Enhancing the Level of Knowledge and Awareness among TB Patients: A Collaborative Approach to Antimicrobial Resistance with the City Health Office and a Pharmacist through the use of TB InfoKit in the City of Koronadal

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ABSTRACT

This study examined the effectiveness of the TB InfoKit on enhancing knowledge and awareness of antibiotic resistance among tuberculosis (TB) patients. In collaboration with the City Health Office and a pharmacist, it involved 38 TB patients who participated in pre- and post-intervention assessments. Demographic data showed participants were mostly aged 36-55, with a balanced gender distribution and primarily high school education. The methodology included administering the TB InfoKit or Educational Video Presentation and leaflet followed by measuring knowledge and awareness levels using pre- and post-intervention surveys. Results indicated significant improvements: the mean knowledge score improved significantly from 44.5 to 78.7, and awareness scores increases from 2.73 to 3.32. T-tests confirmed these improvements were statistically significant. The study determined that the TB InfoKit is an informative tool to educate TB patients about antibiotic resistance, emphasizing the necessity of continuing educational efforts to maintain and expand awareness and knowledge.

Keywords: Antibiotic resistance, Tuberculosis, Information Education and Communication (IEC) tools, Health education, TB DOTS

INTRODUCTION

Antimicrobial resistance is one of the world's most urgent health problems. The overuse and misuse of antibiotics are key factors leading to antimicrobial resistance. (World Health Organization: WHO, 2023) The improper use of these invaluable substances has led to the alarming escalation of antimicrobial resistance (AMR), rendering certain infections virtually impervious to treatment. This made some antibiotics that used to be typical treatments for bacterial infections become ineffective. (Ayukekbong, J. A., & Ntemgwa, M. 2017).

To appreciate the seriousness of the threat posed by Antimicrobial Resistance (AMR), according to the World Health Organization (WHO 2020), it was reported that globally, infections caused by multidrug-resistant (MDR) bacteria result in an alarming 700,000 fatalities each year, spanning all age groups. Drug- resistant tuberculosis (TB) is a major contributor to antimicrobial resistance worldwide and continues to be a public health threat. Annually, about half a million people fall ill with drug-resistant TB globally. Drug resistance is a formidable obstacle to TB care and prevention globally, making it harder and longer to treat, often with poorer outcomes for patients. People with drug-resistant TB face significant economic and social costs and only 1 in 3 access quality care and reaching the missing patients remains a significant public health challenge.

The World Health Organization (WHO) classifies the Philippines as having a high burden of both MDR-TB and TB, with an estimated 22,000 deaths from TB and 30,000 new cases of MDR-TB and rifampicin-resistant TB reported in 2016. The ability to perform routine drug susceptibility testing (DST) for all TB patients remains a challenge in the Philippines, as it does in the majority of high-TB burden countries. With that, the World Health Organization (WHO) advises conducting recurring epidemiological surveys in these conditions

to track temporal trends and assess the burden of drug resistance. (URC, 2023)

The prevalence of multidrug-resistant organisms (MDROs) is indeed on a relentless rise, leading to considerable morbidity and mortality among affected patients. Infections caused by MDR bacteria pose formidable challenges in terms of treatment, often resulting in more severe and prolonged illness. With this, health education was made. According to Nino Hasanica (2020), health education is a process to enhance individual and community health by imparting information and skills. In terms of health care and health culture, it is regarded as the most efficient, cost-effective, and sensible component. The goal of health education is to improve understanding of one's health, alter attitudes, and implement practical daily practices for living a healthy life.

The underlying premise of didactic methods in health education is that the individual is an "empty vessel" that must be "filled" with knowledge for it to integrate, interpret, reproduce, and, ultimately, be adopted and used in practice. The purpose of this research is to provide data on the effectiveness of Information, Education, and Communication (IEC) Tools**.** The research aims to enhance the level of knowledge and awareness of TB patients who received those tools on proper drug use. (Nino Hasanica, 2020)

Informational leaflets on medications encourage the safe and efficient use of medications while also empowering patients to take charge of their own healthcare. Patients' propensity to read booklets might be influenced by their appearance and content; poorly done examples can be confusing and unsettling. Due to patient preferences and appointment time limits, a leaflet might be the sole information patients get. Nineteen studies spanning seven nations satisfied the inclusion criteria. The patient education leaflets that are now in use don't seem to be working or meeting patients' needs. Patients' perceptions and desire to read the current leaflets are impacted by their potential inclusion of unnecessary material and lack of necessary information according to the study Amber Young (2020).

