e - ISSN – 3117-423X
Print ISSN - 3117-4221

International Journal of Community Health Nursing

Journal homepage: www.mcmed.us/journal/ijchn

KNOWLEDGE AND ATTITUDE REGARDING ANTIBIOTIC RESISTANCE AMONG PATIENTS AT GURU NANAK DEV HOSPITAL, AMRITSAR, PUNJAB

Rupinder Singh*

Tutor at Government College of Nursing Amritsar ,Government Medical College, Amritsar.

ABSTRACT

Corresponding Author
Rupinder Singh
Email: - raviravi2157@gmail.com

Article Info
Received: 03/02/2026; **Revised:** 06/03/2026
Accepted: 09/04/2026

Antibiotic resistance is a critical global health challenge that occurs when bacteria evolve mechanisms to withstand antibiotics, rendering treatments ineffective. Misuse and overuse of antibiotics in healthcare settings quicken resistance, leading to higher morbidity, mortality, and healthcare costs. The overuse of antibiotics in humans, animals, and agriculture accelerates this process, and resistant genes can be shared among bacteria. Globally, infections caused by multidrug-resistant (MDR) bacteria are on the rise. This study aimed to assess the knowledge and attitude regarding antibiotic resistance among patients attending the Medicine OPD at Guru Nanak Dev Hospital, Amritsar, Punjab, with the objective of developing an information booklet to improve awareness among people. Between April 19, 2025 and April 24, 2025 patients attending medicine OPD of Guru Nanak Dev Hospital, Amritsar, Punjab were surveyed. A descriptive research design was adopted with a purposive sample of 50 patients. Data were collected using a self-structured questionnaire to measure knowledge and a Likert scale to assess attitudes. The sociodemographic characteristics of the participants were examined, and Knowledge and attitude variables towards antibiotic resistance were explored through a range of statistical methods, including frequencies, percentages, means, and standard deviations. Significance was defined as a p-value of ≤0.05. Findings revealed that 14% of patients had good knowledge, 48% had average knowledge, and 38% had below-average knowledge of antibiotic resistance. Higher education levels (graduate/postgraduate) and medical professions were significantly associated with better knowledge ($p < 0.05$). Regarding attitudes, 64% demonstrated a positive attitude, while 36% had a negative attitude. Apparently, rural patients (78.3% positive attitude) had a more favorable attitude than urban patients (51.9%). A moderate positive correlation ($r = 0.64$) was observed between knowledge and attitude. Education and occupation showed significant associations with knowledge level. The majority of patients exhibited only average knowledge but a generally positive attitude toward antibiotic resistance. These results highlight the urgent need for targeted educational interventions. The development and distribution of an information booklet can help bridge knowledge gaps, promote responsible antibiotic use, and contribute to mitigating antibiotic resistance. However it's important to implement health campaigns, discussions sessions with healthcare providers among the general public to control the distribution of non-prescribed antibiotics.

Key Words: Health Education, Kangaroo Mother Care, Postnatal Mothers, Low Birth Weight, Quasi-Experimental Study.

INTRODUCTION

Antimicrobial Resistance happens when germs develop the ability to defeat the drugs designed to kill them. This makes it one of the most concerning public health issue. [1] Antimicrobials including - Antibiotics, Antivirals, Antifungals are medicines used for treatment of infectious diseases. According to the World Health Organization (WHO), "Antimicrobial Resistance is the ability of bacteria, viruses, fungi, and parasites to change over time and no longer respond to medicines, making infection

harder to treat and increasing the risk of disease spread, severe illness, and death." [2]

Resistance genes carried on plasmids can spread rapidly, increasing the prevalence of resistant bacteria. The most significant bacterial resistance mechanisms include enzymatic degradation of antibiotics, modifications to target sites, reduced drug uptake, and overexpression of efflux pumps that expel antibiotics from bacterial cells.[3] Antibiotic resistance with their inappropriate use contributes to rising mortality, morbidity and healthcare costs. According to Centers for Disease Control and Prevention (CDC) about 30% of Outpatient Antibiotics are unnecessary, with acute respiratory infection accounting for 50% of inappropriate use.[4]

Overall, Antibiotic resistance is a major global threat, causing approximately 70,000 deaths annually, with projections reaching 10 Million deaths per year by 2050. The economic burden could exceed USD 1 Trillion by 2030. Healthcare workers (HCWs) play a key role in safe antibiotic use, yet knowledge gaps could lead to misuse. Hence, many surveys were conducted by European Centre for Disease Prevention and Control (ECDP) about Healthcare workers and common people Knowledge, Attitude and Behavior assessment to spread more awareness regarding optimal Antibiotic use [5]

PROBLEM STATEMENT: -

A descriptive study to assess the knowledge and attitude regarding Antibiotic Resistance among patients attending Medicine OPD at Guru Nanak Dev Hospital, Amritsar, Punjab, 2025 with a view to developing an Information booklet on Antibiotic Resistance.

