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Knowledge and Awareness on Antibiotic Resistance Among the Residents of Barangay San Fabian, Echague, Isabela

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ABSTRACT

The emergence of antibiotic resistance continues to threaten the health of the people. It becomes serious for it causes infections difficult to treat as they unconsciously acquiring antibiotic resistance by consuming antibiotic containing products, inappropriate use and abusing this drug. Knowledge and awareness are huge factors in contributing to the present problem. The purpose of this study is to determine the level of knowledge and awareness of the residents of barangay San Fabian, Echague, Isabela regarding antibiotic resistance. This quantitative research used descriptive research design, specifically descriptive-survey method to assess the level of knowledge and awareness of the respondents regarding antibiotic resistance and it also aims to know the extent to which how these components are influenced by their age, gender and highest educational attainment. A researcher-made questionnaire was utilized as the main instrument in gathering the data needed in this study, it underwent pilot test and was reviewed and evaluated using Cronbach's alpha tool for validity. The questionnaire was distributed to the respondents that was selected using convenience sampling and snowball sampling technique. Based on the evidence presented, the age bracket with the highest level of knowledge regarding antibiotic resistance is 18-35 years old with a weighted mean of 3.62. It also showed in statistical data that males are more knowledgeable with a mean of 3.51, than females with a mean of 3.39. The educational attainment with highest level of knowledge is vocational graduate with a weighted mean of 3.50. For the level of awareness, age bracket 18-35 years old has the highest mean which is 3.71, the males also have a higher awareness regarding antibiotic resistance with a mean of 3.65, and vocational graduate has the highest level of awareness with a mean of 3.88. The Chi square test revealed that there is no significant relationship between the level of knowledge and level of awareness on antibiotic resistance and the respondents age, gender, and highest educational attainment. A program was proposed to help raise awareness and promote health education in the community regarding antibiotic resistance. The findings in this study will serve as a standard to maintain and improve the quality of health care services in the barangay and for nursing education to improve clinical practice.

Keywords: antibiotic resistance; knowledge; awareness

INTRODUCTION

There has been a high case rate of antibiotic resistance in different parts of the world today. It was considered to be a global health threat by the World Health Organization. When treating bacterial infections, the top medicine on the list that will be prescribed are antibiotics but the incorrect or abuse of using these medicines causes antibiotic resistance and makes the life of the people be endangered.

In the mid-20th century, antibiotics were seen as the 'wonder drug'. At the time, there was an optimistic belief that infectious diseases would almost completely disappear. Alexander Fleming and Paul Ehrlich, were synonymously identified with the beginning of the modern antibiotic period. Antibiotics were thought to be a magic formula that selectively targets microbes that are responsible for the cause of disease, but do not affect the host at the same time. (1)

Antibiotic resistance occurred as the ability to destroy the drugs intended to kill them grows in germs like bacteria and fungi. Antibiotic resistance does not mean that antibiotics are becoming resistant to the body; it was that the antibiotics intended to kill them have become resistant to bacteria. Each year in the United States, it infects at least 2.8 million people, and more than 35,000 cases result in death. (2) In 2014, the World Health Organization raised the alarm about a return to the post-antibiotic period in which cancer is taken over by drug-resistant infections as the leading cause of human suffering and deaths by 2050. Globally, AMR reportedly accounts for 700,000 deaths each year. Experts said that if no action was taken, it is estimated that by 2050 there will be around 10 million deaths annually. (3)

A research study in Manila, Philippines indicated that 66.3% of antibiotic medications without prescriptions were obtained in community drugstores. (4) Same on the study in Ethiopia that revealed antibiotics were sold over-the-counter in community pharmacies and it's a widespread practice. The primary causes for continuous sales of antibiotic medicine without valid prescription were a lack of regulatory enforcement mechanism, professional conflicts of interest, owner's influence, client demand and prescriber. (5)

Antibiotics are most often obtained via non-medical professional in the Philippines, which has one of the lowest percentages of prescriptions issued by Doctors. (6) Sharing antibiotics were prevalent and it was linked to misunderstandings about how to use antibiotics properly. Antibiotics were easily accessible in sari-sari stands, and frequently sold without expiration information in the community. It indicates that in the Philippines and other Southeast Asian nations, multifaceted and locally adapted approaches to limiting informal antibiotic availability are required. (7)

