KNOWLEDGE, ATTITUDE AND PRACTICES OF RESIDENTS IN BARANGAY MANGA, PEÑABLANCA CAGAYAN TOWARDS THE USE OF ANTIBIOTICS

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ABSTRACT

The study aimed to evaluate the knowledge, attitudes, and practices of residents in Barangay Manga, Peñablanca Cagayan regarding antibiotic use. Data collection involved facilitated interviews to gather responses on their antibiotic-related knowledge, attitudes, and practices. A simple random sampling method was utilized for the survey. Findings indicated that while respondents demonstrated good knowledge and positive attitudes, their practices did not align with this understanding. Factors such as sex, religion, educational attainment, and monthly income were found to influence knowledge, while sex and educational attainment affected attitudes towards antibiotic use. Despite the favorable knowledge and attitudes observed, the researchers concluded that the poor practices of the respondents persisted. Thus, it was recommended to conduct seminars or extension programs aimed at addressing these discrepancies and combating antibiotic resistance.

Key words: *Antibiotics, Knowledge, Attitude, Practices, Antibiotic resistance*

INTRODUCTION

Antibiotic resistance is increasing to a dangerous level in all parts of the world. The antibiotics that were once effective in curing common infections and have saved countless lives are becoming less effective due to the development of resistant microorganisms. The problem is already apparent in many aspects of public health, and its effects reverberate through every cornerstone of the healthcare system.

According to the World Health Organization, due to antibiotic resistance, 700,000 people are reported to die every year. Even more alarming is that WHO expects that this figure could rise to 50 million by the year 2050.

As observed by researchers, the use of antibiotics, even without a prescription, is apparent in the community. More people are self-prescribing antibiotics due to technological advancements and the handy Doctor Google. This exacerbated the misuse and abuse. Most of the time, these people take antibiotics even when they are not needed, such as when they have a cough or cold, because this is a sign and symptom of COVID-19, and they want to get rid of it. Patients assume that by taking antibiotics,

they can get quick relief from the signs and symptoms of infection when, in fact, the viral illness usually resolves within a few days due to its ability to self-limit.

Without immediate intervention, it will bring more complications such as drug resistance, intoxication episodes, and infections that may be harder to treat. More expensive drugs are used to treat infections if first-line antibiotics no longer work due to antibiotic-resistant resistance. Furthermore, using a second- and third-line treatment can harm patients, resulting in serious side effects such as organ - failure and prolonged recovery.   As a result, there will be an increase in medical costs and mortality rates due to more extended hospital stays.

Antibiotic resistance is not a minor issue; it is alarming and rampant, especially in the Philippines. And as a third-world country with limited medical advancement, we cannot stop antibiotic resistance when we don't start now.

Hence, steps should be taken in all sectors of society, including the government and healthcare workers, to limit the spread of resistant bacteria and reduce its impact. Therefore, our study intents to assess the knowledge, attitudes, and practices of the residents of Barangay Manga, Peñablanca Cagayan, regarding the use of antibiotics. State and local officials can use the findings of this study to create policies and programs on how they will educate the community about the proper use of antibiotics to combat antibiotic resistance.

METHODOLOGY

This chapter provides a detailed description of the research approach and design employed in this study. The following sections discuss the research design, research participants, data gathering materials, data gathering procedure, and the method of analysis that will be done in the conduct of this research.

Research Design
In the conducted study, a descriptive correlational design was employed to investigate the relationships between knowledge, attitude, and practices towards antibiotic use. Data was collected through facilitated interviews using a questionnaire adapted from prior research and tailored to the specific objectives of this study.

Respondents of the Study
The respondents of this study were residents of Barangay Manga, Peñablanca Cagayan, who were at least 18 years old and above. A simple random sampling method was utilized to conduct the survey, ensuring each eligible individual in the population had an equal opportunity for selection. Additionally, participants were required to have had a history of being treated with antibiotics for any illness within the past two years. Their willingness to participate in the study was also a prerequisite for inclusion in the research cohort.

