



Knowledge, Attitudes, and Practices Regarding Antibiotic Use and Resistance Among Residents of Sampaloc, Manila

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Abstract

Antimicrobial resistance remains an important public-health concern, particularly where inappropriate antibiotic use, self-medication, and limited public understanding contribute to unsafe medication practices. This study examined knowledge, attitudes, and practices regarding antibiotic use and resistance among residents of Sampaloc, Manila. A quantitative, non-experimental cross-sectional survey was conducted among 370 respondents from Barangays 397 and 586. Data were gathered using an adapted questionnaire covering demographic characteristics, antibiotic consumption, knowledge of antibiotic use and resistance, attitudes, and reported practices. Descriptive statistics were used to summarize the findings. Most respondents had previously taken antibiotics (88.92%), while 64.05% reported that the antibiotics they had used were prescribed by an authorized physician. However, 58.38% had not heard of antibiotic resistance, drug resistance, or antibiotic-resistant bacteria. The overall knowledge score was 2.50, indicating that knowledge had been acquired but was not fully understood. Several potentially inappropriate behaviors were evident, including premature discontinuation of antibiotics when symptoms improved, incomplete adherence to prescribed courses, and self-medication associated with the cost of medical consultation and medication. The findings indicate a substantial gap between antibiotic exposure and adequate understanding of responsible antibiotic use and antimicrobial resistance. Community-based education, stronger patient counseling, and improved antimicrobial-awareness initiatives are warranted to address misconceptions and promote more appropriate antibiotic-use practices.

Keywords: *antibiotic use; antimicrobial resistance; knowledge, attitudes, and practices; self-medication; medication adherence; public health*

1. Introduction

Antibiotics transformed the treatment of bacterial infections and substantially reduced morbidity and mortality associated with infectious diseases. Their clinical value, however, is increasingly threatened by antimicrobial resistance, which develops and spreads when microorganisms survive exposure to medicines that would ordinarily inhibit or eliminate them. Inappropriate antibiotic use, including unnecessary consumption, incorrect dosing, premature discontinuation of treatment, and use without proper medical guidance, can contribute to this problem (Hutchings et al., 2019).

Antimicrobial resistance is not limited to a particular country or healthcare system. Inappropriate antibiotic consumption, inadequate public knowledge, and barriers to professional consultation can encourage behaviors such as self-diagnosis and self-medication. These concerns are particularly relevant in settings where individuals may obtain medicines without adequate clinical guidance or may interrupt treatment because of cost or perceived recovery.

Within the Philippine setting, self-medication and misconceptions regarding antibiotic use remain important concerns. Robredo et al. (2022) emphasized the continuing challenges of antimicrobial resistance in the Philippines, including problems related to antibiotic access, use, and public understanding. These conditions make public knowledge, attitudes, and practices important areas of inquiry because appropriate antibiotic use depends not only on access to medicines but also on how individuals understand their purpose, risks, and proper administration.

The relationship among knowledge, attitudes, and practices is particularly important in antimicrobial stewardship at the community level. Individuals may have encountered or previously used antibiotics without necessarily understanding antibiotic resistance, the distinction between bacterial and viral infections, the importance of completing prescribed treatment, or the risks associated with self-medication. Accordingly, examining antibiotic use solely in terms of access or consumption may overlook the behavioral factors that influence how medicines are actually used.

Sampaloc, Manila provides a relevant setting for examining these concerns because it is a densely populated urban community with residents representing varied educational and occupational backgrounds. Localized evidence can help identify misconceptions and behaviors that may not be visible in national-level data and can support more targeted public-health interventions.

The study aimed to examine knowledge, attitudes, and practices regarding antibiotic use and resistance among residents of Sampaloc, Manila. Specifically, it sought to describe respondents' demographic characteristics; assess their knowledge regarding antibiotics, appropriate use, and antibiotic resistance; examine attitudes toward antibiotic use; and assess reported practices associated with antibiotic consumption, medication adherence, and self-medication.