Klebsiella pneumonia, Pseudomonas aeruginosa, Acinetobacter baumanii, Staphylococcus aureus, Coagulase-negative Staphylococcus, Escherichia coli, and Enterobacter species were the most commonly found types of pathogens with antimicrobial resistance in the Philippines, as reported by the Department of Health's Antimicrobial Resistance Surveillance Program. (8)

Antibiotics used to treat infections such as pneumonia, tuberculosis, gonorrhea, and salmonellosis are becoming less effective, making treatment increasingly difficult. It can lead to higher medical costs, prolonged hospital stays, and increased mortality. (9) These are all possible things that will happen in less fortunate communities that are highly-risked, where in medicines can be bought without proper prescription and there is a lack of proper knowledge on the medicines they are taking.

For antimicrobial resistance to be contained, education, and knowledge among those involved in antimicrobial usage are essential. There is no hope for action without recognizing or understanding the growing issue of antimicrobial resistance. (10)

Factors contributing to the development of antibiotic resistance are lack of knowledge and public awareness. As stated in WHO's National Action for Global Change on Antimicrobial Resistance, the misuse and abuse of antimicrobials, in particular antibiotics, are major contributors to the emergence and spread of antimicrobial resistance, while low awareness contributes to misuse and overuse.

Through assessing the citizens of a community in the province, the gathered data were served as a baseline survey on how to address this problem. Regarding how to help the citizens to fully understand the proper usage of this medicine, to avoid ignorance and confusion that leads to harm to every person. The perspectives of the citizens were given contributory factors so that they knew how to do and make concrete action plans to reduce the risks of getting infected with antibiotic resistance.

METHODS

Design

Descriptive-survey method was used in this study. The researchers used this design to see a general picture of the population under investigation, describe the nature of existing conditions, or determine the relationships that exist between or among specific variables of the study.

The total population of San Fabian, Echague, Isabela is 4,138 as of 2019 which was composed of seven (7) puroks. Using Slovin's formula at 90% level of confidence with 10% margin of error, a sample size of 98 is determined which is the total number of respondents in this study.

The respondents of this study were selected using Convenience Sampling method it is based on respondents availability to participate in the study and Snowball Sampling were the current/existing respondents referred another potential participant to the researchers. These methods are used due to COVID-19 pandemic, were there are health protocols implemented by the government to ensure the safety of every individual, which causes to have a difficulty in properly gathering of data. The two-sampling techniques are the appropriate method to use in this study because the researchers personally conducted and floated the questionnaires to the respondents.

This study used a researcher-made questionnaire as the research instrument to gather data that is based on the research topic and objectives. The questionnaire was a checklist type and consists of three parts, Part 1 was the respondents' profile that was identified by Name (optional), Age, Gender and Highest Educational Attainment, Part 2 was to assess the Knowledge and Part 3 was to assess the Awareness of the respondents. There were total of sixteen questions (eight each for Part 2 & 3) and the language used is in English and Filipino. A 4-Point Likert Scale was utilized, where the respondents answered it from the levels of agreement.

Table 1. Mean and quantitative description

Scale	Mean Range	Description	
4	3.26 – 4.00	Strongly agree	High
3	2.51 – 3.25	Agree	Average
2	1.76 – 2.50	Disagree	Low
1	1.00 – 1.75	Strongly disagree	Very low

Data Gathering Procedures

The researchers chose a title for the study with the approval of the research professor. They secured a letter to the barangay captain to request a permission to gather data in barangay San Fabian. Upon the approval, the researchers requested an updated barangay population from the barangay captain/other barangay officials.

The constructed questionnaire was checked by the research adviser and a pilot test was conducted on a small group from different barangay to ensure the validity and reliability of the questionnaire, where the result of Cronbach's alpha is 0.961 and Cronbach's alpha based on standardized items result is 0.962 which is equivalent to excellent.

A consent form was given first to all the respondents to have their approval to participate in this study. That by signing the form the respondents voluntarily agreed to take part in the study and were informed on the purpose of the research study, benefits of participation and assured that the information collected shall remain confidential.

