ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26mar135

Public Perception and Practice About Antibiotic Resistance Among Rural Population: A Community Based Cross Sectional Study in Rural Tamil Nadu, India

Dr. Arun Murugan S.[1]; Dr. Kavitha[2]; Dr. Jeyalakshmi[3]; Dr. Agilan N. R. R.[4]

[1]Head of Department, Department of Community Medicine, Omandurar Govt Estate, Chennai, India
[2,3]Assistant Professor, Department of Community Medicine, Omandurar Govt Estate, Chennai, India
[4]Compulsory Rotatory Medical Intern (CRMI), Department of Community Medicine, Omandurar Govt Estate, Chennai, India

Publication Date: 2026/03/10

Abstract

- ***Background:***
Antimicrobial resistance is a growing global threat to public health, driven by inappropriate antibiotic use and limited public awareness. Understanding knowledge, attitudes and practices (KAP) in rural communities is essential to design targeted interventions.

- ***Objectives:***
To assess knowledge, attitude and practice regarding antibiotics and antibiotic resistance among rural population in rural Tamil Nadu, India.

- ***Methods:***
A WHO style public awareness questionnaire was used to perform a community-based cross-sectional survey. Responses from 207 participants were analysed (descriptive statistics; chi-square test for associations : $p<0.05$ considered as significant).

- ***Results:***
Mean age was 46.3 ± 16.8 years, 51.7% were female. Overall, 53.6% had heard the term "antibiotic resistance". Correct knowledge was lowest for statements that antibiotics do not work for colds/flu (29.0%) and that incomplete courses can lead to resistance (30.0%). Most respondents had poor knowledge scores (0–2 correct answers) (53.1%), while 4.3% had good knowledge (≥5 correct). Self-medication behaviours were common: 34.3% agreed they had purchased antibiotics without a prescription and 33.3% agreed they had taken antibiotics recommended by others. In multiple-response items, common sources of antibiotics included pharmacies without prescription (27.5%) and leftover antibiotics (27.5%). No statistically significant associations were observed between awareness/knowledge and education level in chi-square testing ($p>0.05$).

- ***Conclusions:***
Knowledge regarding appropriate antibiotic use and AMR was suboptimal, and potentially risky practices were frequent in this rural sample. Community-based awareness and pharmacy-focused stewardship interventions are needed.

Keywords: *Antibiotics; Antimicrobial Resistance; Knowledge Attitude Practice; Rural; Tamil Nadu; India.*

How to Cite: Dr. Arun Murugan S.; Dr. Kavitha; Dr. Jeyalakshmi; Dr. Agilan N. R. R. (2026) Public Perception and Practice About Antibiotic Resistance Among Rural Population: A Community Based Cross Sectional Study in Rural Tamil Nadu, India. *International Journal of Innovative Science and Research Technology*, 11(3), 114-119. https://doi.org/10.38124/ijisrt/26mar135

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26mar135

I. INTRODUCTION

Antimicrobial resistance endangers the effective prevention and treatment of infections and is recognized as a major global health challenge. The World Health Organization (WHO) has highlighted that misconceptions about antibiotics—such as using them for viral illnesses—contribute to inappropriate use and accelerate resistance. India faces a substantial AMR burden and has expanded national surveillance initiatives (e.g., NARS-Net) to monitor resistance trends. However, inappropriate antibiotic access and self-medication remain common, particularly in settings with easy over-the-counter availability.

Public knowledge, attitudes and practices influence antibiotic demand, adherence and sharing of medicines. Rural populations may have additional barriers including limited access to reliable health information and variable health literacy. Measuring community KAP helps identify gaps and informs behaviour-change interventions tailored to local context.

This study aimed to assess knowledge, attitude and practice regarding antibiotics and antibiotic resistance among rural population in rural Tamil Nadu, India.

II. MATERIALS AND METHODS

Study design and setting: Community based cross sectional study is conducted among the rural population in Tamil Nadu, India (around Chennai). Data were collected between June 2025 and August 2025.

Participants and sampling: Adults from the rural community were invited to participate using convenience sampling. A total of 207 complete responses were included in analysis.

