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Original Research Article

Antibiotic self-medication-prevalence and trends among adults attending an urban health centre in South Kerala

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ABSTRACT

Background: Antibiotics acts as an essential tool, especially in the developing world where infectious diseases are the major cause of mortality. But widespread inappropriate use of antibiotics has been identified as the major reason for antimicrobial resistance. Objectives were to estimate the prevalence of antibiotic self-medication among adults attending an urban health centre in South Kerala and to assess the trends of antibiotic self-medication in the study group

Methods: This cross-sectional study was conducted among community dwelling adults attending the health centre which covers the urban field practice area of Pushpagiri institute of medical sciences, Tiruvalla. Data was collected using interviewer administered questionnaire from adults aged 18 years and above using consecutive sampling method

Results: Out of 236 participants, 138(58.5%) were females and 98 (41.8%) males. The mean age of the study population was 50.10±18.27 SD. Overall prevalence of antibiotic self-medication among the study group was 12.7%. In our study, age group ($p<0.001$), education ($p<0.001$) and socio-economic status ($p<001$) were significantly associated with antibiotic self-medication. The most common drug among study population was azithromycin (66.7%).

Conclusions: Even though the overall prevalence of antibiotic self-medication was low among community dwelling adults in South Kerala, higher rates were seen in a certain stratum of the population. The study necessitates the need for better understanding of the effects of antibiotic self-medication which can be done through effective strategies like behavior change communication and promoting further research into the cause and effects of antibiotic self-medication

Keywords: Antibiotics, Self-medication, Pattern of use

INTRODUCTION

In the impoverished world, where infectious diseases are the leading cause of death, antibiotics have a crucial role. But widespread inappropriate use of antibiotics has been identified as the major reason for antimicrobial resistance in India. Literature shows that worldwide human consumption of antibiotics have increased by 36% between 2000 and 2010.[1,2] Even though India is the largest antibiotic consumer in absolute volume the country does not have a formal program for surveillance of its antibiotic use.[2] Recent research indicates that, a variety of microbial organisms are involved in antibiotic

resistance, and the medications available to treat these new infections are limited.[3]

Self-medication as defined by the world health organization (WHO) 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 disease or symptoms. Antimicrobial resistance has numerous, intricate causes. Lack of adequate health services, improper use of antibiotics in humans and food animals, inadequate water and sewage systems, access issues, shortages in research and development for crucial health technologies, and environmental degradation are only a few of them.[4] The WHO has designated antimicrobial resistance, a public health priority and urged its member countries to take action. The 2015 resolution 'transforming our world: the 2030 agenda for sustainable development' emphasized the importance of dealing with rising antimicrobial resistance.

There is a scarcity of data on antibiotic use in Indian communities. Proper data from various sections of the country are required to aid in design and implementation of specific policies and interventions to avoid the emergence of antibiotic resistance. Therefore, this study aims to estimate the prevalence and pattern of antibiotic self-medication of community dwelling adults attending an urban health centre of medical college in South Kerala.

Objectives

The objectives were to estimate the prevalence of antibiotic self-medication among adults attending an urban health centre in South Kerala and to assess the pattern of antibiotic self-medication in the study group.

METHODS

Study design and participants

A cross sectional study was conducted for a period of six months from April 2022 to September 2022 at Urban health training centre (UHTC) of a tertiary care centre in Tiruvalla, Kerala. The study participants included adults aged more than 18 years attending UHTC Mathilbhagom which mainly consist of people residing at Tiruvalla municipality. Tiruvalla Municipality has a population of 53000, located in Pathanamthitta district in Kerala. Population density is 1948 person per square kilometre.

Inclusion criteria

Adults who aged above 18 years attending the UHTC Mathilbhagom, Tiruvalla, Kerala were included in study.

Exclusion criteria

Those who have severe physical illness/ non ambulatory, cannot comprehend/ answer questionnaire and those who are not willing to participate were excluded.

Sample size

Sample size was calculated considering the proportion of antibiotic self-medication (p) as 42% from previous study, confidence level (1-α) as 95%, absolute precision (d) as 15%.[5] The sample size was calculated using the following formula:

$$N=\frac{\{Z^2(1-\frac{\alpha}{2}\times p\ (1-p)\}}{d^2}$$

The sample size calculated was 236.