2. Review of Related Literature

2.1 Antibiotic Use and Antimicrobial Resistance

Antibiotics remain essential to the treatment of bacterial infections and represent one of the major advances of modern medicine. They act by killing bacteria or preventing their growth and have substantially improved outcomes for infections that were once associated with high mortality. Their effectiveness, however, is increasingly threatened by inappropriate and excessive use. Overprescribing, unnecessary consumption, and unsupervised access contribute to antimicrobial resistance (Al-Tawfiq et al., 2022; Hutchings et al., 2019).

Proper antibiotic use requires recognition that these medicines are intended for bacterial rather than viral infections. Treatment should follow professional guidance, and patients should avoid sharing, saving, or reusing antibiotics without medical advice. At the population level, inappropriate consumption may increase the selection and spread of resistant organisms.

The wider ecology of antimicrobial resistance also extends beyond human prescribing behavior. In a Philippine seafood-safety study, Nacino and Basit (2025) documented phenotypic antimicrobial-resistance profiles among bacterial isolates from commonly consumed fish, illustrating that AMR is a cross-sector public-health concern that can also emerge in environmental and food-chain contexts.

2.2 Public Knowledge, Misconceptions, and Attitudes Toward Antibiotics

Public understanding of antibiotics is a major determinant of how these medicines are used. Misconceptions concerning their effectiveness against viral infections, the meaning of antibiotic resistance, and the necessity of professional consultation may encourage inappropriate consumption. Bhardwaj et al. (2021) reported substantial gaps in knowledge concerning antibiotics, including confusion regarding their effectiveness against bacterial and viral infections.

Population-based evidence also shows that awareness of antimicrobial resistance is not necessarily accompanied by correct antibiotic-use behavior. Pogurschi et al. (2022) found limited knowledge of antibiotic resistance alongside practices such as stopping treatment when symptoms disappeared. Karuniawati et al. (2021) similarly documented relationships among knowledge, attitudes, and practices while reporting self-medication for common symptoms. These findings suggest that awareness alone may be insufficient unless accompanied by correct beliefs and appropriate medication practices.

A closely related Philippine community-health study likewise demonstrated that awareness does not necessarily translate directly into behavior: Temporada et al. (2025) found only weak associations between leptospirosis awareness and preventive practice, while attitudes were much more strongly associated with reported preventive behavior.

A similar distinction between exposure to information and meaningful outcomes appears in adjacent behavioral research. Rao et al. (2025), examining AI adoption in education, reported that perceived usefulness and engagement

benefits were stronger than perceived gains in academic performance, underscoring the broader point that awareness or exposure alone should not be assumed to produce optimal behavioral outcomes.

2.3 Self-Medication, Adherence, and Antibiotic-Use Practices

Self-medication and poor adherence are recurring concerns in community antibiotic use. Cambaco et al. (2020) reported that respondents in rural Mozambique were generally familiar with antibiotics but lacked sufficient understanding of their proper use. Inappropriate behaviors included failure to complete prescribed treatment, sharing medicines, self-medication, and treatment interruption.

In the Philippines, the challenge is compounded by differences in healthcare access and medication practices. Robredo et al. (2022) described antimicrobial resistance as a persistent national concern and emphasized the need for coordinated approaches to appropriate antibiotic use. These conditions indicate that antibiotic misuse cannot be explained solely by lack of information; economic pressures, access to care, prior treatment experience, and medicine availability may also shape behavior.

Medication practices are also shaped by the organization and accessibility of the healthcare and pharmacy environment. Atento and Atento (2025), in their case analysis of Mercury Drug Corporation, emphasized the strategic importance of retail-pharmacy access and adaptation within the Philippine healthcare system, providing an adjacent systems perspective on how medicine access and service delivery intersect with patient behavior.

At the broader health-system level, Atento, Quinto, and Espelita (2025) similarly argued that workforce shortages, maldistribution, and readiness gaps can weaken domestic healthcare capacity. Such structural constraints are relevant when interpreting self-medication or delayed consultation, because individual medicine-use decisions occur within the practical limits of available professional care.

2.4 Demographic and Socioeconomic Factors

Knowledge and antibiotic-use practices may vary according to demographic and socioeconomic characteristics. Di et al. (2022) found that occupation, age, sex, educational attainment, and income were associated with selected dimensions of antibiotic knowledge and practice in Vietnam. Such findings suggest that educational exposure and occupational context can shape how individuals understand and use antibiotics.

