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Enhancing Knowledge and Perception on Tuberculosis through TB Alamin Yan (TBAY) Program among Adult Residence of Barangay Malis, Brooke's Point, Palawan

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ABSTRACT:

In the MIMAROPA region, the morbidity rate of tuberculosis of all forms per 100,000 population amounted to just over 57 in 2020. In Palawan alone, an estimated 400 new cases of TB are added to the graph every year. Hence, the disease remains a top health dilemma in the region particularly in remote barangays where health educational campaigns are not the focus. This study seeks to enhance the knowledge and perception of Tuberculosis through the TB Alamin Yan (TBAY) Program among Adult residents of Barangay Malis, Brooke's Point, Palawan. A quasi-experimental pre-test and post-test research design was employed in this study. The study revealed that the mean level of knowledge among control participants for both pre-test and post-test is classified as a "poor level of knowledge". Moreover, the results showed a statistical difference in the mean pre-test and post-test scores of the control and experimental groups. Recommendations include ensuring that diagnostic, treatment, and health intervention services are accessible among rural and underserved areas to improve TB diagnostics in Brooke's Point and the rest of the Philippines.

Keywords: knowledge, perception, tuberculosis

Introduction:

A major global health concern that still affects millions of people and communities worldwide is tuberculosis (TB). Its persistent prevalence and significant impact continue to extend a health crisis towards the public health system. One of the adopted goals of every member state of the United Nations (UN) is to achieve a Tuberculosis free-world by 2030, yet according to the World Health Organization (WHO) in 2022, TB remains as the world's second leading cause of mortality after COVID-19 , almost doubling as many deaths as HIV/AIDS.

In the context of global tuberculosis, the term HBC or "high burden country" is utilized since 1998. In 2015, WHO developed a modified classification of three global HBC which is one for TB, one for HIV-associated TB and one for drug-resistant TB (MDR/RR-TB).In the recent (WHO,2023) tuberculosis report, WHO released the list of the top 30 countries included in each of the three global high-burden countries category. Reflected on the list was the Philippines overlapped and qualifies for every classification of HBC, which means that cases of TB in the Philippines are accounted to the abovementioned categories. More specifically, the DOH revealed that the Philippines recorded an alarming total TB case of 612,000 in 2023 or a 549 TB cases per 100,000 population. In an estimate, 106 Filipinos dies from TB every single day, making it as the fourth largest contributor of TB cases globally next to India, China and Indonesia.

Consequently, in MIMAROPA region, the morbidity rate of tuberculosis of all forms per 100,000 population amounted to just over 57 in 2020. Furthermore, the Philippines TB modular report in 2022 revealed that the region has an increased number of 9,244 cases with the province of Oriental Mindoro, Occidental Mindoro and Palawan as the top 3 contributors. In Palawan alone, an estimated of 400 new cases of TB are added to the graph every year. Hence, the disease remains a top health dilemma in the region particularly in remote barangays where health educational campaigns are not the focus.

Moreover, the prevention and control of TB does not only rely on medical interventions. Despite the various efforts and approach in reducing TB incidence and mortality over the years, the spread of TB is exacerbated by delayed diagnosis and treatment, cultural stigma, and low-knowledge of every community, all of which are influenced by lack of healthcare resources. The knowledge and perception of the communities towards the disease are significant cornerstone for the complete TB mitigation. Misconceptions, cultural beliefs, and stigma surrounding TB often hinder effective prevention and control measures. With the provided critical role of knowledge and perception of individuals directed to tuberculosis control efforts, it is timely to address the presence of existing gaps and enhance understanding among the residents.

In conclusion, this paper aims to assess the baseline knowledge and perception among the residents of Barangay Malis about tuberculosis origin, transmission, symptoms and available treatment and by addressing misconceptions and reducing stigma, interventions aimed at enhancing their knowledge and perception of the disease.

Methodology:

Research Design

A quasi-experimental pre-test and post-test research design was employed in this study to evaluate the efficacy of the TBAY (TB AY Alamin) health intervention in enhancing the knowledge and perceptions of adult residents of Barangay Malis regarding tuberculosis. In this study, two groups were identified as participants. One is the "control group," and the "treatment group" is another. The researcher administered a pretest to both the control and treatment groups, which contained the same questions. However, the treatment group proceeded with the prepared intervention, which is the TBAY enhancement workshop, while the control group is placebo or did not receive any.