Measurement tools and methods

The study tool used was a structured questionnaire which was a modified version of antibiotic self-medication questionnaire used by Rajendran et al in their study conducted in an urban area of Ernakulam district in Kerala.[6] The questionnaire was piloted and all questions were simplified for better understanding. The final questionnaire required between 3 and 5 min to complete. The questionnaire consists of two parts:

Part A to find the prevalence of antibiotic self-medication during the 6 months preceding the survey part B to assess the pattern of antibiotic use, which was administered only to those who said yes to antibiotic self-medication in part A of questionnaire. Information on sources of medication, reasons, and habits of self-medication was collected.

Study procedure

Institutional ethics committee approval was obtained before start of data collection. Data was collected using interviewer administered questionnaire from adults aged 18 years using consecutive sampling method. No identifying or sensitive information was collected.

Statistical analysis

Data obtained was coded and entered into Microsoft excel and analyzed using SPSS software. Shapiro-Wilk test was done for testing normality. Quantitative variables were summarized using mean and standard deviation and qualitative variables using proportion and percentages. Association between various qualitative variables will be assessed using chi square test.

RESULTS

Socio demographic characters of the study sample

Out of 236 participants, 138 (58.5%) were females and 98 (41.8%) males. The mean age of the study population was 50.10±18.27 SD. Among the participants 110 (46.6%) had education above high school, 29 (12.3%) had professional occupation, 91 (38.6) were unemployed. The 166 (70.3%) belonged to above poverty line and 70 (29.7%) to below poverty line.

Results by primary objectives

Overall prevalence of antibiotic self-medication among the study group was 12.7%. Among the participants who practices self-medication, prevalence of self-medication was higher among age group less than 50 years 22 (73.3%). The prevalence of SMA (self medication with antibiotics) was higher in females 21 (70%) compared to males 9 (30%). Regarding the education, SMA was seen more among participants having education above high school 23 (76.7%) compared to below high school 07 (23.3%). Professionals showed a higher tendency to practice self-medication 22 (73.3%). Generally, prevalence of SMA was higher in above poverty line (APL) category 27 (90%) than in below poverty line 3 (10%). A statistically significant association was found between prevalence of SMA and age group of study sample ($p<0.001$), prevalence of SMA and education ($p<0.001$), prevalence of SMA and SES ($p<0.01$). No Statistically significant association was found between gender and occupation.

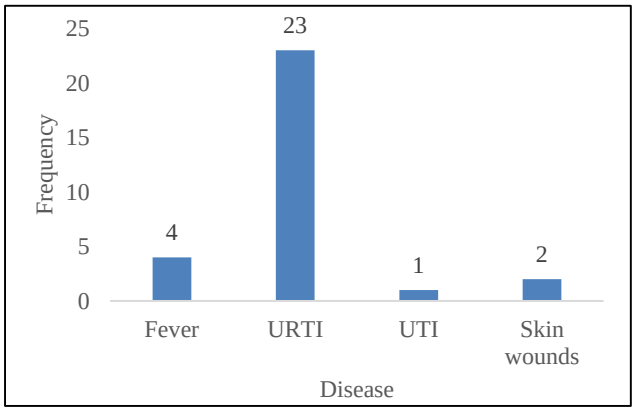

Figure 1: Distribution of conditions associated with self-medication.