AIM OF THE STUDY: -

To assess knowledge and attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH Amritsar, with a view to develop an Information booklet on antibiotic resistance.

OBJECTIVES: -

- To assess knowledge regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.
- To assess attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.
- To associate the relationship between knowledge and attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.
- To identify the correlation of knowledge regarding antibiotic resistance among socio-demographic variables.
- To identify the correlation of attitude regarding antibiotic resistance among socio-demographic variables.
- To distribute information booklets on antibiotic resistance.

OPERATIONAL DEFINITIONS: -

Knowledge: It refers to the understanding and the learned behaviour acquired through experience regarding antibiotic resistance.

Attitude: It refers to the way in which one thinks and feels about antibiotic resistance.

Antibiotics: Antibiotics are medications that fight bacterial infections by either killing bacteria or preventing their growth.

Antibiotic Resistance: It refers to the ability of bacteria to withstand the effect of antibiotics, rendering them ineffective in treating infections.

ASSUMPTIONS: -

- Young adults will have more knowledge regarding antibiotics resistance than older adults
- Medical professionals will have more knowledge about antibiotic resistance than those in other professions.
- Women are more likely to take antibiotics without prescriptions for minor infections, contributing to resistance over time.
- Patients from lower socioeconomic backgrounds may have less awareness of antibiotic resistance, as healthcare education is often limited in these communities.
- Patients with formal education have more knowledge and good attitude regarding antibiotic resistance than those who had no formal education.
- Patients with prior exposure to healthcare may have a higher level of awareness regarding antibiotic resistance than those with little to no medical exposure.

DELIMITATIONS: -

Study was limited to:

- Medicine OPD patients at GNDH Hospital, Amritsar, and does not include inpatients or patients from other departments.
- The study included only 50 participants, which may limit the generalizability of findings to broader populations.
- Chronic illness patients and older adults (>70 years) were excluded, potentially overlooking high-risk groups for antibiotic misuse.

CONCEPTUAL FRAMEWORK: -

For this study, Pender's Health Promotion Model is selected to guide the study as it is focused on enhancing the well-being and self-care behaviors of individuals. The model emphasizes the role of cognitive-perceptual factors, modifying factors, and behavior-specific cognitions and affect in influencing health-promoting behaviors. [6]

METHODOLOGY

The methodology is the most important part of research as it is the framework for conducting a study. Research methodology defines what the activity of research is, how to proceed and how to measure progress. It indicates the general pattern for organizing the procedures to gather valid and reliable data for an investigation. The present statement is "A descriptive study to assess the knowledge and attitude regarding Antibiotic Resistance among patients attending Medicine OPD at Guru Nanak Dev Hospital, Amritsar, Punjab, 2025 with a view to developing an Information booklet on Antibiotic Resistance.

Research Approach

Polit and Beck (2008). As described in a non experimental approach, the researcher observes, describes and documents aspects of a situation as it naturally occurs and sometimes serves as a starting point for hypothesis generation or theory development. A quantitative research approach was used in this study.

Research Setting: - The present study was conducted in Medicine OPD, Guru Nanak Dev Hospital, Amritsar.

Target Population: - According to Polit & Hungler (1999) "Population refers to the entire aggregation of cases that need a designated set of criteria". The target population selected was patients attending medicine OPD.

Criteria for sample selection: -

- **Inclusion Criteria: -**
  1. People attending medicine OPD, GNDH.
  2. People who were willing to participate.
- **Exclusion Criteria:-**
  1. People who need emergency treatment.
  2. Individuals with chronic illnesses and older adults.

Description of tool: -

The tool is divided into 3 parts: -

Part-1:- It includes the socio demographic variables of respondents. It includes age group, religion, marital status, area of residence, type of family and source of information.

Part-2:- It includes a self-structured questionnaire to assess the knowledge regarding antibiotic resistance among selected patients.