However, The Public Health Agency of Canada reports that over 50% of adults and nearly 90% of seniors in the country struggle to read or comprehend the information that comes with their prescription drugs which was shown in the study of J.L. Wofford (2019). In the study of E. Nielsen (2020), the World Health Organization acknowledges the importance of patient education in enhancing patient participation in disease management. A substantial amount of research has also been done on the various teaching aids and resources that can be used in hospital settings to enhance patient education. These include take- home DVDs, PowerPoint presentations, charts, props, group classes, online and recorded videos, booklets, and PowerPoint presentations. Educational videos are a cost-effective way to deliver a consistent message to a large audience while also providing both visual and auditory information (M.-L. Yeh *et al. 2020).* Studies have shown that, when communicated in a comprehensible manner, video-based health education is more easily assimilated by patients than other patient education techniques (C.-Y. Hsieh *et al.* 2014). As a result, health care professionals are using video-based educational resources more frequently (A. Stromberg 2014*)*

Both the general public and health professionals of all backgrounds and levels of education frequently overlook and refuse to acknowledge the importance of health education as a preventative health care strategy. (Nino Hasanica, 2017). Given the shortcomings of an awareness agenda and the dearth of social research to guide alternative strategies, education and awareness- raising are the main instruments of global health policy to alter public behaviour and address antibiotic.

MATERIALS AND METHOD

Research Design

In this study, the researchers utilized a quasi-experimental design to evaluate the impact of an Information, Education, and Communication (IEC) intervention on the knowledge and awareness of antibiotic resistance among tuberculosis (TB) patients in the City of Koronadal, South Cotabato. According to Lauren Thomas (2023), this design aims to establish a cause-and-effect relationship between an independent and dependent variable. However, unlike a true experiment, a quasi-experiment does not rely on random assignment. Instead, subjects are assigned to groups based on non-random criteria.

Pre-intervention and post-intervention assessments was conducted to evaluate the changes in knowledge and awareness of the group. This quasi-experimental design allowed the researchers to evaluate the effectiveness of the TB InfoKit intervention in improving antibiotic resistance knowledge among TB patients in a real-world healthcare context. A modified questionnaire was developed and was validated by an expert to assess baseline knowledge and awareness levels about antimicrobial resistance among TB patients before and after the intervention. The questionnaire included items related to basic understanding of antimicrobial resistance, adherence to prescribed medications, and awareness of preventive measures. Likert scale questions were incorporated to capture the participants' opinions and attitudes towards antimicrobial use. After the TB InfoKit intervention, the same questionnaire was given for the participants to measure the difference in level of knowledge and awareness before and after.

Research Locale

The research took place in the City Health Office (CHO) of Koronadal City, South Cotabato, Philippines. This specific locale was driven by its relevance to the study's goal, which focuses on enhancing the knowledge and awareness of antimicrobial resistance among Tuberculosis (TB) patients through the use of TB Info Kit. Koronadal is a landlocked component city in the coastal province of South Cotabato. It serves as the provincial capital as well as the regional center of SOCCSKSARGEN. Furthermore, according to the City Health Office (CHO), at least 10 patients regularly visit their office for medical assistance and medication. Their footwork includes regular community visits, health education campaigns, and collaboration with local barangays to ensure TB patients receive continuous care and proper medication. The office conducts regular follow-ups with patients to monitor their treatment progress and adherence, and it provides training to local health workers to improve TB case detection and management.

Population and Sampling

In this study, the researchers employed a purposive sampling method. According to Dovetail Editorial Team (2023), in research studies, purposive sampling is employed to choose a specific group of participants or units for assessment. When a researcher wants to choose a sample that is representative of the characteristics, they are interested in studying and has a clear idea of those characteristics, this method is appropriate. Furthermore, this kind of sampling is frequently employed because it enables the researcher to concentrate on particular areas of study and collect substantial information on the individuals being studied.