The researchers distributed, instructed, and guided the respondents in filling up and answering the instrument if necessary. The data gathered was tabulated, analyzed, and interpreted using the statistical tools for the study with the supervision of the statistician.

Statistical Treatment of Data

The researchers determined the profile of the respondents and their level of knowledge and awareness regarding antibiotic resistance through the use of frequency, percentage and weighted mean. Chi square test was used to determine the significant relationship between the level of knowledge and awareness on antibiotic resistance among the respondents profile.

RESULTS

Profile of the Respondents

The table 1 showed the profile of the respondents in terms of age, gender and highest educational attainment. As presented in table 1, the data revealed that most of the respondents belong to the age bracket of 18-35 years old with a frequency of 46 and accounts for 47%, followed by the age bracket of 36-55 years old with a frequency of 39 and accounts for 40% and the remaining 13% for the age 56 years old and above.

In terms of gender, the majority of the respondents are female with a frequency of 60 and accounts for 61%, which is far higher than the number of males with a frequency of 38 and accounts for 39%.

As to highest educational attainment, respondents who were High School Graduate have the highest number with 48%, followed by College Graduate with 35%, then Elementary Graduate with 9% and Vocational Graduate with 8%.

Table 1. Frequency and percentage of the profile of the respondents

Profile of the respondents	Frequency	Percentage
Age		
• 18 - 35 years old	46	47
• 36 - 55 years old	39	40
• 56 years old and above	13	13
Gender		
• Male	38	39
• Female	60	61
Highest educational attainment		
• Elementary graduate	9	9
• High school graduate	47	48
• Vocational graduate	8	8
• College graduate	34	35

Level of Knowledge of the Respondents on Antibiotic Resistance According to Their Age, Gender and Highest Educational Attainment

Table 2. Weighted mean and quantitative description of knowledge level according to age

Age	Mean	Description
18 - 35 years old	3.62	High knowledge
36 - 55 years old	3.17	Average knowledge
56 years old and above	2.82	Average knowledge
Overall mean	3.20	Average knowledge

The table 2 showed the respondents knowledge level based on Age with the computed weighted mean and quantitative description.

The result revealed that 18-35 years old had a highest mean of 3.62 or categorized as high knowledge level. Followed by 36-55 years old with a mean of 3.17 or categorized as average knowledge level, same to 56 years old and above with a mean of 2.82. The overall weighted mean is 3.20 or average knowledge level according to their age.

Table 3. Weighted mean and quantitative description of knowledge level according to gender

Gender	Mean	Description
Male	3.51	High knowledge
Female	3.39	High knowledge
Overall mean	3.45	High knowledge

The table 3 presented the respondents knowledge level based on Gender with the computed weighted mean and quantitative description.

The table were dominated by male with a weighted mean of 3.51 followed by female with a weighted mean of 3.39. The overall weighted mean is 3.45 or categorized as high knowledge level according to gender.

Table 4. Weighted mean and quantitative description of knowledge level according to highest educational attainment

Highest educational attainment	Mean	Description
Elementary graduate	3.42	High knowledge
High school graduate	3.41	High knowledge
Vocational graduate	3.50	High knowledge
College graduate	3.47	High knowledge
Overall mean	3.45	High knowledge

Table 4 showed the respondents knowledge level based on Highest Educational Attainment with the computed weighted mean and quantitative description.

The table revealed that Vocational Graduate has a weighted mean of 3.50 or high knowledge, followed by College Graduate with 3.47 or high knowledge, followed by Elementary Graduate with 3.42 or high knowledge, High School Graduate with 3.41 or high knowledge. The overall weighted mean on this table is 3.45 or categorized as high knowledge level according to the highest educational attainment.

Level of Awareness of The Respondents on Antibiotic Resistance According to Their Age, Gender and Highest Educational Attainment

Table 5. Weighted mean and quantitative description of awareness level according to age

Age	Mean	Description
18 - 35 years old	3.71	High awareness
36 - 55 years old	3.66	High awareness
56 years old and above	3.61	High awareness
Overall mean	3.66	High awareness

Table 5 showed the respondents awareness level based on Age with the computed weighted mean and quantitative description.

