



EXTENT OF KNOWLEDGE, ATTITUDES, AND PRACTICES TOWARDS THE USE OF AMOXICILLIN AMONG SELECTED FILIPINO ADULTS

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ABSTRACT

In the Philippines, amoxicillin is one of the most commonly bought and widely available antibiotics to the public. With its broad therapeutic use and significance as one of the most commonly accessible drugs to the public, this research then seeks to assess the extent of knowledge, attitudes, and practices (KAP) on the use of amoxicillin among selected Filipino adults. A descriptive correlational method was utilized in this study, wherein a total of 334 respondents participated through non-probability convenience sampling. Data were collected through Google forms, which used descriptive statistics, multivariate linear regression, Pearson's correlation coefficient, t-test, and one-way ANOVA to determine the extent of the selected respondents' KAP. The majority of the respondents consist of the group of young adults (86.53%), females (74.85%), 71.86% are college graduates, and 63.17% came from urban communities. The findings of the study showed that the respondents were considered to have a great extent of knowledge ($\bar{X}$: 3.30) and attitudes ($\bar{X}$: 3.26). However, they only show a moderate extent in the practice of amoxicillin use ($\bar{X}$: 3.16). As a result, this study provides evidence that knowledge impacts attitudes and practice and eventually, contributes to the advancement of intervention techniques to encourage and sustain optimal amoxicillin consumption in the general population.

KEYWORDS: amoxicillin, knowledge, attitudes, practices, antimicrobial resistance, Filipino.

INTRODUCTION

Several leading causes of morbidity in the Philippines are acute respiratory infections, acute lower respiratory tract infections, pneumonia, bronchitis, and urinary tract infections caused by bacterial infections. In contrast, two (2) of the top ten (10) causes of mortality in the country include pneumonia and chronic lower respiratory infections, which ranked seventh and tenth, respectively.^[1,2] Based on the data presented, bacterial infections are prevalent in the country, and these are usually communicable and may shorten one's life expectancy. However, these can be prevented with drugs mainly indicated for these illnesses.

Antibiotics are medications mainly used to treat human and animal bacterial infections. Under Republic Act No. 10918, or the Pharmacy Law, antibiotics are medications that require a prescription due to their ability to induce adverse drug reactions. However, in the Philippines, amoxicillin is a popular antibiotic that is a commonly accessible, low-cost medication used by the public as a first-line treatment for various health issues such as common colds, coughs, and diarrhea. Considering such, this may lead to its misuse and abuse, resulting in

disease-causing bacteria losing their ability to respond to these antibiotics and, over time, may contribute to the emergence of antimicrobial resistance (AMR).^[3]

AMR is already a prevailing case in the country and is now considered a significant concern in the public health sector since it may compromise patients' health in combating infectious diseases and may result in a continuous increase of mortality globally to more than 10 million by the year 2050.^[4,5] Therefore, there is a need for constant and thorough investigations of antibiotic misuse and abuse and the unregulated dispensing involved in its development. This study, then, aims to emphasize the consumption of amoxicillin, a popular antibiotic in the country, by the selected Filipino adult respondents, which seeks to contribute to the prevention of AMR by determining the extent of their KAP towards the use of this medication.

METHODS

This study was a non-experimental quantitative study that utilized a descriptive correlational design to effectively demonstrate the extent and relationship of Filipino adults' KAP.

Study Respondents and Sampling Technique

Convenience and criterion sampling were used to select the 334 respondents, who are ages 18 and above and have previously used or are currently using amoxicillin as a medication.

Survey Instrument

Structured and close-ended questionnaires were created after reviewing similar studies which utilized the Likert scale form as the measure of the survey questionnaires. The instrument was validated by experts and a reliability test result of 0.901 using Cronbach's Alpha scale was measured.

Data Collection

The data were collected using online surveys transcribed in Google forms and disseminated to online platforms.

Statistical Analysis

Statistical treatments such as descriptive statistics, multivariate linear regression analysis, Pearson correlation coefficient, t-test, and One-Way ANOVA were used. Descriptive statistics was used to describe the socio-demographic data and each response to questions on the KAP of the respondents. Multivariate linear regression analysis was also used to measure the relationship between the KAP of the respondents and

their use of amoxicillin, while Pearson's correlation coefficient was used to assess the relationship between the KAP of the respondents. T-test and One-Way ANOVA were, then, used to identify the significant difference between the KAP of the respondents based on their socio-demographic profiles.