The study specifically targeted individuals who met the following criteria involving drug-susceptible tuberculosis patients living in Koronadal City, South Cotabato, falling within a specified age range of 18 to 80 years old and above. The research aimed to encompass 30 to 40 participants who are enrolled in the TB-Dots (Directly Observed Treatment, Short-course) program, who received medications for at least 2 weeks of treatment.

Research Instrument

The researchers employed a modified questionnaire where some of the questions were from the study of Cacayan E.B. (2022) entitled 'Knowledge and Awareness on Antibiotic Resistance Among the Residents of Barangay San Fabian, Echague, Isabela. Cacayan'. The said questionnaire was also validated by an expert to gather data about the level of knowledge and awareness among Tuberculosis (TB) patients with regards to antimicrobial resistance and its proper use. The questionnaire consisted of three parts. The first part was answerable by the participants' personal information such as their code name, age, gender, and highest educational attainment.

The second part was made to assess the knowledge of the participants; it contained multiple-choice questions that provided participants with multiple answer options. Part three was made to assess the level of awareness of the participants and it utilized the 4-Point Likert Scale which was answerable by strongly agree at 4 points, agree at 3 points, disagree at 2 point and strongly disagree at 1 point. Thus, there was a total of 20-items questionnaires in which the first 10 questions were for the level of knowledge and the other 10 was for the level of awareness which was crafted to be concise, clear, and easily comprehensible. Hence, the questionnaire

was made consisting of multilingual questions and answer options.

Data Gathering Procedure

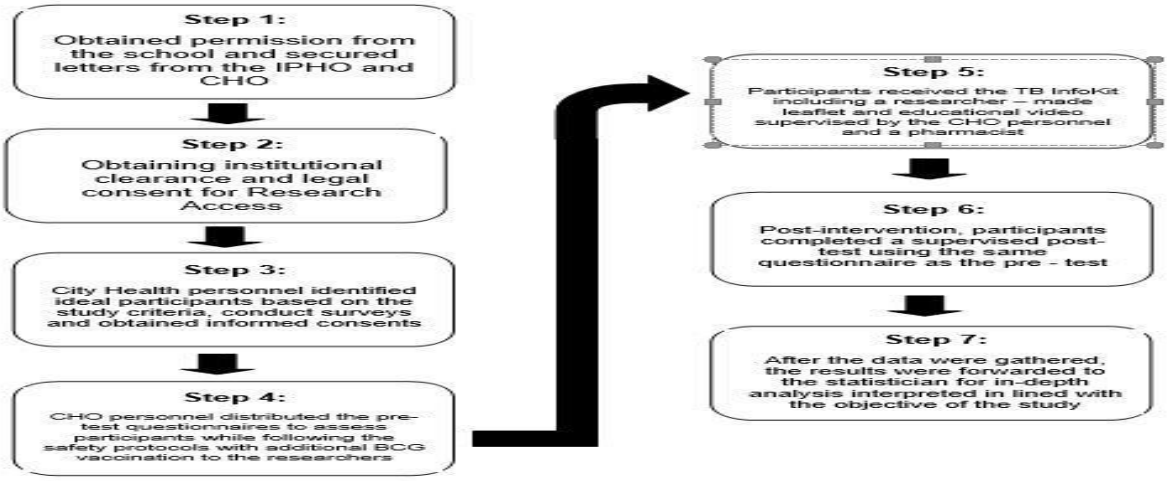

Figure 6 Schematic Diagram of Research Procedure

Statistical Analysis

The researchers utilized descriptive statistics to determine the profile of the participants and their level of knowledge and awareness regarding antimicrobial resistance. These descriptive statistics included frequency, percentage, weighted mean and standard deviation. The paired t-test was employed to compare observed and expected result. According to Renandya, W. A. (2020), it is used to compare the means of two related groups to determine if there is a statistically significant difference between them. This test is appropriate for pre-test and post-test scenarios where the same subjects are measured before and after an intervention. By focusing on the differences in scores for each participant, it provides a clear measure of the intervention's effectiveness, ensuring that observed improvements are not due to random variation but rather to the intervention itself. This robustness and accuracy make it ideal for your study.