Study tool: The questionnaire was based on WHO public awareness items, including knowledge statements (True/False/Don't know) and attitude/practice items (Agree/Disagree/Don't know), along with antibiotic use history and multi-response items (sources/reasons/information sources).

Operational definitions: Knowledge score was computed from seven statements, awarding 1 point is for each correct response and 0 is for incorrect/don't know (range 0–7). Knowledge was categorized as poor (0–2), moderate (3–4), good (5–7).

Statistical analysis: Data were analysed using SPSS-style procedures. Descriptive statistics were reported in the form of frequency and percentage. The chi-square test was used to analyse associations between categorical variables. A p value <0.05 was considered statistically significant with 95% confidence.

Ethical considerations: Participation was voluntary with informed consent obtained at the start of the survey. Responses were anonymous and no personal identifiers were collected.

III. RESULTS

Participant characteristics are shown in Table 1. The mean age was 46.3±16.8 years and females comprised 51.7% of respondents. More than half (53.6%) had heard the term "antibiotic resistance".

Knowledge: Correct responses across knowledge statements ranged from 29.0% to 44.0% (Table 2). Overall, 53.1% had poor knowledge scores, 42.5% moderate knowledge and only 4.3% good knowledge (Figure 3).

Attitudes and practices: Risky practices were frequent. About one-third agreed that they purchased antibiotics without prescription and used antibiotics recommended by others (Table 3–4). In multi-response items, pharmacies without prescription and leftover antibiotics were common antibiotic sources (Table 5 and Figure 4).

Association testing: No statistically significant associations were observed between awareness/knowledge variables and education level ($p>0.05$) in chi-square tests (Table 8).

Table 1 Sociodemographic Characteristics of Participants (n=207)

Characteristic	Value
Age (years), mean ± SD	46.3 ± 16.8
Age group: 31–45	60 (29.0%)
Age group: >60	53 (25.6%)
Age group: 46–60	49 (23.7%)
Age group: ≤30	45 (21.7%)
Gender: Female	107 (51.7%)
Gender: Male	100 (48.3%)
Education level: Higher Secondary	41 (19.8%)
Education level: Primary	35 (16.9%)
Education level: Illiterate	34 (16.4%)
Education level: Postgraduate	34 (16.4%)
Education level: Secondary	32 (15.5%)
Education level: Graduate	31 (15.0%)
Occupation: Farmer	43 (20.8%)

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26mar135

Occupation: Student	41 (19.8%)
Occupation: Labourer	33 (15.9%)
Occupation: Engineer	32 (15.5%)
Occupation: Housewife	30 (14.5%)
Occupation: Shopkeeper	22 (10.6%)
Occupation: Private employee	3 (1.4%)
Occupation: Driver	1 (0.5%)
Occupation: Retired	1 (0.5%)
Occupation: Skilled worker	1 (0.5%)

Table 2 Correct Responses to Knowledge Statements about Antibiotics and Antibiotic Resistance (n=207)

Knowledge statement	Correct response	Correct n (%)
Antibiotics are effective against viruses	False	65 (31.4%)
Antibiotics work against colds and flu	False	60 (29.0%)
Taking antibiotics unnecessarily can cause them to become ineffective	True	78 (37.7%)
Antibiotic resistance occurs when your body becomes resistant to antibiotics	False	76 (36.7%)
Resistant bacteria can spread from person to person	True	91 (44.0%)
If I don't complete the full course of antibiotics, resistance may develop	True	62 (30.0%)
Healthy people can carry antibiotic-resistant bacteria	True	68 (32.9%)

Table 3 Antibiotic Use, Awareness and Selected Practices (n=207)

Indicator	Value
Taken antibiotics in past 6 months (Yes)	81 (39.1%)
Heard the term “antibiotic resistance” (Yes)	111 (53.6%)
Purchased antibiotics without prescription (Agree)	71 (34.3%)
Took antibiotics recommended by others (Agree)	69 (33.3%)
Stopped antibiotics before completion (Agree)	56 (27.1%)

Table 4 Distribution of Responses to Attitude and Practice Items (n=207)