Data Gathering tool

Data was collected through an interview using a questionnaire adapted from previous studies and customized to suit this study's purpose. Subject experts reviewed and evaluated the questionnaire's content and reliability. Any problems or corrections with the questionnaire were addressed and changed. The questionnaire is divided into four parts: the profile of the respondents, their knowledge, attitude, and practices regarding antibiotic use.

Data Gathering Procedure

After the finalization of questionnaires and before selecting the respondents, the researchers seek for permission to the authority such as the Barangay Captain and even to the Research Development Center for their approval and necessary signatures. The respondents were chosen based on the researchers' criteria. Prior to the data collection, the respondent's consent was obtained. The data was collected through interview using a questionnaire that was adapted from previous studies and tailored to the research objectives.

Data Analysis

To present the profile of the respondents, this study employed descriptive statistics, including frequency counts and percentage distribution. The assessment of respondents' knowledge, attitudes, and practices concerning antibiotic use was conducted using weighted mean analysis. The Likert scale employed for interpretation spanned from evaluating knowledge levels ranging from "Not knowledgeable" to "Very knowledgeable", attitudes from "Strongly disagree" to "Strongly agree", and practices from "Never" to "Always" to encompass diverse frequencies of practices.

One-way analysis of variance (ANOVA) was utilized to assess a significant difference in respondents' knowledge, attitude, and practices when they were grouped based on their profile. Additionally, to ascertain the potential correlation between respondents' profiles and their knowledge, attitude, and practices, Pearson Correlation analysis was utilized.

RESULT AND DISCUSSION

Profile of the Respondents in terms of Age

In terms of the respondents' profile regarding age, it was revealed that the majority were young adults, as they were primarily homemakers and were present in their respective homes during data collection. Thirty-one out of 116 respondents were senior citizens, with only two respondents aged 80 years and above, constituting the age range with the lowest number of participants. This was due to the fact that individuals in this age group tend to experience hearing loss and poor eyesight, which may have hindered their ability to comprehend the questionnaire.

Profile of the Respondents in terms of Sex

It was evident that there were more female respondents than male counterparts, as the majority were homemakers who remained at home while their husbands were at work, particularly on the farm,

during the data gathering. Females were assumed to have a higher level of knowledge, a better attitude, and practices towards the proper use of antibiotics, as they were typically more health-conscious than males when it came to taking care of health (Nepal et al., 2019).

Profile of the Respondents in terms of Educational Attainment

The tallied educational attainment revealed that elementary undergraduates constituted the highest population among respondents. The majority of participants were unable to pursue secondary or tertiary education due to financial constraints and the distant proximity of the barangay to high schools and universities. However, there were still a few who managed to pursue college education. According to the study by Napolitano et al. (2013), individuals with higher educational attainment typically exhibited greater knowledge, more acceptable attitudes, and better practices regarding the use of antibiotics.

Profile of the Respondents in terms of Monthly Income

The table depicted the distribution of the monthly income of the respondents. It indicated that 75% of the population had a monthly income of 5000 and below, suggesting that the majority of respondents did not possess a stable financial income. Furthermore, it was observed that individuals with higher monthly incomes were typically college graduates with stable jobs.

A study indicated that those with stable incomes possessed the knowledge, appropriate attitude, and better antibiotic practices, as they were able to visit and seek advice from healthcare professionals regarding antibiotics (Karuniawati et al., 2021). Additionally, they could also leverage resources such as televisions, cellphones, and other devices to access information about the proper use of antibiotics. Profile of the Respondents in terms of Number of Household member

It was revealed that the majority of household members fell within the range of 3-4 members, accounting for 31.9% of the total. Conversely, families with 1-2 household members had the lowest frequency, comprising 17.2% of respondents.

Families with fewer household members tended to exhibit better knowledge, appropriate attitudes, and practices regarding antibiotic use. They were often more attentive and caring when a loved one fell ill, fearing the possibility of losing them. Consequently, they sought medical advice even if it required additional expenses.

