

Knowledge, Attitude, and Practice (KAP) Regarding Antibiotic Use and Antimicrobial Resistance Among General Population

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Abstract

Background:

Antimicrobial resistance (AMR) has emerged as a major global public health challenge mainly due to irrational and inappropriate use of antibiotics. Public knowledge, attitude, and practices regarding antibiotic use play an important role in controlling antimicrobial resistance.

Objectives:

To assess the knowledge, attitude, and practices (KAP) regarding antibiotic use and antimicrobial resistance among the general population and to determine the association between socio-demographic factors and knowledge regarding AMR.

Methodology:

A community-based cross-sectional study was conducted among 160 adults residing in the urban field practice area of a tertiary care teaching hospital. Participants aged 18 years and above were selected using simple random sampling. Data were collected using a predesigned and pretested semi-structured questionnaire. Statistical analysis was performed using SPSS version 25, and Chi-square test was applied for assessment of associations.

Results:

Among 160 participants, 45.0% had good knowledge regarding antibiotic use and antimicrobial resistance. About 43.1% participants were aware of AMR, while 38.1% practiced self-medication with antibiotics. Educational status showed significant association with knowledge regarding AMR ($p=0.021$). Self-medication practices were significantly higher among males ($p=0.014$).

Conclusion:

Despite moderate awareness and positive attitude toward antibiotic use, inappropriate antibiotic practices were common among the study population. Community awareness programs and strict regulation of antibiotic sales are essential to combat antimicrobial resistance.

Keywords: *Antibiotics; Antimicrobial resistance; Knowledge attitude practice; Self-medication; Community health; Public awareness.*

Introduction

Antibiotics are among the most significant discoveries in modern medicine and have played a crucial role in reducing morbidity and mortality associated with infectious diseases. However, irrational and inappropriate use of antibiotics, including self-medication,

incomplete treatment courses, and unnecessary prescriptions, has contributed substantially to the emergence of antimicrobial resistance (AMR). AMR is now recognized as a major global public health threat, leading to prolonged illness, increased healthcare expenditure, treatment failure, and higher mortality rates. ^(1,2) The World

Health Organization (WHO) has emphasized that misuse and overuse of antibiotics in both humans and animals are key drivers of resistance, particularly in low- and middle-income countries where over-the-counter access to antibiotics is common. ⁽³⁾

Public knowledge, attitude, and practices regarding antibiotic use significantly influence the development and spread of AMR. Lack of awareness about the proper indications for antibiotic therapy and misconceptions regarding their effectiveness against viral infections have been reported widely among the general population. ⁽⁴⁾ In India, easy availability of antibiotics without prescription, poor adherence to treatment regimens, and inadequate public awareness further aggravate the problem. ⁽⁵⁾ Assessing the knowledge, attitude, and practices (KAP) of the general population regarding antibiotic use and antimicrobial resistance is therefore essential for planning effective educational interventions and strengthening antimicrobial stewardship programs. ⁽⁶⁾

Objectives

Primary Objective

1. To assess the knowledge, attitude, and practices regarding antibiotic use and antimicrobial resistance among the general population.

Secondary Objectives

2. To evaluate the level of awareness about appropriate antibiotic usage among study participants.
3. To identify common practices related to self-medication and antibiotic consumption.
4. To assess the attitude of the general population toward completion of antibiotic courses and physician consultation before antibiotic use.
5. To determine the association between socio-demographic factors and knowledge regarding antimicrobial resistance.

MATERIALS AND METHODOLOGY

Study Design

The study was conducted as a community-based cross-sectional descriptive study.

Study Setting

The study was carried out among the general population residing in the urban field practice area attached to the Department of Community Medicine of a tertiary care teaching hospital.

Study Duration

The study was conducted over a period of 3 months from June 2025 to August 2025.

Study Population

Individuals aged 18 years and above residing in the study area during the study period were included in the study.

Inclusion Criteria

- Individuals aged ≥ 18 years.
- Individuals who provided informed written consent for participation.