These patterns support the need to interpret community antibiotic behavior within its social context. Information campaigns may be less effective when individuals face practical barriers to professional consultation or medication adherence.

This socioeconomic framing is consistent with broader Philippine and ASEAN health evidence showing that favorable macro-level conditions do not automatically translate into equitable health outcomes. Quinto and Atento (2025) found heterogeneous relationships among economic conditions, employment, and child nutrition across four ASEAN economies, supporting the need to interpret health behavior and outcomes within their surrounding structural context.

2.5 Synthesis and Research Gap

The literature collectively indicates that inappropriate antibiotic use is shaped by the interaction of knowledge, attitudes, behavioral practices, and socioeconomic conditions. Misconceptions concerning antibiotic indications and resistance remain common across different populations, particularly regarding viral illnesses, treatment completion, and self-medication (Bhardwaj et al., 2021; Karuniawati et al., 2021; Pogurschi et al., 2022).

The reviewed studies also show that correct knowledge does not automatically translate into appropriate behavior. Economic limitations, accessibility of antibiotics, prior treatment experiences, and healthcare access may encourage self-medication and premature discontinuation despite some awareness of appropriate use. However, localized evidence concerning these patterns among residents of Sampaloc, Manila remains limited. The present study addresses this contextual gap by examining antibiotic-use knowledge, attitudes, and reported practices within an urban Manila community.

Evidence from behavioral self-monitoring research also cautions against assuming that increased awareness is sufficient to change health outcomes. San Juan et al. (2026) observed numerical improvement in perceived sleep quality

following digital self-monitoring, but the intervention effect was not statistically significant, illustrating the broader difficulty of converting awareness into sustained behavioral change.

Related health-support literature further suggests that interventions may underperform when they address information without addressing the conditions under which behavior occurs. Quinto et al. (2026) identified a structural mismatch between the predominantly functional orientation of caregiver-support systems and the broader psychosocial needs of caregivers, an adjacent example of why education alone may be insufficient when practical and contextual barriers remain.

3. Methodology

3.1 Research Design

The study employed a quantitative, non-experimental cross-sectional survey design to examine knowledge, attitudes, and practices regarding antibiotic use and resistance among residents of Sampaloc, Manila. Numerical data were gathered through a structured questionnaire and summarized using descriptive statistical procedures.

3.2 Study Setting and Respondents

The study was conducted in Sampaloc, Manila. The completed dataset consisted of 370 respondents from Barangays 397 and 586. Participants represented members of the general public rather than exclusively healthcare professionals, allowing the study to examine community-level understanding and behavior concerning antibiotic use.

3.3 Sampling Technique

Cluster sampling was employed. The original sample-size calculation indicated a target of 369 respondents based on a reported population of 9,280, a 95% confidence level, and a 5% margin of error. The completed dataset contained 370 respondents. Local permission was obtained before data collection.

3.4 Research Instrument

Data were collected using an adapted structured questionnaire based on the population survey developed by Effah et al. (2020) on public knowledge, attitudes, and awareness concerning antibiotic use and resistance. The instrument was prepared in English and Filipino and was subjected to validation before administration.

The questionnaire contained four principal components: demographic information; knowledge regarding antibiotic use and resistance; attitudes toward antibiotic use and resistance using a four-point agreement scale; and reported antibiotic-use practices using a frequency scale ranging from Never to Always. The source manuscript did not report a reliability coefficient for the adapted instrument.

3.5 Data Gathering Procedure

Data were collected through a combination of face-to-face and online questionnaire administration during June 2023. Prospective respondents were informed about the study before participation, and the questionnaire was made available in printed form and through Google Forms. Completed responses were compiled for statistical analysis.

3.6 Data Analysis

Frequencies and percentages were used to summarize respondent characteristics and antibiotic-consumption indicators. Weighted means were used to summarize the knowledge, attitude, and practice items. Because the completed results section did not provide inferential test outputs, the present article reports only the descriptive findings that can be directly verified from the source manuscript.