Ethical Approval

Ethical approval was obtained from the Institutional Ethics Review Board (IERB) of Centro Escolar University.

RESULTS

In primary care, amoxicillin is one of the most commonly prescribed antibiotics.^[6] In the Philippines, it is also usually found in *sari-sari* stores that can be bought even without a doctor's prescription.^[7] This practice is associated with the risk of antimicrobial resistance, which is a prevalent public health concern not only in the country but also globally. The present study, then, observed the extent of KAP towards the use of amoxicillin among Filipino adults.

Socio-demographic profile of the respondents

Table 1 shows that out of 334 respondents, the majority are young adults (86.53%), female (74.85%), 71.86% are college graduates, and 63.17% from urban communities.

Table 1: Socio-demographic Profile of Respondents.

Socio-demographic Variable	Frequency	Percentage (%)
Age		
18 to 35	289	86.53
36 to 55	36	10.78
56 and above	9	2.69
Sex		
Male	84	25.15
Female	250	74.85
Highest Educational Attainment		
Elementary	0	0.00
High school	71	21.26
College	240	71.86
Postgraduate	3	5.69
Vocational	4	1.20
Type of Community		
Urban	211	63.17
Rural	123	36.83

KAP towards the use of amoxicillin

Respondents were aware that amoxicillin is indicated for bacterial infections. Along with this, it was noted that they had a great extent of knowledge regarding the possible allergic reactions and that alcohol and cigarettes may cause interactions with the medicine.

On the proper ways of acquiring the medication, the respondents had a great extent of knowledge as consultation, and a prescription from a physician is

needed before purchasing the medicine. They are also aware that it is crucial to finish the whole duration of treatment and that antimicrobial resistance is an urgent worldwide public health concern and can occur if amoxicillin is used too frequently.

Based on the results, table 2 presents that the respondents have scored an overall mean of 3.30, which defines a great extent of knowledge of the use of amoxicillin.

Table 2: Respondents' Extent of Knowledge Towards the Use of Amoxicillin.

Variables	Mean	Verbal Interpretation
Indication of amoxicillin		
For bacterial infections.	3.70	Great Extent
Not for infections other than caused by bacteria.	2.31	Less Extent
Not for treating symptoms like cough, colds, and flu.	2.77	Moderate Extent
It cannot reduce headaches, pain, and inflammation.	2.61	Moderate Extent
Side Effects, Caution, and Contraindications of Amoxicillin		
Side effects can be experienced when taking this medication.	3.15	Moderate Extent
It is possible to have allergic reactions.	3.39	Great Extent
It is not allowed to drink alcoholic beverages or use cigarettes.	3.31	Great Extent
Proper Ways of Acquiring the Medication		
I should consult a physician first before buying.	3.75	Great Extent
A valid prescription should be presented when buying.	3.70	Great Extent
Amoxicillin's Regimen		
It is necessary to finish the whole duration prescribed for taking amoxicillin.	3.72	Great Extent
Possibility of Antimicrobial Resistance		
It can develop if amoxicillin is used too frequently, making it less likely to work in the future.	3.58	Great Extent
It is a major and urgent worldwide public health concern.	3.56	Great Extent
Overall Interpretation	3.30	Great Extent

Respondents demonstrated a moderate extent of attitude toward the use of amoxicillin without a doctor's prescription when it comes to not using the medication when having a sore throat or cough for more than a week. Furthermore, a great extent of attitude was observed in terms of the need to consult a doctor first and with the completion of treatment, however, only a

moderate extent was shown in finishing the duration of the treatment since they perceive that branded and generic medicines are equally effective. In addition, a moderate extent of attitudes was also obtained from the participants as they answered about not storing amoxicillin and reserving it for future use, and not using it when having the same symptoms as before.

Therefore, the overall mean score of 3.26 implies that the respondents have a great extent of attitudes toward amoxicillin use.