Knowledge of the Respondents towards the use of Antibiotics

Table 2.1 **Knowledge of the Respondents regarding Antibiotic Prescription**

STATEMENTS	MEAN	DESCRIPTION
Antibiotic Prescription		
1. Medical Prescription is needed in buying antibiotics.	3.09	knowledgeable
2. Medical Prescription can be shared from family members, friends and relatives.	2.84	knowledgeable
3. Prescribed antibiotics to a patient should not be shared to somebody else.	2.51	knowledgeable

4. Buying antibiotics from the sari-sari store would be dangerous to my health when there is no prescription	2.67	knowledgeable
CATEGORICAL MEAN	**2.78**	**knowledgeable**

Table 2.1 illustrated the respondents' knowledge regarding antibiotic prescription, with a categorical mean of 2.78, indicating they were knowledgeable about its importance. In the Philippines, the sale and dispensing of antibiotics without a prescription are strictly prohibited, as highlighted by Bahta et al. (2020), who identified it as an example of irrational antibiotic use contributing to bacterial resistance. The results indicated the respondents were knowledgeable across all statement parameters, with the highest mean attributed to the necessity of a medical prescription for purchasing antibiotics, emphasizing their awareness of this requirement reinforced by healthcare providers.

Table 2.2 **Knowledge of the Respondents regarding Antibiotic course of action**

STATEMENTS	MEAN	DESCRIPTION
Antibiotic course of action		
1. Different antibiotics are needed to cure different diseases caused by microorganisms.	2.47	Partially knowledgeable
2. Antibiotics can be a broad-spectrum or narrow-spectrum drug.	2.47	Partially knowledgeable
3. There is a specific antibiotic for every pathogenic microorganism.	2.53	knowledgeable
4. Improper use of antibiotic is dangerous to my health since it can cause antibiotic resistance.	3.92	Very knowledgeable
5. Antibiotic can kill the normal flora that I have in my body.	2.28	Partially knowledgeable
6. There is a need to complete antibiotic course for best results.	3.22	knowledgeable
7. Antibiotics help patients recover faster from coughs and colds.	3.96	Very knowledgeable
CATEGORICAL MEAN	**2.69**	**knowledgeable**

Table 2.2 depicted respondents' knowledge regarding the antibiotic course of action, yielding a categorical mean of 2.69, signifying they were knowledgeable on this topic. Notably, statement parameter (5) regarding the potential impact of antibiotics on normal flora garnered the lowest mean, suggesting partial familiarity with this concept.

Similarly, statement parameters (1) and (2) regarding the need for different antibiotics for various microorganism-caused illnesses and the distinction between broad-spectrum and narrow-spectrum drugs also received partial knowledgeable ratings. Conversely, statement parameter (7) concerning the efficacy of antibiotics in treating coughs and colds attained the highest mean, indicating a very knowledgeable understanding.

Yusef et al. (2018) highlighted that excessive antibiotic use to alleviate discomfort or pain, inflammation, or colds contributes to antibiotic resistance, underscoring the importance of proper antibiotic usage. The respondents' knowledge in this regard seemed well-founded, likely influenced by physicians'

emphasis on appropriate antibiotic use and the necessity of completing prescribed courses during medical consultations.

Table 2.3 **Knowledge of the Respondents regarding Side Effects and Adverse Effects of Antibiotics**

STATEMENTS	MEAN	DESCRIPTION
Side Effects and Adverse Effects		
1. Taking antibiotics may cause problems such as dizziness, head-ache, nausea, vomiting and loss of appetite.	2.40	Partially knowledgeable
2. The effect of antibiotics may vary from one person to another.	2.53	knowledgeable
3. If you experience side effects while taking antibiotics, you should stop taking them as soon as possible.	2.75	knowledgeable
4. If you have a skin reaction after taking an antibiotic, you should stop taking that medication.	2.78	knowledgeable
CATEGORICAL MEAN	**2.61**	**knowledgeable**

Table 2.3 presents the knowledge of the respondents regarding the side effects and adverse effects of antibiotics. The categorical mean is 2.61 with a descriptive value of knowledgeable. This means that the respondents know and can explain antibiotic side effects and adverse effects.