Sample and Sampling Design:

The selected respondents of the study are 30 adult residents of barangay Malis Brooke's Point Palawan. Nonprobability Purposive sampling was employed to select the appropriate participants. Out of 30 respondents, 15 was grouped as "control group" while 15 are tagged as "treatment group". The participants were further chosen based on the following criteria: 1) Must be a resident of the barangay for at least six (6) months and 2) Must be among the adult population of the barangay..

Research Instrument

The researcher utilized a pre-test and post-test assessment to determine the impact of TBAY (TB Alamin Yan) as health intervention in enhancing the knowledge and perceptions of the 'treatment" respondents regarding tuberculosis. The instrument was divided in three (3) parts: (Part 1) Participants' demographics, (Part 2) Knowledge assessment, and (Part 3) Perception assessment. The knowledge assessment was to test the level of understanding of the participants about the origin, mode of transmission, prevention of tuberculosis. Moreover, knowledge assessment part was a ten (10) items multiple choice questions. Similarly, the perception assessment was made to reveal the point of view of the participants about the tuberculosis and its pathophysiology. The perception part of the questionnaire has 10 Items with a 5-point Likert scale. This section is divided into three domains; 1) Perceived Susceptibility to tuberculosis: 6 items, 2) Perceived severity of tuberculosis: 3 items and, 3) Perceived benefit: 1 item. The scale was processed as ordinal data, with the following responses supplied using 5-point Likert Scale: "strongly agree", "agree", "maybe/neutral", "disagree", and "strongly disagree".

When predicting the weather, the analog approach is difficult to utilize because it needs to identify a day in the past with weather that is comparable to the current forecast, which is tough to do. Consider the following scenario: the current forecast predicts a warm day with a cold front approaching the forecast area.

A similar day occurred in the previous month when a warm day was followed by the arrival of a cold front, which resulted in the formation of thunderstorms later in the day. The forecaster could use the analog approach to anticipate the same type of weather, but even minor variances between the past and the present can influence the outcome, thus the analog method may not be the best option.

Data Analysis Procedure

Descriptive statistics using different measures of central tendencies were utilized to present the knowledge and perceptions of the control and treatment group regarding tuberculosis. Frequency, percentage and tables were also used in the data presentation. Subjects in each group are measured at two given periods: pretest (before TBAY intervention) and post-test (after TBAY intervention). For a control group, there is no treatment at all. To test for the significant difference before and after the intervention, the level of knowledge, level of perception, T-test of the gain and pre and post test scores was computed. All statistical analysis was conducted using a 0.05 alpha level. The total knowledge level of each participant was computed using the formula below:

Total knowledge level = Total knowledge score/ total knowledge items x 100%

After the total knowledge level has been computed, each level was group using this classification:

Classification for level of knowledge
Poor level of knowledge: 0-50%
Intermediate level of knowledge: 51-70%
Good level of knowledge- 71-84%
Excellent level of knowledge: 85-100%

Furthermore, perception part of the questionnaire has 10 Items with a 5-point Likert scale. Points were assigned to each category as follows: 0- Strongly agree; 1- agree; 2- maybe/neutral; 3-disagree; and 4-strongly disagree for each domain; the total score was the sum of the points acquired for all

questions in the domain. This was reclassified as strong belief, poor belief, or neutral (neither strong nor bad) belief using a threshold established by multiplying 3 (points for responding neutral) by the number of items in each domain.