The table revealed the age ranges from 18-35 years old has the highest mean which is 3.71 or high awareness, followed by 36-55 years old with a mean of 3.66 or high awareness and 56 years old and above with a mean of 3.61 or high awareness. The overall weighted mean is 3.66 or categorized as high level of awareness according to age.

Table 6. Weighted mean and quantitative description of awareness level according to gender

Gender	Mean	Description
Male	3.65	High awareness
Female	3.64	High awareness
Overall mean	3.65	High awareness

Table 6 showed the respondents awareness level based on Gender with the computed weighted mean and quantitative description.

The table revealed the awareness level of male is 3.65 or categorized as high awareness, while female awareness level is 3.64 or categorized as high awareness. The overall weighted mean is 3.65 or high level of awareness according to gender.

Table 7. Weighted mean and quantitative description of awareness level according to highest educational attainment

Highest educational attainment	Mean	Description
Elementary graduate	3.44	High awareness
High school graduate	3.64	High awareness
Vocational graduate	3.88	High awareness
College graduate	3.70	High awareness
Overall mean	3.66	High Awareness

Table 7 presented the respondents awareness level based on Highest Educational Attainment with the computed weighted mean and quantitative description.

The weighted mean for Vocational Graduate is 3.88 or high awareness, followed by College Graduate with 3.70 or high awareness, followed by High School Graduate with 3.64 or high awareness and Elementary Graduate with 3.44 or high awareness. The overall weighted mean for this table is 3.66 or categorized as high level of awareness according to highest educational attainment.

Level of Knowledge of the Respondents on Antibiotic Resistance

Table 8 presented the level of knowledge on antibiotic resistance among the residents of Barangay San Fabian, Echague, Isabela.

It showed the weighted mean and descriptive interpretation of the second part of the survey questionnaire. The data revealed that the majority of the weighted mean belongs to the bracket of high knowledge which ranges from 3.26 - 4.00 and the overall weighted mean for respondents' knowledge is 3.43. This implies that the residents of barangay San Fabian, Echague, Isabela have a high level of knowledge regarding antibiotic resistance.

Table 8. Weighted mean and quantitative description of knowledge level on antibiotic resistance

Knowledge	Mean	Description
1. Antibiotics are used to treat infections caused by bacteria. *Ginagamit ang antibayotiko upang mapagaling ang mga impeksyon dulot ng bakterya.*	3.70	High knowledge
2. Each antibiotic has different classifications to treat bacterial infection. *Magkakaiba ang uri ng antibayotikong ginagamit sa pagpapagaling ng mga impeksyong dulot ng bakterya.*	3.54	High knowledge
3. Antibiotic is not intended for fever and pain reliever. *Hindi maaaring gamitin ang antibayotiko para sa lagnat at sakit ng katawan.*	3.30	High knowledge
4. Generic medications are just as effective as brand-name drugs. *Magkasingbisa ang pangkaraniwang gamot at ang mga mamahaling gamot.*	3.42	High knowledge
5. Incurable and recurrence of disease can be a sign of developing antibiotic resistance. *Isang tanda ng kawalan ng bisa ng mga antibayotiko ang pabalik-balik at hindi gumagaling na mga sakit.*	3.37	High knowledge
6. If taken too often, antibiotics are less likely to work in the future. *Hindi magiging epektibo ang mga antibayotiko kung ginamit ito ng madalas.*	3.36	High knowledge
7. Inappropriate and over use of antibiotic can contribute in developing antibiotic resistance. *Ang bisa ng mga antibayotiko ay makaaapekto dahil sa maling paggamit ng mga ito.*	3.42	High knowledge
8. It becomes harder to treat a certain disease when you develop antibiotic resistance. *Higit na mahirap gamutin ang isang sakit kung mayroong resistansya sa antibayotiko.*	3.35	High knowledge
Mean	3.43	High knowledge

Level of Awareness of the Respondents on Antibiotic Resistance

Table 9. Weighted mean and quantitative description of awareness level on antibiotic resistance