In this case, the categorical variables are likely “level of knowledge” and “level of awareness” in antimicrobial resistance of TB Patients. If the null hypothesis is rejected, it suggests that there is a significant relationship between the TB InfoKit tool in enhancing the level of knowledge and awareness of TB patients on antimicrobial resistance. The analysis aimed to provide insights into whether the Tb InfoKit tool is associated with the level of knowledge and awareness of antimicrobial resistance of TB patients. It is a way to statistically assess the relationship between these variables and provide evidence on whether the utilization of TB InfoKit have an impact in enhancing the level of knowledge and awareness of antimicrobial resistance among TB Patients in Koronadal City, South Cotabato.

RESULTS

This chapter presents the overall data of the study that aims to identify the enhanced level of knowledge and awareness among the subjects on TB. Descriptive and inferential statistics were utilized to answer the problems stipulated in the study.

Demographic Profile

Table 4 presents the demographic profile of respondents participating in a study aimed at Enhancing the Level of Knowledge and Awareness among TB Patients: A Collaborative Approach to Antimicrobial Resistance with the City Health Office and a Pharmacist through the use of TB InfoKit in the City of Koronadal. The respondents were segmented based on age, gender, and highest educational attainment.

Table 1: Demographic Profile

Profile	Segmentation	frequency	% Distribution
Age	18 – 35 years old	14	37
	36 – 55 years old	16	42
	56 – 60 years old	8	21
Gender	Female	16	42
	Male	22	58
Highest Educational Attainment			
Elementary Graduate	9	24	
High School Graduate	23	61	
College Graduate	6	2	

Regarding age distribution, the majority of respondents fell within the age range of 36 to 55 years old, constituting 42.1% of the sample. Those aged 18 to 35 years old represented 36.8% of the respondents, while individuals aged 56 to 60 years old comprised 21.1% of the sample.

In terms of gender, the study had slightly more male participants (57.9%) than female (42.1%), indicating a generally balanced gender distribution among respondents. According to the study of 1 BMC PUBLIC HEALTH 2022 Several gender-related factors significantly influence the risk and diagnosis of tuberculosis (TB), contributing to the higher proportion of male respondents in TB studies. Also, Research indicates that men are more vulnerable to TB due to a combination of social, behavioral, and biological factors. Men are more likely to engage in behaviors that increase their risk of TB, such as smoking and alcohol abuse. Smoking is a notable risk factor for TB, and men tend to smoke more frequently than women. This behavior leads to conditions like chronic obstructive pulmonary disease (COPD) and lung cancer, which are more prevalent among male smokers and further elevate their TB risk (Fraga, J., 2018)

Regarding educational attainment, the largest proportion of respondents were high school graduates, constituting 60.5% of the sample. Elementary graduates represented 23.7% of the respondents, while college graduates made up 15.8% of the sample. These demographic insights provide a foundation for understanding the characteristics of the respondents involved in the study, which is essential for interpreting and contextualizing the findings related to the effectiveness of IEC tools in enhancing knowledge and awareness of antimicrobial resistance among TB patients in Koronadal.

Level of Knowledge about Antimicrobial Resistance

Table 5 provides insights into the level of knowledge among respondents regarding tuberculosis (TB) and antimicrobial- resistant TB, as assessed through pretest and posttest measures. The table compares the mean scores and corresponding descriptions of knowledge levels for various items before and after the intervention.

Table 2: Level of Knowledge about Antimicrobial Resistance among the Participants

ITEMS	PRE-TEST		POST-TEST	
	Mean	Description	Mean	Description
How is	84.2	Very high	100	Very high
tuberculosis				
primarily				
transmitted?				
What is the	50.0	Moderate	89.5	Very high
standard				
treatment for				
tuberculosis?				
What is	18.4	Very poor	71.1	High
antibiotic-				
resistant				
tuberculosis				
(TB)?				
What is the	34.2	Low	65.8	High
primary danger				
of antibiotic-				
resistant				
tuberculosis?				
When someone	57.9	Moderate	89.5	Very high
with antibiotic-				
resistant TB is				
not effectively				
treated, the				
bacteria will				
eventually?				
The spread of	28.9	Low	68.4	High
antibiotic-				

resistant TB can				
be a				
consequence of				
which of the				
following?				
Compared to	47.4	Moderate	65.8	High
regular TB,				
antibiotic-				
resistant TB				
may be				
considered as?				
When	68.4	High	84.2	Very high
prescribed				
antibiotics for				
TB, it's				
important to:				
The emergence	10.5	Very low	71.1	High
of antibiotic-				
resistant TB is				
most likely				
linked to in				
which of the				
following?				
Which of the	44.7	Moderate	81.6	Very high
following				
contributes to				
the				
development of				
antibiotic-				
resistant TB?				
Overall Mean Score	44.5	Moderate	78.7	High