Item	Response	n (%)
I trust my doctor to decide whether I need antibiotics.	Agree	89 (43.0%)
I trust my doctor to decide whether I need antibiotics.	Disagree	67 (32.4%)
I trust my doctor to decide whether I need antibiotics.	Don't know	51 (24.6%)
I would take antibiotics if I had a cold, just to be safe.	Agree	81 (39.1%)
I would take antibiotics if I had a cold, just to be safe.	Disagree	64 (30.9%)
I would take antibiotics if I had a cold, just to be safe.	Don't know	62 (30.0%)
I would stop antibiotics once I feel better, even if not finished.	Agree	74 (35.7%)
I would stop antibiotics once I feel better, even if not finished.	Disagree	69 (33.3%)
I would stop antibiotics once I feel better, even if not finished.	Don't know	64 (30.9%)
It's okay to use leftover antibiotics for a similar illness.	Agree	88 (42.5%)
It's okay to use leftover antibiotics for a similar illness.	Disagree	62 (30.0%)
It's okay to use leftover antibiotics for a similar illness.	Don't know	57 (27.5%)
Have you ever purchased antibiotics without a prescription?	Agree	71 (34.3%)
Have you ever purchased antibiotics without a prescription?	Disagree	62 (30.0%)
Have you ever purchased antibiotics without a prescription?	Don't know	74 (35.7%)
Have you ever taken antibiotics someone else recommended or gave you?	Agree	69 (33.3%)
Have you ever taken antibiotics someone else recommended or gave you?	Disagree	76 (36.7%)
Have you ever taken antibiotics someone else recommended or gave you?	Don't know	62 (30.0%)
Have you ever stopped taking antibiotics before completing the course?	Agree	56 (27.1%)
Have you ever stopped taking antibiotics before completing the course?	Disagree	82 (39.6%)
Have you ever stopped taking antibiotics before completing the course?	Don't know	69 (33.3%)

Table 5 Sources of Antibiotics (Multiple Response; Top Selections)

Source	n	% of Respondents (Answered)
Pharmacy without prescription	57	27.5
Leftover from earlier	57	27.5
Doctor prescription	52	25.1
Friend/family	45	21.7

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26mar135

Other	2	1.0

Table 6 Reasons for Antibiotic Use (Multiple Response; Top Selections)

Reason	**n**	**% of Respondents (Answered)**
Sore throat	131	63.3
Cold/flu	118	57.0
Fever	80	38.6
Infection (e.g. UTI	3	1.4
skin)	3	1.4
Got Hit in my forefinger (leg)	1	0.5

Table 7 Sources of Information About Antibiotics (Multiple Response; Top Selections)

Information Source	**n**	**% of Respondents (Answered)**
Doctor/nurse	203	98.1
Pharmacist	74	35.7
Family/friends	71	34.3
Internet/social media	4	1.9
TV/radio	2	1.0
Myself	1	0.5

Table 8 Chi-Square Tests of Association (Selected)

Association Tested (Row vs Column)	**Predictor**	**χ^2 (df)**	**p-value**
Heard “antibiotic resistance”	Education level	0.93 (5)	0.968
Purchased antibiotics without prescription	Gender	1.47 (1)	0.225
Knowledge category	Education level	9.57 (10)	0.479

