	46 (14.9)
Employment	Employed	37 (12)
	Unemployed	231 (74.8)
	Health-related Job	28 (9.1)
	Housework	11 (3.6)
	Retired	1 (0.3)
Income	Sufficient for expenditures	63 (20.4)
	Insufficient for expenditure	240 (77.7)

One year period prevalence and patterns of SMA

The prevalence of SMA found to be 30.1% in the past twelve months. The typical causes for SMA were familiarity with medication, cost-saving, and lack of time. Toothache, sore throat, and cough were common health conditions that were self-medicated with antibiotics. In 58.4% of cases, the pharmacy was the primary source of recommendation followed by having past successful experience (26.9%) and family member advice (12.4%). Amoxicillin (47%), metronidazole (10.1%), and azithromycin (9.2%) were common antibiotics that were used for self-medication (Table 2).

Table 2: Motives, medical conditions, referral origin, and types of antibiotics employed for self-administration of antibiotics

Reasons	Previous experience	36 (36.4)	N = 99 (100%)
	Cost-saving	34 (34.3)	
	Lack of time	13 (13.1)	
	Lack of access to physician	7 (7.1)	
	The mildness of disease or symptoms	4 (4.0)	
	Convenience	3 (3.0)	
	Absence of trust in physician	2 (2.0)	
Health conditions	Toothache	38 (30.9)	N = 123 (100%)
	Sore throat	36 (29.3)	
	Cough	8 (6.5)	
	Runny nose	8 (6.5)	
	Stomach problem	7 (5.7)	
	flu	6 (4.9)	
	Nasal congestion	6 (4.9)	
	Ear infection	4 (3.3)	
	Pain	3 (2.4)	
	fever	3 (2.4)	
	Skin problems	2 (1.6)	
	PID	2 (1.6)	
Sources of recommendation	Recommendation by pharmacist	52 (58.4)	N = 89 (100%)
	Previous experience	24 (27.0)	
	The opinion of family members	11 (12.4)	
	Opinion of friends	2 (2.2)	
Antibiotics used for self-medication	Amoxicillin	61 (51.3)	N = 119 (100%)
	Metronidazole	24 (20.2)	
	Azithromycin	19 (16.0)	
	Penicillin	9 (7.6)	
	Augmentin	6 (5.0)	

DISCUSSION

This study is the first targeting SMA among attendants of a dental clinic in Afghanistan and revealed the prevalence of SMA in the past 12 months was 30.1%. The most common reasons for SMA were familiarity with

the medication, cost-saving, and lack of time. The most common conditions that were self-medicated were toothache, sore throat, and cough. Pharmacies were the main source of antibiotic recommendation (58.4%), followed by past experience and family members. The most commonly used antibiotics were amoxicillin, metronidazole, and azithromycin.

The prevalence of SMA is high as 30.1%, which is consistent with a study among visitors of Central Polyclinic of Kabul and in a dental clinic of Saudi Arabia that reported the rates of SMA as 34.9% and 27%, respectively (Dar-Odeh et al., 2018; Negarandeh et al., 2021). However, it is not in line with cross-sectional studies in dental clinics of Eritrea and Saudi Arabia, which founded the rate as 45.1% (Ateshim et al., 2019) and 78.7% (Alghadeer et al., 2018), respectively. These differences may have been influenced by setting, sampling method, sample size, recall period and variation may be due to the differences in the laws and regulations on the dispensing of antibiotics and different socio-economic situations. Nonetheless, the prevalence of SMA in Afghanistan is still high. It is not surprising, because pharmacies in Afghanistan dispense all drugs like grocery stores.

Our study found that previous successful experience, cost-saving, and lack of time as the most common reasons behind SMA, which is consistent with other studies (Abduelkarem et al., 2019; Alfalogy et al., 2017; Nafisah et al., 2017; Ateshim et al., 2019). Sore throat, most of the time, is the result of a virus but, our research found the most prevailing health condition for which individuals resort to SMA. This indicates the inappropriate practice of antibiotics that can result to microbial resistance. Also, the inappropriate utilization implies a lack of information provided to individuals regarding medications. The pharmacy was the primary source of obtaining antibiotics in this survey. A study in developing countries found that pharmacies mostly managed by business people rather than professionals. Therefore, antibiotics dispensed quickly without prescription (Ansari, 2017). The pattern of SMA follows the model of other countries (Al Rasheed et al., 2016; Abduelkarem et al., 2019; Nepal and Bhatta, 2018).

Nonetheless, the prevalence of SMA is quite high. This indicates that antibiotic misuse in the community is a significant issue. This suggests measures need to be taken to educate the public on proper antibiotic use and the dangers of misuse. Access and affordability of healthcare consultations should also be improved. The common conditions which were self-medicated with antibiotics are often viral illnesses that do not require antibiotics. There is a need to communicate this to the public to reduce unnecessary antibiotic use. Pharmacies and the public need more education on appropriate antibiotic dispensing and use.

LIMITATION

However, it is important to exercise caution when generalizing the findings due to the limited sample size and the fact that the sample was drawn exclusively from one dental clinic relying on self-reported data.

CONCLUSION

Self-medication with antibiotics is widespread among individuals visiting the dental teaching clinic of Kabul University of Medical Sciences. The SMA patterns observed suggest an irrational approach to antibiotic usage. There is a need for policy change concerning antibiotics dispensing to restrict this medicine as prescription-only medicine. Besides, People should be educated on the disadvantages of SMA. High SMA prevalence highlights the need for public health strategies like awareness campaigns and antibiotic stewardship. Engaging pharmacies

and families is crucial. More research should be done in the country with significant sample size and various clinics. More multi-center studies can elucidate the nationwide situation.

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