Results of the survey showed that before the intervention, The overall mean score, before the intervention, was 44.5, indicating a "moderate" level of knowledge about tuberculosis (TB) and antimicrobial-resistant TB among respondents. The highest pretest mean score was 84.2 for "How TB is primarily transmitted", and the

lowest was 10.5 for knowledge about the emergence of antimicrobial-resistant TB. The results indicate that the respondents had a good understanding of basic TB transmission, but their knowledge of antimicrobial resistance was limited.

Following the intervention, there was a significant improvement in respondents' knowledge across all items. Overall, the posttest mean score increased from 44.5% to 78.7%, signifying a notable enhancement in respondents' knowledge levels after the intervention. the overall mean score rose to 78.7, indicating a "high" level of knowledge. The highest posttest mean score was 100 for "How TB is primarily transmitted", while the lowest was

65.8 for understanding "The emergence of antimicrobial-resistant TB" This indicates a significant improvement, especially in areas with initially low scores, demonstrating the intervention's effectiveness. The use of TB InfoKit tools likely provided clear, targeted information that helped respondents understand both the basics and complexities of TB and antimicrobial resistance.

Moreover, A study presented in the Proceedings of the 1st International Conference on Community Health (ICCH 2019) examined the impact of health education using leaflets and videos on students' knowledge about the dangers of smoking. The research involved 54 students who were divided into two groups, with their knowledge assessed before and after the intervention using questionnaires. The results showed a significant increase in knowledge post-intervention, with 77.8% of students demonstrating improved knowledge after using leaflets and 88.9% after viewing videos. Statistical analysis confirmed the effectiveness of both methods ($p \leq 0.05$), indicating that these educational tools can effectively enhance knowledge and understanding of health risks. This study underscores the potential of using multimedia educational interventions to improve health knowledge, which could be similarly applied to increase awareness of antimicrobial resistance among TB patients.

In addition, According to Hindriati (2023), the study investigates the effectiveness of video media and leaflets in enhancing adolescents' knowledge about the impact of mistimed pregnancy. Conducted in Jambi City, Indonesia, the quasi- experimental study involved 96 adolescents and utilized a pre-test and post-test control group design. The findings highlight significant improvements in knowledge levels for both educational methods, with video media demonstrating greater effectiveness compared to leaflets. This suggests that video-based educational interventions are more impactful in conveying information and enhancing understanding among adolescents regarding mistimed pregnancies.

Level of Awareness about Antimicrobial Resistance

Table 6 presents the mean level of awareness among respondents regarding antimicrobial usage and related practices, as assessed through pretest and posttest measures. This table compares the mean scores and standard deviations (SD) alongside descriptionsof awareness levels for various questions before and after the intervention.

Table 3: Level of Awareness about Antimicrobial Resistance among Participants

QUESTIONS	PRE-TEST		POST-TEST	
	Mean	Description	Mean	Description
Leftover	2.47	Low	3.24	High
antibiotics for				
TB can be				
saved for				
personal future				
use or to give to				

someone else				
I think that it is good that one needs a prescription to acquire antibiotics from pharmacist	3.34	Very high	3.9	Very high
Antibiotics make one recover faster when having a cold. *	2.29	Low	2.66	High
It is appropriate to take antibiotics when having a sore throat and common cold, otherwise one may suffer other complications*	2.26	Low	2.66	High
If one feels better only after partially completing an antibiotic course, one can terminate the therapy immediately. *	2.66	High	3.37	Very high
Antibiotic use for animals can reduce the	2.50	Low	3.21	High

possibility of				
effective				
antibiotic				
treatment for				
humans. *				

to take antibiotics when having a sore throat and common cold, otherwise one may suffer other complications." These results suggest that there were still misconceptions or gaps in knowledge regarding the appropriate use of antimicrobials for these conditions post-intervention.