➢ *Figures*

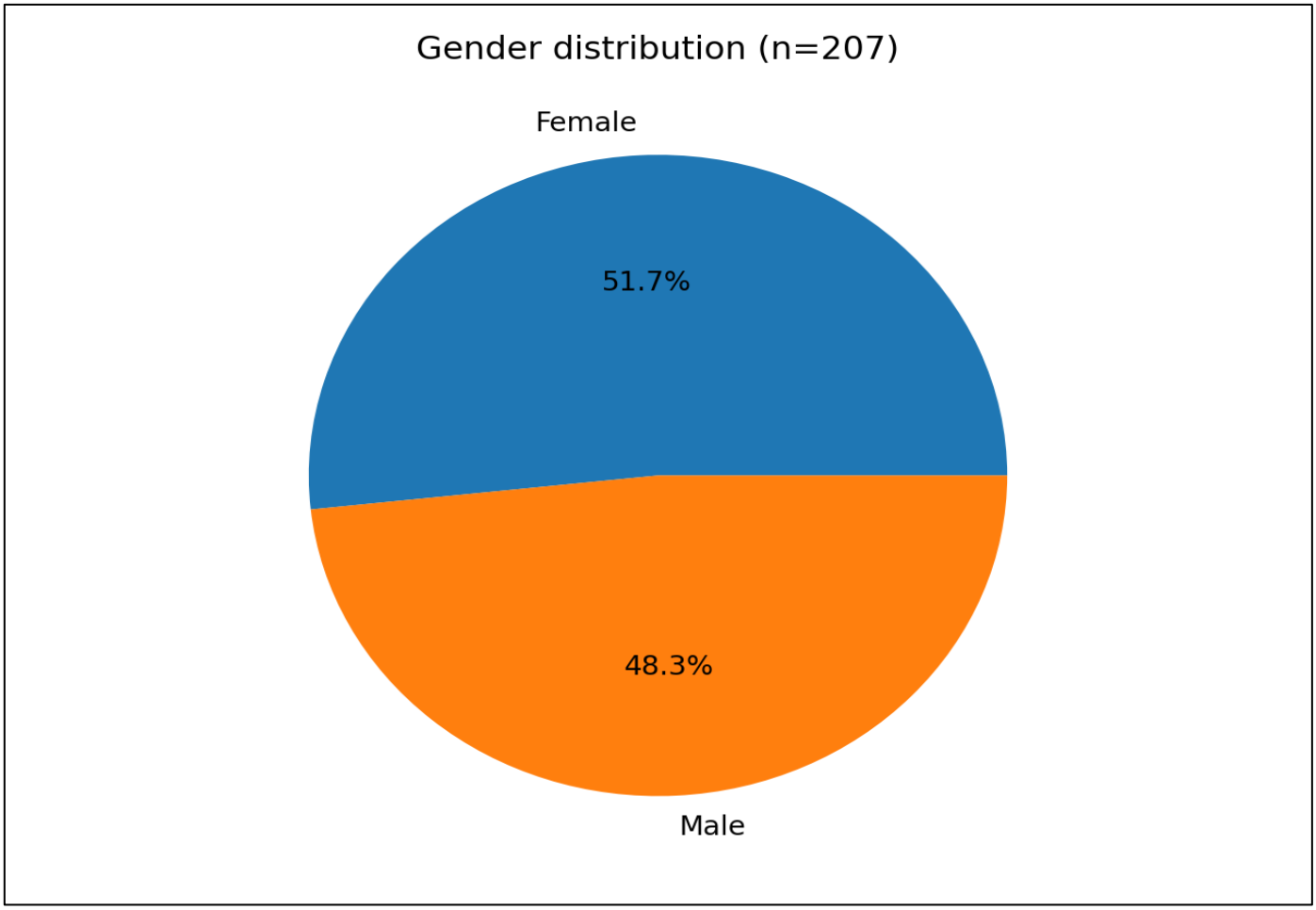

Fig 1 Gender Distribution (n=207).