Exclusion Criteria

- Healthcare professionals and medical students.
- Individuals who were seriously ill or unable to respond to the questionnaire.

Sample Size

The sample size was calculated using the formula:

$$n = \frac{4pq}{L^2}$$

Where:

- p = prevalence of adequate knowledge regarding antibiotic use among the general population. A previous study reported prevalence as 50%. ⁽⁷⁾
- $q = 100 - p = 50$
- L = allowable error taken as 8%.

$$n = \frac{4 \times 50 \times 50}{8^2}$$

$$n = \frac{10000}{64} = 156.25$$

Thus, the minimum sample size was calculated to be 156. Considering feasibility and non-response, a total of 160 participants were included in the study.

Sampling Technique

A simple random sampling method was used for selection of participants from the study area. Eligible individuals were approached house-to-house until the required sample size was achieved.

Data Collection Procedure

Participants were interviewed personally after obtaining informed written consent. Confidentiality and anonymity of the participants were maintained throughout the study. Adequate explanation regarding the purpose of the study was provided before data collection.

Statistical Analysis

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) software version 25. Association between categorical variables was assessed using Chi-square test. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

Approval from the Institutional Ethics Committee was obtained prior to commencement of the study. Written informed consent was obtained from all participants.

RESULTS

A total of 160 participants were included in the study. The mean age of the study participants was 36.8 ± 12.4 years. Majority of the participants belonged to the age group of 21–40 years (46.9%). Males constituted 55.0% of the study population. Most of the participants had completed secondary education or above (68.1%).

Table 1: Socio-demographic Characteristics of Study Participants (n=160)

Variable	Frequency (n)	Percentage (%)
Age Group (years)		
18–20	18	11.3
21–40	75	46.9
41–60	49	30.6
>60	18	11.3
Gender		
Male	88	55.0
Female	72	45.0
Education Status		
Illiterate	14	8.8
Primary School	37	23.1
Secondary School	62	38.8
Graduate and Above	47	29.4
Occupation		
Unemployed/House wife	44	27.5
Laborer	36	22.5
Service/Business	58	36.3
Student	22	13.7

Table 2: Knowledge Regarding Antibiotic Use and Antimicrobial Resistance

Knowledge Variables	Correct Response n (%)
Heard about antibiotics	126 (78.8)
Knew antibiotics are used for bacterial infections	92 (57.5)
Incorrectly believed antibiotics cure viral infections	74 (46.3)
Aware about antimicrobial resistance	69 (43.1)
Knew incomplete antibiotic course causes resistance	101 (63.1)
Knew antibiotics should be taken only on doctor's advice	118 (73.8)

Table 3: Attitude Toward Antibiotic Use

Attitude Variables	Frequency n (%)
Believed antibiotics speed up recovery from common cold	70 (43.8)
Felt leftover antibiotics can be reused	52 (32.5)
Believed physician consultation is necessary before antibiotic use	122 (76.3)
Agreed misuse of antibiotics is harmful	129 (80.6)

Table 4: Practices Related to Antibiotic Use

Practice Variables	Frequency n (%)
Self-medication with antibiotics in past 6 months	61 (38.1)
Purchased antibiotics without prescription	56 (35.0)
Completed full course of antibiotics	104 (65.0)
Stopped antibiotics after symptom relief	48 (30.0)
Shared antibiotics with family members	29 (18.1)

Table 5: Overall KAP Score Among Participants

Category	Frequency (n)	Percentage (%)
Good Knowledge	72	45.0
Poor Knowledge	88	55.0
Positive Attitude	98	61.3
Negative Attitude	62	38.7
Good Practice	86	53.8
Poor Practice	74	46.2

Table 6: Association Between Education Status and Knowledge Regarding Antimicrobial Resistance

Education Status	Good Knowledge n (%)	Poor Knowledge n (%)	Total	p-value
Illiterate/Primary	18 (35.3)	33 (64.7)	51	
Secondary School	27 (43.5)	35 (56.5)	62	
Graduate & Above	27 (57.4)	20 (42.6)	47	0.021*