3.7 Ethical Considerations

Participation was voluntary and respondents were provided with informed-consent information concerning the purpose of the study, expected participation, confidentiality, and the right to withdraw. The source manuscript states that institutional research ethics guidelines were followed and describes confidentiality measures for research records. Local authorities in Barangays 397 and 586 permitted the conduct of the study. No specific institutional ethics approval number was reported in the source manuscript.

4. Results and Discussion

4.1 Respondent Characteristics

The study included 370 respondents. The distribution by sex was nearly even, with 186 males (50.27%) and 184 females (49.74%). The largest age group was 18-24 years (32.43%), followed by respondents aged 55 years and above (23.78%), 45-54 years (17.03%), 35-44 years (14.05%), and 25-34 years (12.70%).

Educational backgrounds were diverse. College-level respondents constituted the largest category (23.78%), followed by high-school graduates (18.38%), college graduates (17.57%), and those with vocational education (12.97%). In terms of occupation, 52.16% were non-healthcare workers, 41.08% reported no occupation, and 6.76% were healthcare workers.

4.2 Antibiotic Exposure and Awareness

Antibiotic exposure was common among respondents. Most (88.92%) reported having taken antibiotics, and 64.05% reported that the antibiotics had been prescribed by an authorized physician. However, 28.11% indicated that the antibiotics they had used were not physician-prescribed.

Table 1. Selected Indicators of Antibiotic Exposure and Awareness

Indicator	Response	n	%
Ever taken antibiotics	Yes	329	88.92
	No	36	9.73
	Do not know	5	1.35
Prescribed by authorized physician	Yes	237	64.05
	No	104	28.11
	Do not know	29	7.84
Antibiotic use in previous 12 months	Never	96	25.95
	Once	106	28.65
	2-5 times	123	33.24
	More than 5 times	45	12.16
Heard of antibiotic/drug resistance	Yes	112	30.27
	No	216	58.38
	Do not know	42	11.35

Among respondents, 33.24% reported using antibiotics two to five times during the previous 12 months, 28.65% reported one use, and 12.16% reported more than five uses. Conversely, 25.95% reported no antibiotic use during that period. Only 30.27% had heard of antibiotic resistance, drug resistance, or antibiotic-resistant bacteria, whereas 58.38% had not. The contrast between widespread antibiotic exposure and limited awareness of resistance is one of the clearest patterns in the data.

4.3 Knowledge Regarding Antibiotic Use and Resistance

The original study reported an overall knowledge weighted mean of 2.50, interpreted as 'knowledge acquired but not fully understood.' Individual item means ranged from 2.39 to 2.73.

Table 2. Knowledge Regarding Antibiotic Use and Resistance

Knowledge statement	Weighted mean	Original interpretation
Antibiotics are used for some bacterial infections	2.44	Uncertain knowledge
Antibiotics can be purchased online or locally	2.46	Uncertain knowledge
Inappropriate use or missed doses may increase resistance	2.47	Uncertain knowledge
Antibiotic resistance is a serious public-health issue	2.51	Knowledge acquired but not fully understood
Overuse of antibiotics can contribute to resistance	2.52	Knowledge acquired but not fully understood
Skipping one or two doses does not contribute to resistance	2.56	Knowledge acquired but not fully understood
Use without physician prescription can contribute to resistance	2.50	Knowledge acquired but not fully

		understood
Stop antibiotics once symptoms are relieved	2.73	Knowledge acquired but not fully understood
Frequent antibiotic use may reduce effectiveness	2.39	Uncertain knowledge
Non-prescribed antibiotic sales should be prohibited	2.45	Uncertain knowledge
Overall	2.50	Knowledge acquired but not fully understood

Note. Statement wording was lightly edited for readability while preserving the original meaning and reported weighted means.

Several responses indicate important misconceptions. Respondents showed uncertainty regarding whether inappropriate use or missed doses contribute to resistance and whether frequent antibiotic use can reduce effectiveness. The overall score should therefore be interpreted as partial and inconsistent understanding rather than adequate knowledge.