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26mar135

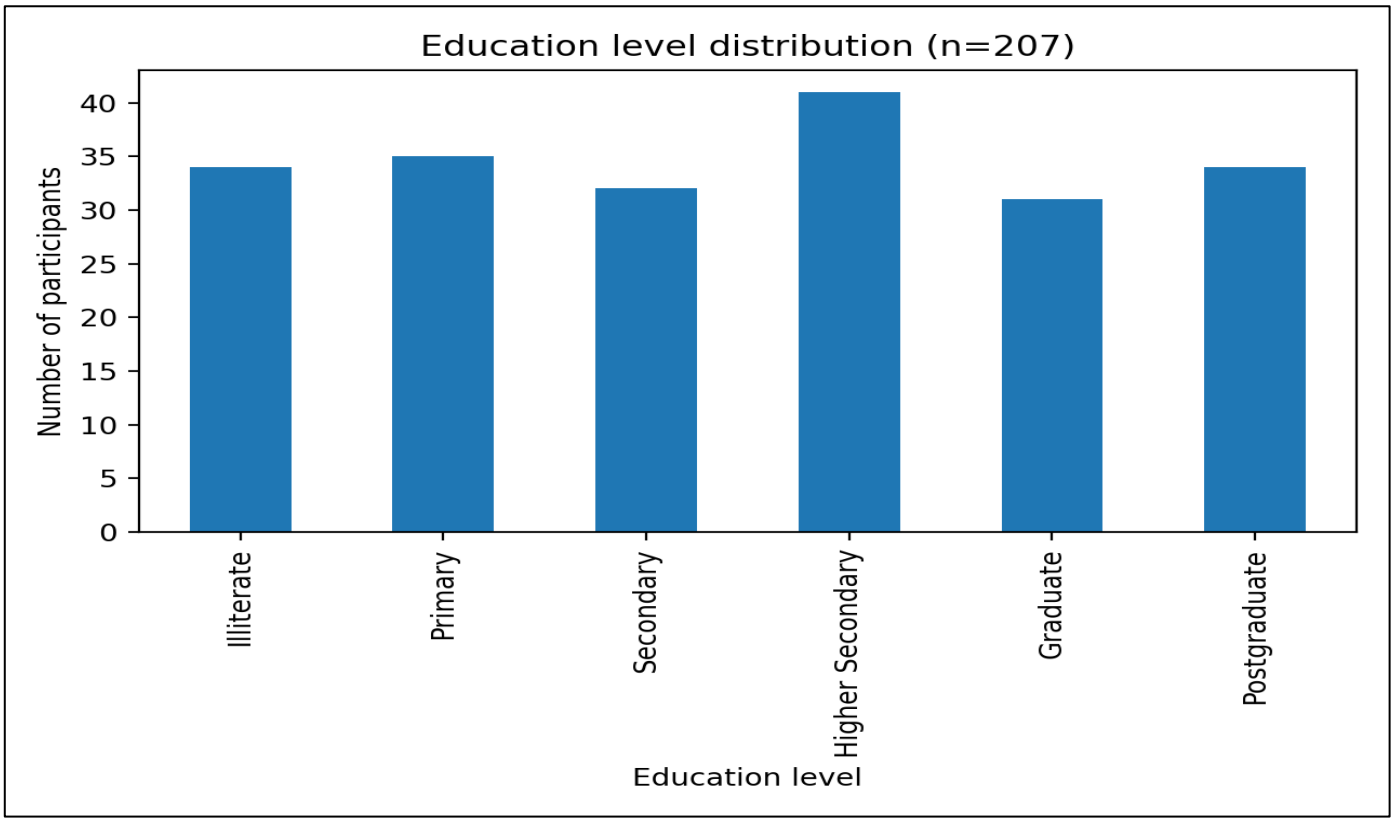

Fig 2 Education Level Distribution (n=207).