Awareness	Mean	Description
1. Antibiotics should not be sold without a prescription. *Hindi dapat ibinebenta ang mga antibayotiko kung walang reseta ang mga doktor.*	3.71	High awareness
2. I should seek advised to the Doctor for proper medications. *Higit na mainam na humingi ng payo sa mga doktor upang mabigyan ng angkop na gamot na kailangan ng ating katawan.*	3.60	High awareness
3. I need to know the difference between antibiotics and other drugs. *Kailangan malaman ng bawat isa ang kaibahan ng antibayotiko sa iba pang uri ng gamot.*	3.81	High awareness
4. I should not ask my neighbor about medications for treating a disease. *Sa paghahanap ng gamot o medikasyon, hindi dapat ang mga kapitbahay ang tinatanong.*	3.50	High awareness
5. I follow the time of taking antibiotic. *Kailangang sundin ang angkop na oras sa pag-inom ng mga antibayotiko.*	3.67	High awareness
6. I will not stop my antibiotic medication until course of treatment is done. *Hindi dapat ihinto ang pag-inom ng mga antibayotiko hanggat hindi natatapos ang gamutan.*	3.54	High awareness

Awareness	Mean	Description
7. Taking long-term antibiotics can contribute in developing antibiotic resistance. *Ang paggamit ng mga antibayotiko sa mahabang panahon ay maaaring makaapekto sa bisa nito.*	3.51	High awareness
8. A pregnant woman should seek and coordinate to the Doctor for antibiotic medications. *Kinakailangang humingi ng payo sa mga doktor ang mga buntis kung anong angkop na antibayotiko ang kailangan ng kanilang katawan.*	3.83	High awareness
Mean	3.65	High awareness

Table 9 presented the level of awareness on antibiotic resistance among the residents of Barangay San Fabian, Echague, Isabela.

It showed the weighted mean and descriptive interpretation of the third part of the survey questionnaire. The data revealed the majority of the weighted mean belongs to the bracket of high awareness which ranges from 3.26 - 4.00 and the overall weighted mean for respondents' awareness in this study is 3.65. It implies that the residents of barangay San Fabian, Echague, Isabela have a high level of awareness in regards to antibiotic resistance.

Significant Relationship between the Level of Knowledge on Antibiotic Resistance and the Respondents Profile

Table 10. Significant relationship between the respondents level of knowledge on antibiotic resistance and their profile

Profile	Significance Pearson's Chi-square	Analysis	Decision	Remarks
Age	1.00	>0.05	Accept Ho	Not significant
Gender	0.99	>0.05	Accept Ho	Not significant
Highest educational attainment	1.00	>0.05	Accept Ho	Not significant
	Value	Df	Asymp. sig. (2-sided)	
	Age			
Pearson Chi-square	0.581[a]	7	0.999	
Likelihood ratio	0.575	7	0.999	
	Gender			
Pearson Chi-square	0.581[a]	7	0.999	
Likelihood ratio	0.575	7	0.999	
	Highest educational attainment			
Pearson Chi-square	1.623[a]	21	1.000	
Likelihood ratio	2.524	21	1.000	
N of valid cases	98			

Table 10 showed the significant relationship between the level of knowledge on antibiotic resistance and their profile using Pearson's Chi-square C – test at 0.05 level of significance.

The significance C values for all of the profiles were more than 0.05, as shown in the table. The null hypothesis was accepted. There is no significant relationship between the level of knowledge on antibiotic resistance and their profile age, gender and highest educational attainment.

This indicated that the level of knowledge on antibiotic resistance of the residents of barangay San Fabian is not influence by their age, gender and highest educational attainment. Similar to the study of Yusef et al. [(11)], it states that assessment of knowledge showed no significant relationship between the age, gender and educational attainment. Same to the study of Effah et al. [(12)], were in age group, gender and educational status group has no significant relationship in regards to their general knowledge level on antibiotic resistance. However, as reported elsewhere, a significant relationship was found between gender, age and educational attainment. Waaseth et al. [(13)], argued that there is a significant difference between respondents profile, women were more knowledgeable than men in regards to antibiotics, higher age and higher educational attainment was associated with more knowledgeable respondents in regards to antibiotic resistance.