Table 3: Respondents' Extent of Attitudes Towards the Use of Amoxicillin.

Variables	Mean	Verbal Interpretation
Use of Amoxicillin Without a Doctor's Prescription		
It is not okay to take it when I have a sore throat.	3.23	Moderate Extent
I cannot take it when I have had a cough for more than a week.	3.08	Moderate Extent
Consultation with a Doctor		
I should get a prescription first before taking amoxicillin.	3.73	Great Extent
It is necessary to get more information regarding its use.	3.78	Great Extent
It is necessary to present a prescription when buying it.	3.70	Great Extent
It is not okay to buy amoxicillin from sari-sari stores.	3.33	Great Extent
It is not okay to buy amoxicillin whenever I'm sick because my doctor prescribed it to me before.	3.30	Great Extent
Completion of Treatment		
Even if I am feeling better, I always finish the course of treatment with amoxicillin.	3.47	Great Extent
Branded amoxicillin is equally effective as the generics, so the prescribed duration of treatment should still be completed.	3.22	Moderate Extent
When I Have Extra Amoxicillin		
It is not okay to store it and reserve it for future use.	2.62	Moderate Extent
I cannot use it if I experience the same symptoms as before.	3.03	Moderate Extent
Overall interpretation	3.26	Great Extent

A great extent of practice was concluded with regards to the respondents' access to drugs as they only buy medication in drug outlets after consultation with a doctor and they do not buy in sari-sari stores especially when they do not have a doctor's prescription. Moreover, the respondents can identify the correct administration of the drug thereby exhibiting a great extent of the practice. They know that it should be taken orally and should not be sprinkled into wounds and that alcohol consumption is prohibited during therapy.

However, a lesser extent was noted in the respondents' practice in terms of storing leftover amoxicillin for future use. Nonetheless, they do not tend to share it with friends

or family members, indicating that they have a moderate extent of the practice.

On the respondents' practice on the rationale of the use of amoxicillin, they were found to have a great extent of the practice in using the medication only when diagnosed with bacterial infections. However, only a moderate extent was observed since some use it for colds to prevent them from worsening. While in terms of compliance, they showed less extent of practice as they tend to stop the treatment when symptoms disappear.

Based on the findings, this showed that the respondents have a moderate extent of the practice in the use of amoxicillin with an overall mean score of 3.16.

Table 4: Respondents' Extent of Practices Towards the Use of Amoxicillin.

Variables	Mean ($\bar{X}$)	Verbal Interpretation
Access to Drugs		
A pharmacy or drug store after consulting with a doctor.	3.77	Great Extent
Not from sari-sari stores without a doctor's prescription.	3.47	Great Extent
How I use/take amoxicillin		
I take it orally	3.83	Great Extent
I do not sprinkle it into my wounds	3.56	Great Extent
I do not consume alcohol during my treatment	3.88	Great Extent
If I have extra amoxicillin		
I do not keep it at home for future use.	2.47	Less Extent
I do not share it with my friends and family members if they need it.	2.92	Moderate Extent
Rationale of the Use of Amoxicillin		
I take amoxicillin when I am diagnosed with bacterial infections.	3.49	Great Extent
I do not take it when I have a cold just to prevent getting a more serious illness.	3.17	Moderate Extent
Compliance with the prescribed treatment		
When my symptoms disappear, I'll stop taking amoxicillin.	2.05	Less Extent
Overall Interpretation	3.16	Moderate Extent

Table 5 depicts that there was a significant difference between the age and highest educational attainment of the participants. However, there was no significant

difference in the KAP on the usage of amoxicillin based on gender and community type.

Table 5: Significant difference between the respondents' KAP towards amoxicillin use and their socio-demographic profile.

Socio-demographic Variable	Knowledge		Attitudes		Practices	
	p-value	Interpretation	p-value	Interpretation	p-value	Interpretation
Age	0.006	SD	0.005	SD	0.048	SD
Sex	0.937	NSD	0.090	NSD	0.097	NSD
Educational Attainment	0.108	NSD	0.024	SD	0.003	SD
Type of Community	0.790	NSD	0.979	NSD	0.822	NSD

Legend: SD - Significant Difference, NSD - No Significant Difference

There was a positive significant relationship between the independent variables (KAP) at ≤ 0.05 (P: 0.000). Moreover, this presented the compatibility of the multiple linear regression model in the determination of the slope which posed a significant difference, and the

relationship of KAP towards the use of amoxicillin that was perceived with significance. This study, therefore, implied that KAP really has an influence on amoxicillin use.