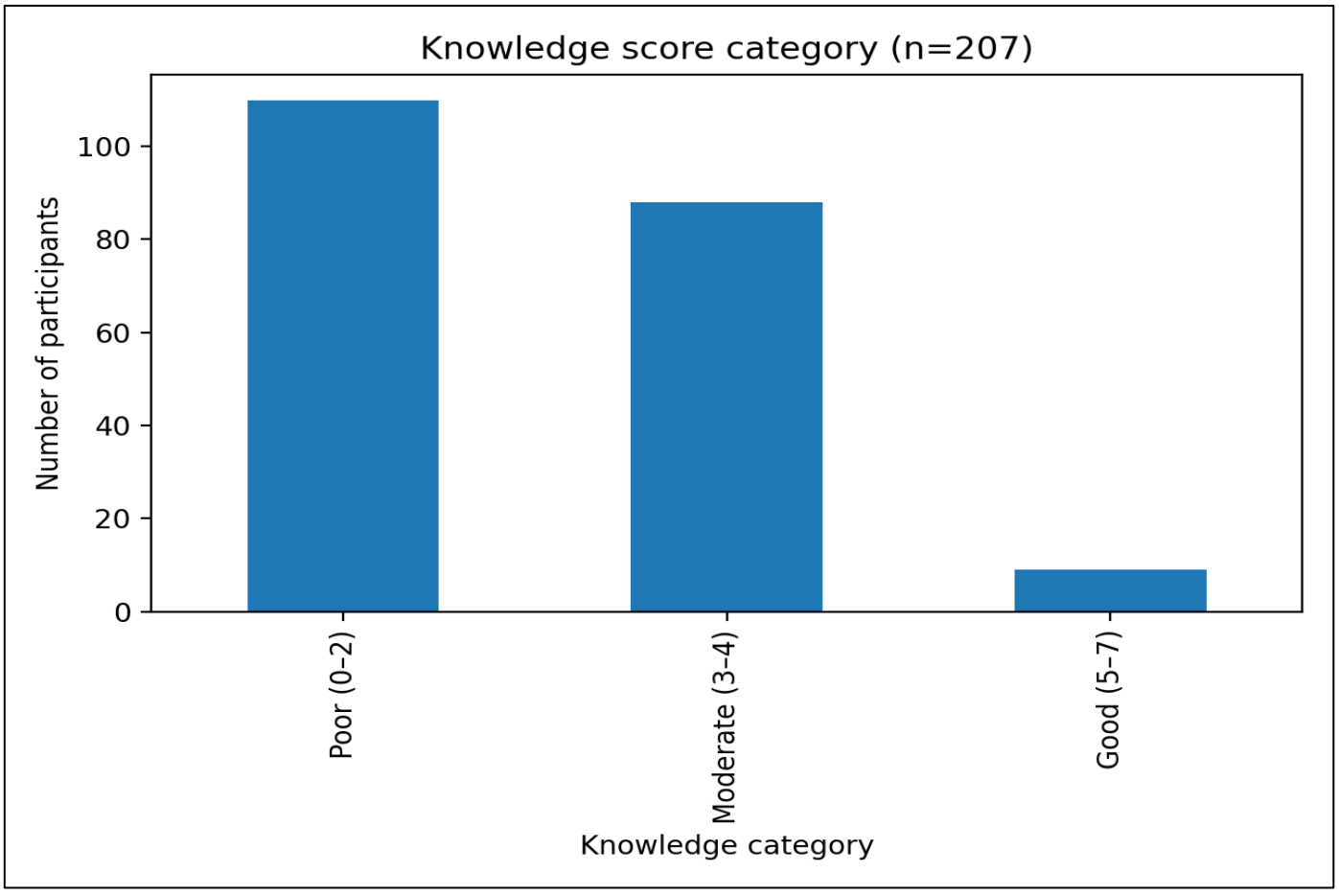

Fig 3 Knowledge Score Categories (n=207).