4.4 Attitudes and Reported Antibiotic-Use Practices

The source manuscript reported an overall attitude mean of 2.52 and labeled it 'Strong.' This composite score requires caution because the attitude scale contains both desirable and undesirable statements. Agreement that a complete antibiotic course should be taken reflects an appropriate attitude, whereas agreement that common colds and sore throats should routinely be treated with antibiotics reflects a potentially inappropriate attitude. For this reason, the item-level patterns are more informative than the aggregate label.

Respondents expressed relatively stronger agreement with having obtained prescribed antibiotics from a pharmacy ($M = 2.88$), having experienced an antibiotic prescription personally or among relatives ($M = 2.82$), and completing an antibiotic course ($M = 2.61$). At the same time, agreement was also reported for statements suggesting that persistent cough, cold, fever, or similar conditions should be treated with antibiotics ($M = 2.69$) and that antibiotics may be appropriate for sore throat or common cold ($M = 2.54$).

Table 3. Reported Antibiotic-Use Practices

Practice	Weighted mean	Original interpretation
Consult a doctor before starting antibiotics	2.49	Applied seldom
Use antibiotics recommended by family/friends without consultation	2.11	Applied seldom
Stop antibiotics once feeling better	2.74	Applied most of the time
Keep antibiotics at home for later use	2.20	Applied seldom
Take antibiotics exactly as prescribed without skipping doses	2.42	Applied seldom
Take antibiotics prescribed for another person	2.11	Applied seldom
Purchase complete doses rather than only a few pills	2.51	Applied most of the time
Complete the full course of antibiotic medication	2.48	Applied seldom
Self-medicate because consultation/medication is expensive	2.50	Applied most of the time
Purchase antibiotics from local stores or online	2.34	Applied seldom
Overall	2.39	Applied seldom

The most concerning reported practice was stopping antibiotics once symptoms improved ($M = 2.74$), which the original researchers classified as occurring most of the time. Respondents also reported self-medication for financial reasons ($M = 2.50$), while taking antibiotics exactly as prescribed ($M = 2.42$) and completing the full prescribed course ($M = 2.48$) were classified as occurring seldom. Taken together, the findings reveal a discrepancy between exposure to antibiotics and adherence to appropriate antibiotic-use practices.

4.5 Discussion

The findings indicate that antibiotic use was widespread among the surveyed residents, but awareness and appropriate behavioral practices did not consistently accompany this exposure. Nearly nine in ten respondents had used antibiotics, yet more than half had not heard of antibiotic or drug resistance. This disconnection between medicine exposure and antimicrobial-resistance awareness is central to the study.

The pattern is consistent with literature showing that familiarity with antibiotics does not necessarily mean that individuals understand their appropriate indications or the consequences of misuse. Bhardwaj et al. (2021) reported substantial public confusion between bacterial and viral infections and identified gaps in knowledge concerning antibiotic misuse and resistance. Pogurschi et al. (2022) similarly documented limited understanding alongside inappropriate antibiotic practices, including discontinuation when symptoms disappeared.

Medication adherence is another important concern. Respondents reported that stopping antibiotics once they felt better occurred relatively frequently, while taking antibiotics exactly as prescribed and completing the full medication course received lower practice scores. Comparable behaviors were reported by Cambaco et al. (2020), whose study identified incomplete courses, treatment interruption, sharing medicines, and self-medication among community respondents.

The results also suggest that economic considerations may influence antibiotic-use decisions. Self-medication undertaken to reduce the financial burden of physician consultation and medication was classified in the source study as occurring most of the time. This pattern supports the broader Philippine concern identified by Robredo et al. (2022) that antimicrobial resistance requires responses extending beyond knowledge campaigns to healthcare access and medicine-use practices.

Comparable institutional evidence indicates that resource constraints can materially shape the implementation of health-related standards and services. Garcia and Atento (2026) found that staffing, budget, and equipment limitations were the most frequently reported challenge in a Philippine hospital accreditation context, reinforcing the importance of interpreting desired health practices against the resources available to individuals and institutions.

The attitude findings further demonstrate why a single aggregate KAP score can conceal meaningful contradictions. Respondents simultaneously expressed support for completing antibiotic courses and beliefs suggesting that antibiotics should be used for conditions such as colds and sore throats. Similar inconsistencies have been documented in other populations (Bhardwaj et al., 2021; Karuniawati et al., 2021).