Overall, the mean score increased from 2.73 to 3.32, indicating a substantial improvement in respondents' awareness levels following the intervention. This enhancement underscores the intervention's effectiveness in boosting awareness about proper antimicrobia006C usage and related practices among TB patients in Koronadal. Another systematic review highlighted the "Antibiotics" by Figueiras, A., & Herdeiro, M. T. (2022) emphasized the effectiveness of educational interventions in reducing inappropriate antibiotic prescriptions in primary care settings. The review found that such interventions, which included distributing educational materials and conducting workshops, led to better prescribing practices and reduced antibiotic costs, indicating an overall improvement in the appropriateness of antimicrobial use .

Significant Difference

Legend (*) Reverse scoring code

The table presents the mean level of awareness among respondents regarding antibiotics before and after an educational intervention. Before the intervention, the overall mean score was 2.73, with a standard deviation of 0.29, indicating a high baseline of awareness. Respondents demonstrated a "very high" understanding, with a mean score of 3.55, regarding "the difference between antibiotics and other drugs." This suggests that respondents had a strong understanding of this distinction, which is crucial in promoting appropriate antibiotic use.

Moreover, the lowest mean score was 2.26, indicating less awareness about the "appropriateness of taking antibiotics for conditions such as sore throats and common colds, which can lead to complications if unnecessary." This highlights an area where respondents had misconceptions or lacked knowledge, potentially risking inappropriate antimicrobial use in everyday health scenarios. A study published in "Frontiers in Pharmacology" by Shairyar Afzal (2023) demonstrated that a pharmacist-led educational intervention significantly improved healthcare workers' knowledge and attitudes towards the rational use of antibiotics. Before the intervention, only 47.6% of participants acknowledged the dangers of inappropriate antimicrobial use, which increased to 57.3% post-intervention. The mean knowledge scores also showed a statistically significant improvement ($p < 0.001$) after the educational intervention . These findings underscore the importance of targeted education to address specific gaps in understanding, ensuring that respondents are well-informed about when antimicrobials are appropriate and their potential consequences when used unnecessarily**.**

After the intervention, the overall mean score was 3.32, with a standard deviation of 0.46, indicating a very high level of awareness. The highest mean score post-test, indicating a "very high" level of understanding, was 3.90 for the statement "I think that it is good that one needs a prescription to acquire antibiotics from a pharmacist." However, the lowest mean score was 2.66, indicating less awareness about statements such as "Antibiotics make one recover faster when having a cold" and "It is appropriateTable 4 presents the results of testing the significant difference between the levels of knowledge and awareness before and after the intervention aimed at enhancing knowledge and awareness of antimicrobial resistance among TB patients in Koronadal. The table includes mean scores, standard deviations (SD), t-values, and p-values for knowledge and awareness variables.

Table 4: Testing the significant difference between the level of knowledge and before and after intervention

Test Variables		Mean	SD	T value	P value	Remarks*
Knowledge	Before	44.5	16.88	-7.85	.000	Significant
	After	78.7	20.42			
Awareness	Before	2.64	0.33	-5.46	.000	Significant
	After	3.01	0.43			

***Calculation was performed at .05 level of significance**

Results showed that before the intervention, the mean knowledge score was 44.5, with a standard deviation of 16.88, while the mean awareness score was 2.64, with a standard deviation of 0.33. After the intervention, the mean knowledge score increased to 78.7, with a standard deviation of 20.42, while the mean awareness score increased to 3.01.

Statistical analysis revealed significant differences between the levels of knowledge and awareness before and after the intervention. The t-values for both knowledge and awareness variables were -7.85 and -5.46, respectively, with corresponding p- values of .000, indicating statistical significance at the .05 level. These results suggest that the intervention was effective in enhancing both knowledge and awareness among TB patients in Koronadal regarding antimicrobial resistance.