Part-3:- It includes a self-structured Likert scale to assess the attitude regarding antibiotic resistance among selected patients.

Criterion measures: - Each correct answer from the knowledge questionnaire carries one mark and the wrong question carries zero marks.

Knowledge Questionnaire: -

- Maximum score - 20
- Minimum score - 0
- Score 14 to 20 (70%)- Good
- Score 7 to 13 (35-70%) - Average
- Score 0 to 6 (<35%)- Below Average

Likert scale to assess attitude: -

Positive statement: - Agree -3, Uncertain - 2, Disagree - 1

Negative statement: - Disagree - 3, Uncertain - 2, Agree - 1

- Maximum score - 60
- Minimum score - 3
- Positive attitude - 76% and above (46-60)
- Negative attitude - below 75% (<45)

Data collection procedure: -

The data collection of the study was carried out on 19-04-2025 and 24-04-2025 from patients attending medicine OPD of Guru Nanak Dev Hospital, Amritsar, Punjab.The non probability purposive sampling technique was used for data collection.

Permission: -

The formal permission for conduction of the study was obtained from Medical Superintendent, Guru Nanak Dev hospital and principal, Government College of Nursing, Amritsar.

Ethical considerations: -

Prior information and explanation was given to the participants. We explained the purpose of study to subjects and assured them that the response will be kept confidential. The professional interpersonal relationship was maintained with the subjects.

ANALYSIS AND INTERPRETATION

Kerlinger (1986) has defined analysis as the categorizing, ordering, manipulating, and summarizing of data to reduce it to intangible and interpretable form so that the research problem can be studied and tested including the relationship between variables. [5]

This chapter deals with analysis and interpretation of data obtained from a sample of 50 patients attending medicine OPD of Guru Nanak Dev Hospital, Amritsar, Punjab.

The analysis of the data was done in accordance with the objectives of the study. The data was analysed

collectively by the frequency, mean, mean percentage, standard deviation, correlation coefficient and represented by tabulation.

OBJECTIVES OF THE STUDY

- To assess knowledge regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.
- To assess attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.
- To associate the correlation between knowledge and attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.
- To determine the association of knowledge regarding antibiotic resistance among socio-demographic variables.
- To determine the association of attitude regarding antibiotic resistance among socio-demographic variables.
- To distribute information booklets on antibiotic resistance.

SOCIO DEMOGRAPHIC VARIABLES

Table 1: Frequency and percentage distribution of subjects as per their socio-demographic variables.

Demographic variable:	**N**	**%**
AGE (IN YEARS)		
18 - 30	19	38 %
31 - 45	19	38 %
46 - 70	12	24 %
GENDER:		
Male	22	44 %
Female	28	56 %
EDUCATIONAL LEVEL:		
No Formal Education	12	24 %
Primary Education	09	18 %
Secondary Education	20	40 %
Graduate and post-graduate	09	18 %
OCCUPATION:		
Student	10	20 %
Medical Professional	04	8 %
Other Professions	34	68 %
Retired	02	4 %

LOCATION:		
Urban	23	46 %
Rural	27	54 %

Table 1 (A) reveals that 38% respondents are of age group 18-30 years, 38% are of age group 31-45 years and then lastly 24% belong to the age group 46-70.
Table 1 (B) reveals that the majority of the patients are female with the percentage of 56% while the rest are males with 44% in the gender variable.
Table 1(C) reveals that 40% patients have secondary education, 18% patients have primary education, 24% Patients have no formal education and 18% are graduate and postgraduate.
Table 1(D) reveals that 68% patients are from other professions, 20% patients are students, 8% are medical professionals and 4% are retired.
Table 1(E) reveals that 54% of the patients are from urban locations and 46% from rural locations.

MAIN ANALYSIS

Objective I - To assess knowledge regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.

Table 2: Frequency and percentage distribution of patients as per knowledge score regarding antibiotic resistance among patients attending medicine OPD at GNDH Amritsar N=50

Level of Knowledge	**Frequency (n)**	**Percentage %**
Good (14-20)	7	14 %
Average (07-13)	24	48 %
Below Average (0-06)	19	38 %

Maximum Score = 20
Minimum Score = 0

Table 2 depicts the frequency and percentage distribution of the patients attending medicine OPD according to the level of knowledge regarding antibiotic resistance. It showed that 24 (48%), had average knowledge regarding antibiotic resistance, followed by 19 (38%) patients who had below average knowledge, and only 7 (14%) who had good knowledge. Hence, it was concluded that the majority of patients attending the medicine OPD had average knowledge regarding antibiotic resistance.