The lowest mean is seen in the statement parameter (1. Taking antibiotics may cause problems such as dizziness, headache, nausea, vomiting, and loss of appetite) with a descriptive value of partially knowledgeable. This reveals that the respondents are acquainted but have a limited understanding that the usage of antibiotics may cause dizziness, headaches, nausea, vomiting, and loss of appetite. Furthermore, the statement parameter (2. The effect of antibiotics may vary from one person to another) has a descriptive value of knowledgeable. This indicates that the respondents are aware that antibiotic effects vary from one person to another.

In addition, the highest mean is observed in the statement parameter (4. If you have a skin reaction after taking an antibiotic, you should stop taking that medication) and followed by the statement parameter (3. If you experience side effects while taking antibiotics, you should stop taking them as soon as possible) with a descriptive value of knowledgeable. This means that the respondents are aware that they should stop using it once they get side effects while taking antibiotics as soon as possible.

According to CDC (2021), it is essential to consult a physician if you experience side effects when taking antibiotics. Common side effects of antibiotics could include rash, diarrhea, and nausea. The respondents are said to be knowledgeable about antibiotics' effects and adverse effects since they have personally experienced them.

Table 2.4 **Knowledge of the Respondents regarding Antibiotic Resistance**

STATEMENTS	MEAN	DESCRIPTION
Antibiotic Resistance		

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1. Antibiotic usage in poultry and aquaculture has the potential to alter and minimize antibiotic effects in humans who consume these agricultural products.	1.56	Not knowledgeable
2. Antibiotic overuse can increase bacteria's resistance to them.	2.39	Partially knowledgeable
3. Antibiotic resistance is a worldwide issue.	2.22	Partially knowledgeable
4. Antibiotic resistance can develop in humans if treatment regimens are not followed.	2.62	knowledgeable
5. Antibiotic misuse can result in antibiotic resistance.	2.68	knowledgeable
6. It can be extremely difficult to treat an infection caused by bacteria that are resistant to antibiotics.	2.35	Partially knowledgeable
CATEGORICAL MEAN	**2.24**	**Partially knowledgeable**

Table 2.4 presented respondents' knowledge concerning antibiotic resistance, yielding a categorical mean of 2.24, indicating partial knowledge with this concept. Notably, they lacked awareness regarding statement parameter (1), which addressed the potential impact of antibiotic usage in poultry and aquaculture on humans, as it was unfamiliar to them.

Additionally, respondents demonstrated partial knowledge regarding statement parameters (2), (3), and (6), concerning antibiotic overuse, the global nature of antibiotic resistance, and the difficulty in treating infections caused by resistant bacteria. However, they expressed belief in statement parameter (4), suggesting that humans could develop resistance if treatment regimens are not followed, despite the World Health Organization's clarification that antibiotic resistance arises in bacteria, not humans.

On the other hand, statement parameter (5) concerning the relationship between antibiotic misuse and resistance was well-understood, with the highest mean indicating knowledgeable comprehension.

In summary, respondents exhibited partial knowledge about antibiotic resistance, although some misconceptions persisted regarding its mechanisms.

Table 2.5 **Weighted Mean Knowledge of the Respondents towards the Antibiotic use**

Parameter	Mean	Description
Antibiotic Prescription	**2.78**	**knowledgeable**
Antibiotic course of treatment	**2.69**	**knowledgeable**
Side Effects and Adverse Effects	**2.61**	**knowledgeable**
Antibiotic Resistance	**2.24**	**Partially knowledgeable**
Weighted Mean	**2.58**	**knowledgeable**

Table 2.5 presented the weighted mean knowledge of respondents regarding antibiotic use, with an overall mean of 2.24, indicating a generally knowledgeable understanding. Notably, the lowest mean

was observed in the area of antibiotic resistance, suggesting partial familiarity likely due to lingering misconceptions.