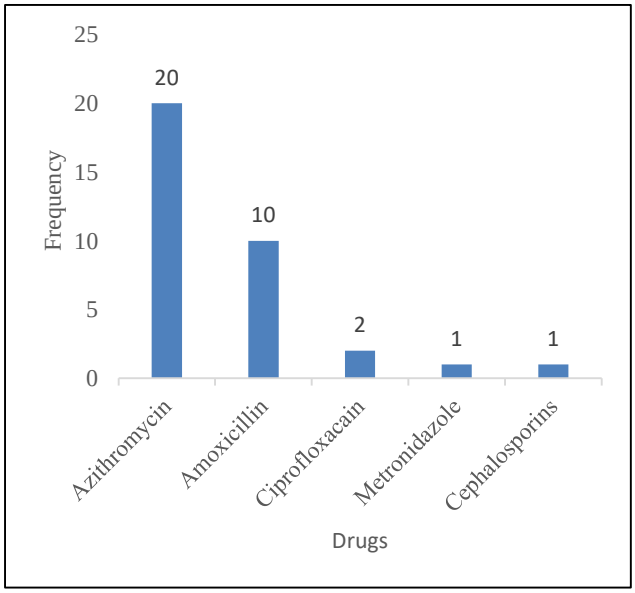

Figure 2: Antibiotics used for self-medication.

Trends

Results showed that more number of people took medication for URTI symptoms 23 (76.7%) followed by fever 4 (13.3%) and skin wounds 2 (6.7%). The main source of antibiotics was from community pharmacies 28 (93.3%), while 2 (6.7%) obtained the drugs from previous prescriptions. The most common drug used among study population was azithromycin 20 (66.7 %) followed by amoxicillin 10 (33.3%), ciprofloxacin 2 (6.6%), cefixime 1 (3%) and metronidazole 1 (3%). Regarding the number of drugs consumed in the course of illness, 26(86.7%) people consumed single drug while 4 (13.3%) took multiple drugs for a particular illness. Most of the participants selected the antibiotics based on doctor's previous prescription 15 (50%), followed by own experience 7(23.3%), opinion of family members 6(20%), recommendation of pharmacists 1 (3.3%) and opinion of friends 1 (3.3%). Regarding the habit of checking instructions on the package before taking medicine, 21(70%) participants replied "sometimes" while 5 (16.7%) replied always. The 4 (13.3) % said that they never checked the instructions. 20 (66.7%) participants stopped the antibiotics after completion of course while 10 (33.3%) stopped after symptoms disappeared. The main reason for self-medication according to participants was convenience 22 (73.3%). Majority of participants 26 (86.7%) admitted the SMA is not an acceptable practice.

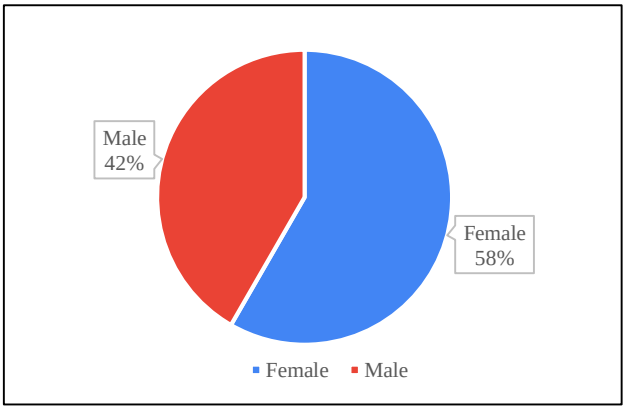

Figure 3: Gender distribution of the study group.

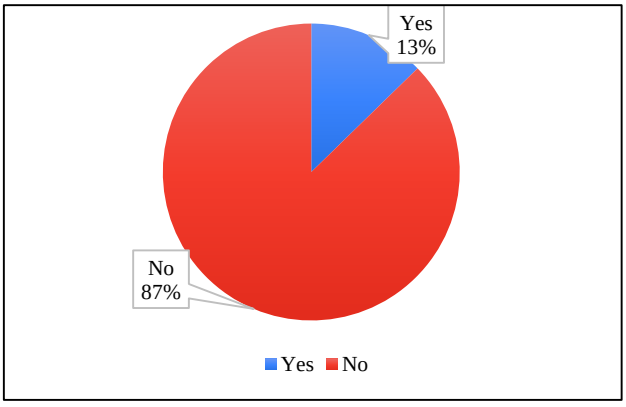

Figure 4: Prevalence of antibiotic self-medication.

Table 1: Educational qualification of the study group.

Education	Frequency (%)
Graduate	49 (20.8)
intermediate/ diploma	61 (25.8)
High school	84 (35.6)
Middle school	21 (8.9)
Primary school	17 (7.2)
Illiterate	4 (1.7)

Table 2: Pattern of antibiotic self-medication.