Significant Relationship between the Level of Awareness on Antibiotic Resistance and the Respondents Profile

Table 11. Significant relationship between the respondents level of awareness on antibiotic resistance and their profile

Profile	Significance Pearson's Chi-square	Analysis	Decision	Remarks
Age	1.00	>0.05	Accept Ho	Not significant
Gender	1.00	>0.05	Accept Ho	Not significant
Highest educational attainment	1.00	>0.05	Accept Ho	Not significant
	Value	df	Asymp. Sig. (2-sided)	
	Age			
Pearson Chi-square	2.080[a]	16	1.000	
Likelihood ratio	2.063	16	1.000	
	Gender			
Pearson Chi-square	0.581[a]	8	1.000	
Likelihood ratio	0.575	8	1.000	
	Highest educational attainment			
Pearson Chi-square	1.623[a]	24	1.000	
Likelihood ratio	2.524	24	1.000	
N of valid cases	98			

Table 11 showed the significant relationship between the level of awareness on antibiotic resistance and their profile using Pearson's Chi-square C – test at 0.05 level of significance.

The significance C values for all of the profiles were more than 0.05, as shown in the table. The null hypothesis was accepted. There is no significant relationship between the level of awareness on antibiotic resistance and their profile age, gender and highest educational attainment.

This indicated that the level of awareness on antibiotic resistance of the residents of barangay San Fabian is not influence by their age, gender and highest educational attainment. According to Chukwu et al. [(14)], there is no significant difference between gender in awareness on antibiotic resistance. While, on the study of Ha et al. [(15)] higher age and educational attainment were positively associated with being aware of antibiotic medicine and antibiotic resistance.

Health Education Program

Health teaching in the barangay by increasing the awareness of every individual in the community through Educational Program about Antibiotic Resistance, a therapeutic technique that helps to empower individuals and by expanding their knowledge and changing their attitudes toward caring for their well-being, and communities to live healthier lives by enhancing physical, mental, emotional, and social health.

Every individual in the community must be educated about antibiotic use and antibiotic resistance through proper health teaching. The basic intervention to stop the growth of bacteria is encouraging everyone to perform frequent proper hand washing. Next, is prevent development of infectious disease by staying healthy through a balanced diet, regular exercise and getting enough sleep. Let a professional in medicines like License Doctors or Pharmacists to prescribe an antibiotic appropriate for infections. If antibiotics is prescribed, ask the mechanism of drug and how the drug will help the current illness. Take the antibiotics as prescribed by the professionals. Don't stop or skip because it is important to finish the full course of medicine. Do not save or reuse leftover antibiotics to treat other illness. Never share prescribed drugs with others, this may lead to misuse and may cause antibiotic resistance. Encourage everyone to only take antibiotics when necessary. After discussion, evaluate the perception and understanding of the individual on the program promoted about prevention of acquiring antibiotic resistance, through the health teachings on proper utilization of antibiotic medicines provided.

Health-promoting education plays an important role for fostering an informed society whose capable of making decisions concerning socio-scientific concerns based on scientifically proven criteria. Antibiotic resistance is a serious public health concern today. Given that inappropriate antibiotic usage has been linked to the emergence and spread of antibiotic-resistant bacteria, educational interventions are necessary to encourage cautious antibiotic usage. [(16)]

DISCUSSION

With regards to age, most of the respondents belong to the age bracket of 18-35 years old. In terms of gender, female respondents are more prominent than male; as to educational attainment, respondents who were High school graduate have the highest number with a frequency of 47 or 48 percent, followed by College graduate with a frequency of 34 or 35 percent, Elementary graduate with a frequency of 9, and Vocational graduate with a frequency of 8.

It is noted that as to level of knowledge on antibiotic resistance according to their age, gender and highest educational attainment, 18-35 years old had a highest mean of 3.62 or categorized as high knowledge level. Younger respondents were more knowledgeable about safety use of antibiotic and the possible harmful effect. The reason for this is because educational attainment has a contributing factor and due to massive exposure to social media applications and media literacy that made them on the advantage and more knowledgeable. Males have a higher knowledge with a mean of 3.51, this implies that male respondents are more knowledgeable on proper usage of antibiotic medicine. In relation on the studies that shows females practice self-medication more than males. On the study of Lukovic et al. [17], female respondents self-medicate 1.4 times more often compared to males. Also, Nuñez et al. [18] stated that there was an association between antibiotic self-medication and female gender. Furthermore, it is also shown that Vocational graduate has the highest level of knowledge with a mean of 3.50. Educational attainment has a big role in knowledge of respondents on proper use of medications. Though based on the result, Vocational graduates are more knowledgeable than College graduates with a mean of 3.47. The reason for this could be the frequency of respondents of this study, because 8 percent of the respondents who graduated in Vocational course are all knowledgeable in regards to antibiotic resistance, compared to some of the 35 percent College graduates.