However, respondents demonstrated strong knowledge in other areas, particularly in antibiotic prescription, which garnered the highest mean, as well as in understanding antibiotic course of action and side effects and adverse effects. A study conducted in 2013 by Le Corvoisie et al. revealed that organizing educational seminars on the proper use of antibiotics significantly enhances the knowledge and practices of the general population. However, according to respondents, no seminars or awareness programs regarding antibiotic use rationale have been conducted in their barangay. Instead, they relied on advice from healthcare professionals during their visits. Thus, doctors, pharmacists, and other healthcare providers play a crucial role in informing, educating, and guiding the public to promote the appropriate use of antibiotics.

Table 3. **Attitude of the respondents regarding Antibiotic Use**

STATEMENTS	MEAN	DESCRIPTION
1. I seek medical consultation before taking antibiotics.	3.09	Agree
2. I only use antibiotics when they are prescribed by a physician.	3.27	Strongly Agree
3. I usually read the instructions label of the antibiotic.	3.29	Strongly Agree
4. Even if I feel better after a few days, I still complete the recommended course of treatment.	2.49	disagree
5. If I have a cough that lasts more than a week, I prefer not to take antibiotics.	3.0	Agree
6. I prefer not to take antibiotics when I have a sore throat.	2.92	Agree
7. I do not prefer to buy antibiotics from the local store (Sari-sari store) without a prescription.	2.70	Agree
8. I do not like keeping antibiotics on hand in case I need them later.	2.46	Disagree
9. I do not want to be able to obtain antibiotics from relatives or friends without first consulting a physician.	2.45	Disagree
10. Even if I feel better, I finish the antibiotic treatment regimen.	2.49	Disagree
CATEGORICAL MEAN	**2.82**	**Agree**

Table 3 presents the mean attitudes of the respondents concerning antibiotic use, with a categorical mean of 2.82 and a descriptive value of "agree," indicating an overall agreement regarding appropriate attitudes toward antibiotic use.

The lowest mean was observed in statement parameters (9) and (8), both reflecting a "disagree" descriptive value. This suggests that respondents preferred obtaining antibiotics from relatives or friends and keeping antibiotics on hand for future use. Additionally, they disagreed with statement parameter (4), indicating a belief that completing the recommended course of treatment was unnecessary and that leftover antibiotics could be used in emergency cases to save money. However, this attitude is inappropriate as per DOH-FDA (2014) guidelines, as it contributes to antibiotic resistance.

Conversely, the highest mean attitude was recorded in statement parameter (3), with a descriptive value of "strongly agree." This indicates a strong preference among respondents for reading the instructions label of antibiotic drugs, a behavior deemed appropriate as it provides vital dosage information.

Table 4. **Practices of the respondents regarding Antibiotic Use**

STATEMENTS	MEAN	DESCRIPTION
1. I consult a doctor before purchasing antibiotics.	2.63	Sometimes
2. I consult a doctor before taking antibiotics.	2.57	Seldom
3. I buy antibiotics with medical prescription.	2.44	Seldom
4. I do not buy antibiotics in local store (sari-sari store).	2.92	Sometimes
5. I do not self-medicate with antibiotic when I am not feeling well.	2.41	Seldom
6. I do not take antibiotic when I have cough or cold.	2.35	Seldom
7. I do not take antibiotic to protect myself from the viral disease C0VID-19.	1.79	Never
8. I do not use left-over antibiotic when I am sick.	1.52	Never
9. I do not stop taking antibiotics once I started feeling better.	3.09	Sometimes
10. I stop taking antibiotics when I get side effects.	3.10	Sometimes
11. I do not share my antibiotic to my family members, friends or relatives who manifest the same signs and symptoms as mine.	2.77	Sometimes
12. I do not keep antibiotics at home so I can use it in case a family members of mine will be needing it.	2.38	Seldom
13. When taking antibiotic, I complete recommended treatment regimen.	3.51	Often
14. I do not use antibiotics to animals (poultry, aquaculture) for growth promotion.	1.47	Never
CATEGORICAL MEAN	**2.50**	**Seldom**

Table 4 presents the mean practices of respondents regarding antibiotic use, with a categorical mean of 2.50 and a descriptive value of "seldom," indicating infrequent adherence to proper antibiotic practices. This suggests a need for improvement to mitigate the rapid growth of antibiotic-resistant bacteria, which hinders our ability to effectively treat infections.