Objective II - To assess attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.

Table 3: Frequency and percentage distribution of patients as per attitude score regarding antibiotic resistance among patients attending medicine OPD at GNDH Amritsar N=50

Level of Attitude	**Frequency (n)**	**Percentage %**
Positive Attitude (46 - 60)	32	64
Negative Attitude (<45)	18	36

Maximum score - 60
Minimum score - 3

Table 3 depicts the frequency and percentage distribution of the patients attending medicine OPD according to the level of attitude regarding antibiotic resistance. It showed that the majority 32 (64%), had a positive attitude regarding Antibiotic resistance, followed by 18 (36%) patients who had a negative attitude. Hence, it was concluded the majority of patients attending the medicine OPD had a positive attitude regarding antibiotic resistance.

Objective III - To associate the correlation between knowledge and attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH, Amritsar.

Table -4: Correlation between knowledge and attitude of selected patients regarding antibiotic resistance among patients attending medicine OPD at GNDH Amritsar N=50

Variables	Mean	Standard Deviation	Coefficient of correlation , *r*
Knowledge	9.02	4.49	0.64
Attitude	48	5.90	

Significant at p<0.05

Table 4 represents the relationship of level of knowledge and attitude regarding antibiotic resistance among patients attending medicine OPD. The coefficient of correlation of both knowledge and attitude among patients attending OPD was calculated which was found to be positively correlated i.e. r=+0.64 and significant at p<0.05. Hence it was concluded that as the level of knowledge increases, positive attitude also increases and vice versa.

DISCUSSION

The investigators interpretatively discuss the result of the study. In the discussion the researchers tie together all the loose ends of the society. The result and the discussion of the study is the researcher's opportunity to examine the logic of the theoretical framework, the method and the analysis. The objective was to assess knowledge regarding antibiotic resistance among patients attending the Medicine OPD at GNDH, Amritsar. The findings show that the maximum percentage of patients (48%) had average knowledge regarding antibiotic resistance, followed by 38% who had below average knowledge and only 14% who had good knowledge. A similar study was conducted at the General Outpatient Department of Kolkata Medical College Hospital, where 69.2% of respondents were aware of antibiotics, but only 14.5% were aware of antimicrobial resistance (AMR). Among those aware of AMR, 94.1% correctly identified that AMR is acquired by pathogens.[7] The second objective of the study was to assess the attitude of patients regarding antibiotic resistance.The findings show that 64% of patients had a positive attitude, while 36% had a negative attitude towards antibiotic resistance. Similarly, a study conducted by Bhardwaj et al. (2021) in coastal South Karnataka found that 60% of the general public exhibited a positive attitude towards the rational use of antibiotics and awareness of antibiotic resistance, while 40% showed a negative attitude. This highlights the ongoing need for awareness campaigns on proper antibiotic use.[8] The third objective was to determine correlation between knowledge and attitude regarding antibiotic resistance among patients; the results of which show positive correlation between knowledge and attitude. A similar study was conducted in Ethiopia, in which they analyzed data from 504 participants (mean age 35.32 ± 9.03 years). The study revealed widespread antibiotic use, low levels of knowledge 64%, and poor attitudes 60.4 % and practices 55 % regarding antibiotic use, resistance, and disposal. Significant positive correlations were found between knowledge, attitude, and practice scores, and most sociodemographic factors were significantly associated with KAP levels. [9]

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a brief account of the present study, including the conclusions drawn from the findings, as well as the implications for future research, limitations, and recommendations.

SUMMARY OF THE STUDY

The aim of the study is to assess the knowledge and attitude regarding antibiotic resistance among patients attending Medicine OPD at GNDH Amritsar, with a view to develop an Information booklet on antibiotic resistance.

MAJOR FINDINGS OF THE STUDY

1. Knowledge Regarding Antibiotic Resistance

- 14% of patients had good knowledge, 48% had average knowledge, and 38% had below-average knowledge.

- Higher education levels (graduate/postgraduate) and medical professions were significantly associated with better knowledge ($p < 0.05$).
- No significant association was found between knowledge and age, gender, or location ($p > 0.05$).