It is noted that as to level of awareness on antibiotic resistance according to their age, gender and highest educational attainment, respondents aged 18-35 years old were more aware about antibiotic use and antibiotic resistance with a mean of 3.71. Media literacy made them on the advantage and more aware. While, 56 years old and above has the smallest weighted mean because they are not sensible in consequences of taking antibiotics. There is a small gap between the overall mean of male with 3.65 and for female with 3.64. As stated by Ha et al. [15], females were less likely to be aware of prescription medications, antibiotics use and antibiotic resistance in comparison to their male counterparts. For educational attainment, vocational graduates have the highest level of awareness with a mean of 3.88.

It is indicated that as to level of knowledge and awareness on antibiotic resistance, majority of the weighted mean belongs to the bracket of high level which ranges from 3.26 – 4.00 were the overall weighted mean for knowledge in this study is 3.43, while for awareness is 3.65. This implied that the residents of barangay San Fabian, Echague, Isabela have a high level of knowledge and awareness regarding antibiotic resistance.

Relationship between the level of knowledge on antibiotic resistance and the respondents profile shows that there is no significant relationship between the level of knowledge on antibiotic resistance and their age, gender and highest educational attainment. This indicated that the level of knowledge on antibiotic resistance of the residents of barangay San Fabian is not influence by their age, gender and highest educational attainment. Yusef et al. [11], stated in their study that assessment of knowledge showed no significant relationship between the age, gender and educational attainment.

Also, the relationship between the level of awareness on antibiotic resistance and the respondents profile shows that there is no significant relationship between the level of awareness on antibiotic resistance and their age, gender and highest educational attainment. This indicated that the level of awareness on antibiotic resistance of the residents of barangay San Fabian is not influence by their age, gender and highest educational attainment.

A health teaching campaign was proposed based from the problem. Regardless of the findings on this study were residents have a high level of knowledge and awareness on antibiotic resistance. The program is vital for better health education in the community. The aim of the health teaching in the barangay is to increase the awareness of every individual in the community through Educational Program about Antibiotic Resistance, it is a therapeutic technique that helps to empower individuals and by expanding their knowledge and changing their attitudes toward caring for their well-being and communities to live healthier lives by enhancing physical, mental, emotional, and social health.

CONCLUSION

The following conclusions were drawn based on the findings of the study; the knowledge of the respondents on antibiotic resistance is at an average level based on their age, specifically the age ranging from 36-55 years old or middle-aged adults and 56 years old above or older adults. Furthermore, the respondents of the age bracket 18-35 years old or young adults, males and vocational graduates are the group that have a highest level of knowledge and awareness on antibiotic resistance. As seen on the statistical data results, the assessment of the residents perceptions or responses on the appropriate antibiotic usage and antibiotic resistance implied that

the residents of barangay San Fabian, Echague, Isabela have a high level of knowledge and awareness on antibiotic resistance. Generally, this study concluded that age, gender and highest educational attainment doesn't influence the knowledge and awareness level of the respondents. A health teaching is needed to better educate the community on the proper utilization of antibiotic medications, to prevent antibiotic resistance which is considered as a global health threat. A program was created to help in raising awareness and promoting health education in the community.

On the basis of findings and conclusions the following recommendations are hereby offered. First, the primary health care's role in combating antimicrobial resistance can be best reflected in national antibacterial resistance plans. Antibiotic resistant infections should be reported to the surveillance teams by healthcare workers. Second, the pharmaceutical companies have a responsibility to ensure the safety of consumer, appropriate and effective medication, and economical use. Third, the result of this study may serve as a standard to maintain and improve the quality of health care services in the barangay. Fourth, for self-medication users' this study will serve as an eye opener to every individual in the community that taking antibiotics has a great responsibility. Lastly, the future researchers may conduct the same study and investigation about antibiotic resistance in various places, which include more respondents and have equal distribution or number of respondents in each category to have accuracy for precise findings.

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