Table 6: Correlation between the respondents' KAP and their use of amoxicillin.

Related Variables of the Model	p- value	Remarks
Knowledge	0.000*	Significant Relationship
Attitude	0.000*	Significant Relationship
Practices	0.000*	Significant Relationship

DISCUSSION

Among the 86.53% of the total respondents, the group of young adulthood with ages ranging from 18 to 35 years old, displayed a notable result among the other group presented in terms of the knowledge regarding the use of amoxicillin ($\bar{X}$: 3.31; P: 0.006). This implied that the extent of knowledge of the participants about the use of amoxicillin was broadly associated with age. The age group of young adulthood is a critical stage that could highly influence health, which was due to the fact that ages between 18 to 35 were highly influenced by technology specifically in internet usage.^[8,9] Furthermore, some studies revealed that the Italian population utilized the internet through social media platforms to gather and gain information regarding antibiotic use.^[10] This established an understanding that there was a significantly good knowledge among the young adults (18 to 35 years old) compared to the other age groups since they were more technologically exposed to the information about antibiotic use.

The result of this study also presented that respondents who obtained a higher degree of education have better attitudes and practices compared to individuals who completed vocational programs. This was validated by Elong Ekambi (2019), wherein it was stated in the study that participants with higher education attainment, normally, tend to get information about the proper use of medication like antibiotics and are more likely to be aware of antibiotic resistance.^[10] On the other hand, respondents who finished vocational programs, in general, were reported as one of the factors associated with a higher probability of null attitude and practices when it comes to the use of amoxicillin. Vocational programs focus more on occupation-specific skills, thus it does not perform well as compared to academic education based on basic skills like literacy.^[11] For this reason, their insufficient ability to communicate effectively through reading, writing, speaking, and listening greatly reflected the overall aspects of their use of amoxicillin. Hence, educational programs on antibiotic use and its link to drug resistance were required and should be well established.

The Knowledge-Attitude-Practices model, on the other hand, was extensively used in this study in specific fields to examine and gather data regarding behavior based on Paul et al. (2020), wherein, the knowledge, attitude, and practice of the participants were the independent variables were collected and their relationship was determined to examine the use of amoxicillin.^[12] In line with the study conducted, the respondent's extent of knowledge, attitude, and practices fell to a great extent, therefore, proving that this study satisfied the idea of the KAP model that was used in the paradigm of the study.

The Pearson Correlation Coefficient was, then, used to measure the correlation between the knowledge and attitude, attitude and practices, and finally between the knowledge and practices. As decided by the results, a positive significant relationship existed between them whereas the knowledge, attitude, and practices affected one another. Thus, this highly supported the idea of the KAP model wherein the knowledge significantly influences the attitude which in turn affects the practices of the respondents regarding their use of amoxicillin. This means that an individual with good knowledge will pose a positive attitude and then it will result in good practice in the use of amoxicillin.

Multiple linear regression, on the other hand, indicated that the knowledge and practice scores gathered through the survey questionnaires were individually associated with the respondents' use of amoxicillin. However, knowledge-attitude and attitude-practices showed multicollinearity, implying that while they were individually associated with participants' use of amoxicillin, they were also correlated with one another. This study, therefore, implied that knowledge, attitude, and practices really have an influence on amoxicillin use, as demonstrated by the p-value of 0.000.

CONCLUSION

Overall, the selected Filipino respondents showed a great extent of knowledge and attitude and a moderate extent of practice towards the use of amoxicillin. Whereas, the KAP had significant relationships with each other, as well as with the use of amoxicillin. It was also found that

there were significant differences between age groups and different levels of educational attainment in the respondents' KAP. As a result, this study provided evidence that knowledge impacted attitudes and practice, and eventually, contributed to the advancement of intervention techniques to encourage and sustain optimal amoxicillin consumption in the general population.

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