2. Attitude toward Antibiotic Resistance

- 64% of patients exhibited a positive attitude, while 36% had a negative attitude.
- Participants with higher education (e.g., graduates) showed significantly more positive attitudes ($p < 0.05$).
- Rural patients (78.3% positive attitude) had a more favorable attitude than urban patients (51.9%).

3. Correlation between Knowledge and Attitude

- A moderate positive correlation ($r = 0.64$) was found, indicating that higher knowledge scores were linked to more positive attitudes.

4. Socio-Demographic Associations

- Education and Occupation: Significant predictors of both knowledge and attitude ($p < 0.05$). Medical professionals and educated individuals scored higher.
- Age/Gender/Location: No significant impact on knowledge or attitude ($p > 0.05$).

5. Key Gaps Identified

- Low awareness of antibiotic resistance mechanisms (e.g., only 14% with "good" knowledge).
- Misconceptions persisted, such as stopping antibiotics when symptoms improved.

CONCLUSION

The study highlights the need for targeted educational programs, especially for less-educated and non-medical populations, to combat antibiotic resistance effectively. The findings support global efforts to improve public awareness and stewardship of antibiotics.

Implications

Nursing Practice

The study helps adherence to infection control practices, such as proper hand hygiene and isolation precautions, is essential. Nurses must also advocate for antibiotic stewardship by ensuring antibiotics are used appropriately based on prescriptions and guidelines.

Nursing Education

The study helps to integrate antibiotic resistance and antimicrobial stewardship into the nursing curriculum. Training should emphasize the responsible use of antibiotics, infection control procedures, and patient education methods.

Nursing Research

Nursing research can help identify gaps in knowledge, attitudes, and practices related to antibiotic use among both healthcare professionals and patients. It can also evaluate the effectiveness of educational interventions, infection control protocols, and antibiotic stewardship programs. This evidence can guide policy-making and clinical guidelines.

Recommendations

- 1. The study can be replicated on a larger sample across different departments to validate and generalize the findings.
- 2. A comparative study can be conducted to assess the knowledge and attitude regarding antibiotic resistance among patients in different hospitals of Punjab.
- 3. Similar studies can be undertaken among different population groups such as rural patients or those visiting private clinics.
- 4. The study can be extended to healthcare professionals and paramedical staff to evaluate their role in controlling antibiotic misuse.
- 5. An interventional study can be designed to assess the effectiveness of awareness programs on improving knowledge and attitude regarding antibiotic resistance.

REFERENCE

1. Centers for Disease Control and Prevention (CDC). About antimicrobial resistance
2. World Health Organization. Antimicrobial resistance. Geneva: World Health Organization;
3. Giacomini E, Perrone V, Alessandrini D, Paoli D, Nappi C, Degli Esposti L. (2021) Evidence of Antibiotic Resistance from Population-Based Studies: A Narrative Review. *Infect Drug Resist.*14, 849-858.
4. Habboush Y, Guzman N. (2025). Antibiotic Resistance. In: StatPearls, Treasure Island (FL): StatPearls Publishing; 2025
5. Barchitta, M., Sabbatucci, M., Furiozzi, F. (2021). Knowledge, attitudes and behaviors on antibiotic use and resistance among healthcare workers in Italy, 2019: investigation by a clustering method. *Antimicrob Resist Infect Control* 10, 134
6. Wei CN, Harada K, Ueda K, Fukumoto K, Minamoto K, Ueda A.(2012). Assessment of health-promoting lifestyle profile in Japanese university students. *Environ Health Prev Med*. 17(3), 222-7.
7. Awareness and knowledge of antibiotics and antimicrobial resistance among beneficiaries attending the general outpatient clinic of a tertiary-level hospital in India. *Journal of Comprehensive Health*.

8. Bhardwaj, K., Shenoy, S. M., Baliga, S., Unnikrishnan, B., & Baliga, B. S. (2021). Knowledge, attitude, and practices related to antibiotic use and resistance among the general public of coastal south Karnataka, India – A cross-sectional survey. *Clinical Epidemiology and Global Health*, 11, 100721
9. Sitotaw B, Philipos W. (2023). Knowledge, Attitude, and Practices (KAP) on Antibiotic Use and Disposal Ways in Sidama Region, Ethiopia: A Community-Based Cross-Sectional Survey. *Scientific World Journal.* 26, 8774634.
10. Creswell JW. Research design: qualitative, quantitative, and mixed methods approaches. Kerlinger FN. Foundations of behavioral research. 3rd ed. New York: Holt, *Rinehart and Winston*; 1986