The distinction between observable compliance and internalized understanding is also evident in adjacent behavioral research. Borinaga et al. (2026) found that controlled, pressure-based motivation could coexist with measurable engagement among Filipino college students, suggesting more generally that participation in a prescribed behavior does not necessarily indicate that the underlying rationale has been fully internalized.

The contribution of the study therefore lies less in assigning respondents a single good or poor KAP classification and more in documenting the coexistence of high antibiotic exposure, incomplete antimicrobial-resistance knowledge, contradictory attitudes, and several potentially unsafe antibiotic-use behaviors within an urban Philippine community.

5. Conclusions, Recommendations, and Implications

5.1 Conclusions

Antibiotic use was common among residents of Sampaloc, Manila, yet familiarity with antibiotics did not consistently correspond to adequate understanding of antibiotic resistance or appropriate medication behavior. Most respondents had previously taken antibiotics, but more than half had not heard of antibiotic resistance, drug resistance, or antibiotic-resistant bacteria.

Respondents demonstrated partial and inconsistent knowledge concerning antibiotic use and resistance. Misconceptions remained regarding missed doses, premature discontinuation, repeated use, and the consequences of inappropriate consumption.

The findings also revealed contradictory attitudes. Respondents expressed support for completing antibiotic treatment but simultaneously endorsed beliefs suggesting that antibiotics may be appropriate for common respiratory symptoms. Reported practices further identified premature discontinuation, incomplete adherence, and financially motivated self-medication as important concerns.

Overall, the principal public-health issue is not simply whether residents have used antibiotics, but whether that use is guided by sufficient knowledge, appropriate attitudes, and responsible practices.

5.2 Recommendations

1. Community health authorities and barangay officials should strengthen educational initiatives focusing on appropriate antibiotic indications, antimicrobial resistance, the importance of medical consultation, and completion of prescribed treatment.
2. Healthcare professionals should reinforce patient counseling whenever antibiotics are prescribed or dispensed, including clear instructions on dosage, treatment duration, the risks of stopping medication when symptoms improve, and the dangers of sharing or reusing antibiotics.
3. Community-level antimicrobial-awareness activities may be integrated into existing health campaigns and educational programs, with messages designed to address specific misconceptions rather than general awareness alone.
4. Future studies should use clearly validated and consistently scored KAP instruments, particularly where positive and negative items are combined. Reliability evidence should be reported, and any inferential analyses specified in the methodology should be fully presented in the results.
5. Further research should examine other communities and geographic settings to determine whether the patterns observed in Sampaloc are replicated elsewhere.

5.3 Implications of the Study

The study has direct implications for community public health and antimicrobial stewardship. The coexistence of high antibiotic exposure and limited understanding of resistance suggests that access to medicines and previous treatment experience alone are insufficient to ensure appropriate antibiotic use.

For healthcare practice, the findings underscore the importance of communication between providers and patients. Counseling at the point of prescribing and dispensing may help correct misconceptions regarding treatment duration, antibiotic indications, and self-medication.

This emphasis on communication is consistent with patient-centered analytics literature arguing that health information is most useful when interpretability, cultural context, and patient experience are retained rather than reduced to standardized messages alone (Atento, Quinto, Espelita, & San Juan, 2025).

For antimicrobial-stewardship policy, community-based strategies should complement institutional prescribing controls. Reducing inappropriate antibiotic use requires coordinated action involving healthcare professionals, pharmacies, local health offices, educational institutions, and households.

At an organizational level, integrated health-analytics frameworks similarly emphasize that data, professional capability, governance, and decision quality must operate together for health interventions to produce meaningful outcomes (Atento, Quinto, Espelita, & Castaneda, 2025). This supports a stewardship approach that combines public education with coordinated institutional capacity rather than relying on awareness campaigns in isolation.

Methodologically, the study illustrates the importance of careful construction and interpretation of KAP instruments. Composite scores may obscure contradictory item-level patterns when appropriate and inappropriate behaviors are combined within the same scale. Future KAP research should ensure consistent item direction, appropriate reverse scoring, transparent reliability reporting, and complete presentation of statistical analyses.

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