The lowest mean was observed in statement parameter (14), where respondents indicated a "never" descriptive value, signifying that they never use antibiotics in animals for growth promotion. This is a positive practice, as studies have shown that using antibiotics in aquaculture and poultry can lead to antibiotic residues in products, contributing to antibiotic resistance in humans (Okocha et al., 2018)

Additionally, statement parameters (7) and (8) revealed that respondents never use leftover antibiotics when sick or to protect themselves from COVID-19. Furthermore, several statement parameters indicated "seldom" practices, attributed to the challenges of accessing healthcare facilities due to financial constraints and distant proximity to hospitals.

Statement parameters (9), (10), and (11) showed "sometimes" practices, indicating occasional adherence to proper antibiotic use. Notably, statement parameter (12) highlighted the sharing of antibiotics, a practice associated with misconceptions about antibiotic use, as reported in previous studies.

Conversely, statement parameter (13) demonstrated the highest mean with an "often" descriptive value, indicating frequent completion of recommended antibiotic treatment regimens, consistent with physicians' advice.

Table 5. **Significant Difference in the Knowledge, Attitude, and Practices of the respondents towards Antibiotic Use when grouped according to Profile**

Profile		KNOWLEDGE	ATTITUDE	PRACTICES
Age	**f – value**	1.12	.62	.42
	p – value	.35	.82	.95
Sex	**f – value**	3.28	3.32	1.69
	p – value	.04*	.04*	.19
Religion	**f – value**	4.47	.65	.80
	p – value	.01*	.52	.45
Educational Attainment	**f – value**	5.56	2.58	.86
	p – value	.00*	.02*	.55
Monthly Income	**f – value**	4.06	1.07	1.86
	p – value	.00*	.37	.12
No. of Family Members	**f – value**	.47	.95	1.33
	p – value	.71	.42	.27

Table 5 demonstrated significant differences in respondents' knowledge and attitude towards antibiotic use based on their profiles. Specifically, a significant difference was observed in knowledge and attitude between males and females, consistent with previous research indicating higher knowledge and more favorable attitudes among females (Nepal et al., 2019).

Furthermore, significant differences were found in knowledge concerning religion, educational attainment, and monthly income. Those with higher education and stable jobs tended to possess greater knowledge, aligning with previous studies linking lower educational levels with a lack of knowledge regarding antibiotic resistance (Napolitano et al., 2013).

However, no significant differences were observed in respondents' practices based on their profiles, as indicated by p-values exceeding 0.05. This suggests uniformity in antibiotic use practices across various demographic groups, possibly influenced by shared community norms and behaviors within the small barrio setting.

Conclusions

The researchers found that the respondents are knowledgeable and have an acceptable attitude. However, their practices regarding antibiotics are poor due to financial issues and lack of access to healthcare to seek help and guidance from healthcare experts.

Recommendations

The researchers made the following recommendations based on their findings and conclusions:

1. Seminars or extension programs on proper antibiotic intake are needed to address the respondents' wrong or poor practices.
2. To address antibiotic resistance, the Department of Health Region 2 should establish strategies for local health education and develop intervention tools aimed at improving the public's knowledge, attitude, and practices concerning antibiotic use.
3. The selling of antibiotics in sari-sari stores should be strictly prohibited.
4. Future researchers should assess antibiotic resistance among the residents in Barangay Manga, Peñablanca Cagayan.
5. Future researchers should study "knowledge, attitudes, and practices towards antibiotic use" in a broader context and across different locales.

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