*Statistically significant

Table 7: Association Between Gender and Self-Medication Practice

Gender	Self-medication Present n (%)	Self-medication Absent n (%)	Total	p-value
Male	41 (46.6)	47 (53.4)	88	
Female	20 (27.8)	52 (72.2)	72	0.014*

*Statistically significant

Table 8: Association Between Awareness About AMR and Completion of Antibiotic Course

Awareness About AMR	Completed Course n (%)	Did Not Complete n (%)	Total	p-value

Aware	56 (81.2)	13 (18.8)	69	
Not Aware	48 (52.7)	43 (47.3)	91	<0.001*

*Statistically significant

DISCUSSION

The present study assessed the knowledge, attitude, and practices regarding antibiotic use and antimicrobial resistance among the general population. In the current study, 45.0% participants demonstrated good knowledge regarding antibiotics and antimicrobial resistance. Similar findings were reported in a recent study conducted in West Bengal, where 35.9% participants had adequate knowledge regarding antibiotic use. ⁽⁸⁾ Another study from Nepal also observed moderate awareness regarding rational antibiotic usage among the community population. ⁽⁷⁾ The comparatively low level of knowledge in the present study may be attributed to inadequate public health education and easy over-the-counter availability of antibiotics.

In the present study, 43.1% participants were aware of antimicrobial resistance, while 46.3% incorrectly believed that antibiotics are useful for viral infections. Comparable findings were observed in studies conducted in India and other developing countries where misconceptions regarding antibiotic effectiveness against viral illnesses were common. ^(9,10) Such misconceptions contribute significantly to irrational antibiotic consumption and emergence of resistant microorganisms. The World Health Organization has repeatedly emphasized that inappropriate antibiotic use remains one of the major drivers of antimicrobial resistance globally. ⁽³⁾

The present study found that 38.1% participants practiced self-medication with antibiotics, and 35.0% purchased antibiotics without prescription. Similar observations were reported by Kotwani et al. in India, who highlighted widespread irrational antibiotic use and non-prescription sales. ⁽⁵⁾ A recent cross-sectional study from Bihar also documented self-medication practices among nearly one-third of respondents. ⁽¹¹⁾ These findings indicate the persistent problem of unrestricted antibiotic accessibility and lack of strict regulatory implementation in developing countries.

Regarding attitude toward antibiotic use, majority of participants in the present study

believed that physician consultation was necessary before taking antibiotics and agreed that misuse of antibiotics is harmful. Similar positive attitudes were observed in studies conducted in Kerala and Delhi NCR. ^(12,13) However, despite relatively positive attitudes, inappropriate practices such as incomplete antibiotic courses and sharing medications among family members were still prevalent. This highlights the gap between knowledge and actual practice.

A statistically significant association was observed between educational status and knowledge regarding antimicrobial resistance in the current study ($p=0.021$). Participants with higher educational status demonstrated better awareness regarding rational antibiotic use.

Conclusion

The present study revealed moderate knowledge and relatively positive attitude regarding antibiotic use and antimicrobial resistance among the general population; however, inappropriate practices such as self-medication, purchasing antibiotics without prescription, and incomplete antibiotic courses were still commonly observed. Educational status showed significant association with knowledge regarding antimicrobial resistance. The findings highlight the need for community-based awareness programs, strict regulation of over-the-counter antibiotic sales, and strengthening of antimicrobial stewardship initiatives to promote rational antibiotic use and reduce the burden of antimicrobial resistance.

Limitations

The study was conducted in a limited geographical area with a relatively small sample size; therefore, the findings may not be generalized to the entire population. As the study was questionnaire-based, responses were dependent on participants' recall and honesty, which could have introduced recall and response bias. Additionally, being a cross-sectional study, causal relationships between variables could not be established.

Author contribution

All authors have contributed equally

Conflict of Interest

Nil

Source of Funding

Nil

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