The marked differences between pre- and post- intervention scores highlight the importance of educational video and leaflets in addressing gaps in understanding and awareness among TB patients. By providing targeted information and clarifying misconceptions. According to a study published by BioMed Central, educational interventions have been shown to significantly enhance participants' understanding and attitudes toward antimicrobial use. This study indicated that targeted education could lead to a marked improvement in the appropriate use of antimicrobials and a reduction in misconceptions about antimicrobial resistance (Vickers 2021).

Overall, these findings underscore the effectiveness of the intervention in enhancing knowledge and awareness levels among the target population. This highlights the critical role of educational initiatives in improving health outcomes and supports the need for ongoing and expanded efforts to educate TB patients about antibiotic resistance and proper antibiotic usage. Similarly, research highlighted by Oxford Academic underscores the efficacy of educational programs in improving knowledge about antibiotics. The study demonstrated that healthcare workers who participated in structured educational interventions exhibited substantial improvements in their knowledge and attitudes towards the rational use of antimicrobials, which in turn contributed to better prescription practices and reduced rates of antibiotic resistance (Figueiras & Herdeiro, 2022).

DISCUSSIONS

The demographic data reveals that most respondents were between 36 and 55 years old (42.1%), followed by those aged 18 to 35 (36.8%), and 56 to 60 (21.1%). This suggests the intervention successfully reached adults and middle-aged individuals. Most of the participants were male (57.9%), slightly higher than female respondents (42.1%), which may reflect differences in health- seeking behaviors or exposure risks related to tuberculosis. In terms of education, most had completed high school (60.5%), while others were elementary (23.7%) and college graduates (15.8%). This shows a generally moderate literacy level, underscoring the importance of clear and accessible materials like the TB InfoKit, which proved well-suited for this audience.

The intervention led to a clear improvement in knowledge about TB and antimicrobial-resistant TB. Before the program, the average knowledge score was 44.5%, showing only a moderate level of understanding. While many participants already knew how TB is transmitted (M = 84.2), awareness of antimicrobial resistance was

very low (M = 10.5). After the educational intervention, the average knowledge score rose significantly to 78.7%, with noticeable gains even in areas that were previously less understood. This highlights the effectiveness of the materials in bridging key knowledge gaps, particularly around resistance to antibiotics.

When it came to awareness, participants already had a relatively strong baseline (M = 2.73, SD = 0.29). They showed high awareness of the difference between antibiotics and other types of drugs (M = 3.55) but struggled with understanding when antibiotics are appropriate—particularly for colds and sore throats (M = 2.26). After the intervention, the average awareness score improved to 3.32 (SD = 0.46), indicating a stronger grasp of proper antibiotic use. Statistical results confirmed that these improvements were significant. Knowledge scores increased from 44.5 to 78.7, and awareness from 2.64 to 3.01. The t-values of -7.85 for knowledge and -5.46 for awareness, both with p-values less than .000, indicate meaningful changes. These outcomes affirm that the intervention effectively enhanced both knowledge and awareness among TB patients in Koronadal. Ultimately, the results highlight the vital role of well-crafted educational materials in empowering communities to use antimicrobials responsibly and better understand the dangers of resistance.

CONCLUSIONS

This study conducted a pretest and post-test survey to assess the effectiveness of the TB InfoKit, an educational video and leaflet, on enhancing the knowledge and awareness of antimicrobial resistance among tuberculosis (TB) patients in Koronadal City, South Cotabato. The study aimed to determine the significant difference in TB patients' knowledge and awareness before and after the intervention, and to evaluate the impact of the TB InfoKit as an educational tool.

The results showed a significant increase in knowledge and awareness scores among TB patients after the TB InfoKit intervention. These changes were statistically significant, with substantial effect sizes indicating a strong practical impact of the intervention. Patients exposed to the TB InfoKit showed notably higher scores in both knowledge and awareness, highlighting the effectiveness of using educational materials in promoting rational antimicrobial use and understanding the threat of antimicrobial resistance.

In conclusion, the effectiveness of the TB InfoKit, composed of a leaflet and educational video, in increasing the knowledge and awareness of antimicrobial resistance among TB patients in Koronadal City, South Cotabato was found to be high. The gathered data strongly suggest that the TB InfoKit is a highly effective tool in improving patients' understanding of antibiotic resistance and appropriate medication use.