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26mar135

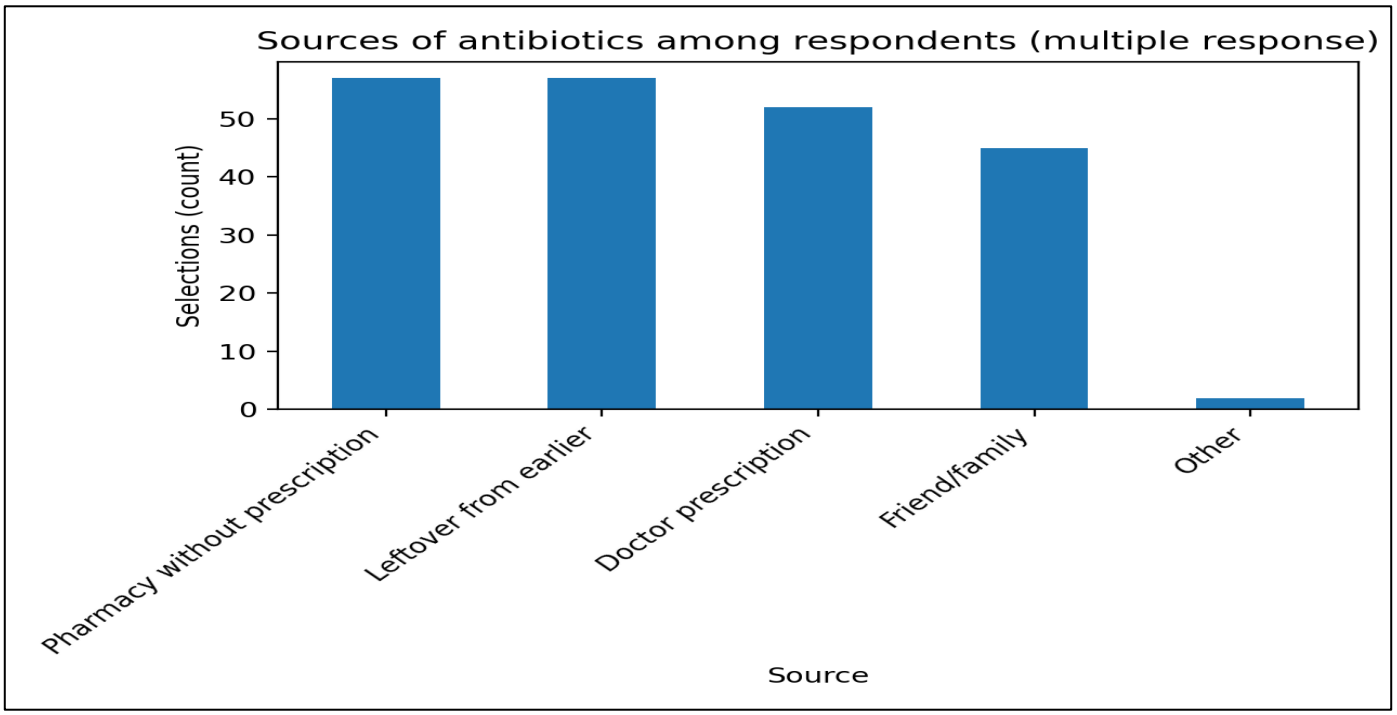

Fig 4 Sources of Antibiotics (Multiple Response; Selections Counted).

IV. DISCUSSION

In this rural Tamil Nadu sample, awareness of the term "antibiotic resistance" was moderate, but detailed knowledge was limited. Misconceptions related to antibiotics for colds/flu and uncertainty around completing antibiotic courses were common. These patterns align with findings from surveys using WHO public awareness tools.

Self-medication behaviours were notable, including reported purchase of antibiotics without prescription and use of leftover medicines. Such practices can increase selective pressure for resistance and contribute to treatment failure. Interventions should focus on community education about viral versus bacterial illnesses, adherence to prescribed courses, and discouraging antibiotic sharing. Strengthening pharmacy regulation and community engagement through primary care and health workers may help reduce inappropriate access.

No significant associations were observed between education level and awareness/knowledge in the current dataset. This may reflect limited power in subgroup comparisons or broadly similar exposure to information across education strata.

Limitations: Convenience sampling and online data collection may limit generalisability. Practices were self-reported, which could be influenced by recollection or social desirability bias.

V. CONCLUSION

Knowledge regarding antibiotic use and antibiotic resistance was suboptimal and potentially risky practices such as non-prescription purchase and use of leftovers were common. Community-based awareness campaigns, counseling by primary care providers, and strengthened antimicrobial stewardship at pharmacies are recommended in rural Tamil Nadu.

➢ *Acknowledgements*
The authors acknowledge all of the individuals who gave their consent and responded to the questionnaire.

➢ *Financial support and sponsorship*
Nil

➢ *Conflicts of interest*
There are not any conflicts of interest.

REFERENCES

[1] World Health Organization. Antibiotic resistance: multi-country public awareness survey. WHO; 2015.
[2] National Centre for Disease Control (NCDC), Ministry of Health and Family Welfare, Government of India. National AMR Surveillance Network (NARS-Net) annual report (Jan–Dec 2024).
[3] Rao S, et al. Knowledge, attitudes, and practices of antibiotic use and antimicrobial resistance in a community setting (India). 2025.
[4] Muflih SM, et al. Public health literacy, knowledge, and awareness about antibiotics and antibiotic resistance: a cross-sectional study. Antibiotics (Basel). 2021.
[5] Chakrabarti A, et al. NAMS task force report on antimicrobial resistance. 2025.