Basis of selecting antibiotics	Frequency (%)
Doctor's previous prescription	15 (50.0)
Opinion of family members	6 (20.0)
Opinion of friends	1 (3.3)
Own experience	7 (23.3)
Recommended by pharmacists	1 (3.3)

Table 3: Reasons for antibiotic self-medication.

Reasons for antibiotic self-medication	Frequency (%)
Convenience	22 (73.4)
Cost saving	1 (3.3)
Minor illness	4 (13.3)
Lack of time	2 (6.7)
Others	1 (3.3)

Table 4: Factors associated with antibiotic self-medication.

Variables	Antibiotic self-medication, (%)		Chi square value	P value
	Yes	No		
	30 (12.7)	206 (87.3)		
Age group (≤50 years vs >50 years)	22 (19.30)	92 (80.70)	8.622	0.005
Educational status (high school vs above high school)	33 (20.90)	87 (79.10)	12.47	0.001
Socio economic status (APL vs BPL)	27 (16.30)	139 (83.70)	6.368	0.01

DISCUSSION

According to our study the prevalence of antibiotic self-medication in South Kerala is 12.7%. This low prevalence rate is comparable to other global studies and another study conducted in central Kerala which shows 3.3%.[6-8] But there are studies from different parts of India which shows higher prevalence rate.[5,9] Differences in social determinants of health, tradition, culture, economic level, and developmental status may be the main causes of the wide diversity in the prevalence of the practice of self-medication. In our study, self-medication practices were more among people with higher education, professional occupation and higher socio-economic status. A similar trend was shown in a study by Rajendran et al in Kerala.[6] This may be due to higher fiscal capacity and accessibility of drug among higher socio economic class. In our study age group ($p<0.001$), education ($p<0.001$) and socio-economic status ($p<001$) were significantly associated with antibiotic self-medication.

From the findings of our study, it can be identified that the most common antibiotic used is Azithromycin a macrolide, following which is Amoxicillin. Similar trend was seen a study conducted in India.[10] But from other regions of WHO Southeast Asia Region, it can be seen that amoxicillin is the most commonly used, then only followed by macrolides.[5] This can be attributed to the fact that in since azithromycin is one of the antibiotics prescribed preliminarily, more people are aware of the medicine. Most of the times, only a single class of antibiotics are consumed by the participants in our study. A major fraction of the study participants took antibiotics for symptoms prevailing to URTI in our study.[6] Trends from Nepal, Indonesia and Bangladesh also are similar.[5] Our results showed community pharmacies is the largest provider (93.3%) of antibiotics, and the rest from previous prescriptions which are comparable to other studies from subcontinent.[11,6] Leftover drugs, are the source of drugs in the study by Nepal et al.[5] The 70% of our study participants responded that the sometimes check the package before consuming the medication. Completion of the medicine, followed by disappearing of symptoms are the most common reason for stopping the medicine in our study and Study from Kerala, whereas disappearance of symptoms remains the first reason on a more global scenario.[6] Convenience is the reason given by the participants for self medication in our study group, and from Central Kerala.[6] More than 80% of participants did say that self medication is not acceptable. Similar attitude have been reported in studies from Asmara and Kerala.[6,12]

Limitation

The main limitation of the study is that it was conducted in a hospital setting. So may not be able to fully reflect the antibiotic usage and pattern in the general population. An interviewer administered questionnaire was used to collect data for the previous six months, which may have caused recall bias.

CONCLUSION

In the present study the prevalence of antibiotic self-medication was found to be 12.7% and was greater among educated and professional groups. Our study

throws light into the increasing irrational antimicrobial use among the public, especially among the educated group which is a major driving force for antimicrobial resistance and increased mortality and morbidity due to the same. The study thus necessitates the need for better understanding of the effects of antibiotic self-medication which can be done through effective strategies like behavior change communication and promoting further research into the cause and effects of antibiotic self-medication. For this numerous-stakeholders beginning at community level should be engaged and an effective antibiotic policy statement should be established by the government.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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