These findings emphasize the importance of educational interventions in empowering TB patients and promoting responsible antibiotic use. Overall, the results support the continued adoption and enhancement of TB InfoKit as a best practice in TB education to improve health outcomes and mitigate antimicrobial resistance.

The intervention of the TB InfoKit should be expanded and translated into local dialects to ensure broader understanding. It can also be used in other healthcare settings such as hospitals to support pharmacists and minimize misuse of antibiotics and include a QR code linking to the video on the leaflet to make the tool more accessible and effective for a wider audience. Future researchers are encouraged to explore its application in other communities and patient groups to gain further insights and enhance the generalizability of the findings.

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REFERENCES

1. Ayukekbong, J. A., Ntemgwa, M., & Atabe, A. N. (2017). The threat of antimicrobial resistance in developing countries: causes and control strategies. Antimicrobial Resistance and Infection Control, 6(1). https://doi.org/10.1186/s13756-017-0208
2. Dovetail Editorial Team. (2023, February 5). What is purposive sampling? Technique, examples, and FAQs. https://dovetail.com/research/purposive-sampling/
3. Figueiras, A., & Herdeiro, M. T. (2022). Educational interventions to reduce prescription and dispensing of antibiotics in primary care: A systematic review of economic impact. Antibiotics. https://doi.org/10.3390/antibiotics11091186
4. Figueiras, A., & Herdeiro, M. T. (2022). Educational interventions to reduce prescription and dispensing of antibiotics in primary care: A systematic review of economic impact.OxfordAcademic.https://academic.oup.com/jphsr/article/11/ 3/197/613749
5. Hasanica, N. (2017). Evaluation of health education methods in the formation of knowledge, attitudes, and behaviors of school children towards health (Doctoral dissertation). Faculty of Health Studies, University of Sarajevo. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7428890/
6. Hindriati, T., Nurmisih, N., Diniyati, D., & Indriani, M. (2023). Effectiveness of Education Using Video Media and Leaflets on Adolescents' Knowledge about the Impact of Mistimed Pregnan-cy. Health Education and Health Promotion, 11(2), 183–187. https://doi.org/10.58209/hehp.11.2.183
7. Hsieh, C.-Y., et al. (2014). Efforts to reduce the door-to-needle time of thrombolysis in acute ischemic stroke: video-assisted therapeutic risk communication. Journal of Formosan Medical Association, 113(7), 457–462. https://doi.org/10.1016/j.jfma.2012.05.009
8. Nielsen, E., et al. (2020). Television as a patient education tool – a review of its effectiveness. Patient Education and Counseling, 11(1), 3–16. https://doi.org/10.1016/0738-3991(88)90003-5
9. Stromberg, A. (2006). Computer-based education for patients with chronic heart failure. A randomized, controlled, multicentre trial of the effects on knowledge, compliance, and quality of life. Patient Education and Counseling, 64(1-3), 128–135. https://doi.org/10.1016/j.pec.2006.02.012
10. Thomas, L. (2023). Quasi-Experimental Design | Definition, Types & Examples. Scribbr. https://www.scribbr.com/methodology/quasi- experimental-design/
11. University Research Co., LLC. (2023). Witnessing TB impact in the Philippines. https://www.urc-chs.com/news/witnessing-tb- impact-in-the-philippines/
12. Vickers, K., et al. (2021). Impact of educational interventions on antibiotic use: a systematic review. BioMed Central. Retrieved from https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916- 021-02017-7
13. Wofford, J. L., et al. (2019). The multimedia computer for office- based patient education: a systematic review. Patient Education and Counseling. Advance online publication. https://doi.org/10.1016/j.pec.2005.04.009
14. World Health Organization: WHO. (2023, November 21). Antimicrobial resistance. https://www.who.int/news-room/fact- sheets/detail/antimicrobial-resistance
15. Yeh, M.-L., et al. (2005). Effects of multimedia with printed nursing guide in education on self-efficacy and functional activity and hospitalization in patients with hip replacement. Patient Education and Counseling, 57(3), 361–368. https://doi.org/10.1016/j.pec.2004.08.016
16. Young, A., Smith June, A., & Tordoff, J. (2021). What do patients want? Time to innovatemedicine information leaflets.
17. *International Journal of Integrated Care*. https://doi.org/10.5334/ijic.3127