HEALTH BELIEF SCALE SCORING SYSTEM	
Domain 1: Perceived Susceptibility (6 items)	
Strong belief	**if cumulative total score more than 12 (>12)**
Neutral/ No belief	**if cumulative total score equal to 12(=12)**
Poor belief	**if cumulative total score less than 12(<12)**
Domain 2: Perceived Severity (3 items)	
Strong belief	**if cumulative total score more than 6 (>6)**
Neutral/ No belief	**if cumulative total score equal to 6 (=6)**
Poor belief	**if cumulative total score less than 6 (< 6)**
Domain 3: Perceived Benefit (1 item)	
Strong belief	**if cumulative total score more than 2 (>2)**
Neutral/ No belief	**if cumulative total score equal to 2(=2)**
Poor belief	**if cumulative total score less than 2 (<2)**

On the other hand, the effect size was also computed. Glass's delta (Glass et al., 1981) is a measure of effect size. Glass' delta solely considers the control group's standard deviation (SDC). This is because Glass claimed that if numerous treatments were compared to a control group, it would be preferable to utilize only the standard deviation computed from the control group, so that effect sizes did not differ under equal means and variances. Effect size was interpret using the standard Glass Delta interpretation.

Effect Size Interpretation
A value of 0.2 represents a small effect size.
A value of 0.5 represents a medium effect size.
A value of 0.8 represents a large effect size.

Statement of the Problem:

This study seeks to enhance the knowledge and perception on Tuberculosis through TB Alamin Yan (TBAY) Program among Adult Residence of Barangay Malis, Brooke's Point, Palawan Specifically, this study aims to answer the following question:

1. What is the level of indicators on tuberculosis before and after the TB Alamin Yan (TBAY) health intervention program among adult residence of Barangay Malis, Brooke's Point, Palawan in terms of:

1.1 Knowledge

1.2 Perception

2. Is there a significant difference before and after the TB Alamin Yan health (TBAY) intervention in terms of:

2.2 knowledge

2.2 Perception

3. What is the effect size of enhancing the knowledge and perception through the TB Alamin Yan (TBAY) Program?

Results

1.1.1 Level of Knowledge about Tuberculosis among control participants

Table 1: Level of Knowledge about Tuberculosis among control participants

KNOWLEDGE INDICATOR	PRE-TEST		POST-TEST		MEAN	
	f	%	f	%	PRE-TEST	POST-TEST
Poor level of knowledge (0-50%)	12	80%	13	87%	42.67%	44%
Intermediate level of knowledge (51-70%)	3	20%	2	13%		
Good level of knowledge (71-84%)	0	0	0	0		
Excellent level of knowledge (85-100%)	0	0	0	0		

The ta ıd post-test results.

Using the researcher's modified knowledge indicator, the pre-test scores revealed that about 80% of the participants were classified as having poor knowledge. In comparison, 20% falls under the intermediate level of knowledge. Meanwhile, the scores from the post-test suggest a 7% increase in the percentage of control participants classified as having poor level of knowledge. On the contrary, none of the participants for both pre-test and post-test scores fall under the good and excellent category. Moreover, the means for both the pre-test and post-test indicate that about 42.67% and 44% of the participants has poor level of knowledge regarding tuberculosis.

The findings of this study conform to the research conducted by Olungah et. al (2018) where the lack of knowledge about tuberculosis leads to wrong opinions about the control and prevention of the disease, thereby making it difficult to reduce the burden of tuberculosis. According to et al. (2019), a lack of understanding about the disease and its treatment contributes to noncompliance with the treatment plan. Furthermore, people with insufficient awareness about tuberculosis commonly self-medicate and seek traditional healers, which can lead to inefficient diagnosis and treatment.

1.1.2 Level of Knowledge about Tuberculosis among experimental participants

KNOWLEDGE INDICATOR	PRE-TEST		POST-TEST		MEAN	
	f	%	f	%	PRE-TEST	POST-TEST
Poor level of knowledge (0-50%)	9	60%	0	0	48.66%	77.33%
Intermediate level of knowledge (51-70%)	5	33%	6	40%		
Good level of knowledge (71-84%)	1	7%	5	33%		
Excellent level of knowledge (85-100%)	0	0	4	27%		

Table 2: Level of Knowledge about Tuberculosis among experimental participants

Table 2 shows the summary of scores classification before (pre-test) and after (post-test) TBAY health intervention within the experimental participants.

The data revealed that majority of the respondents are classified as having poor level of knowledge. On the other hand, 5 out 15 participants have intermediate level of knowledge and only one entered the good level classification based on the pre-test scores. On the contrary, the post test scores indicate a dramatic increase in the number of participants who have an improved knowledge about the topic after the TBAY intervention. After the assessment, 40% or 6 out 15 participants upgraded to intermediate classification, 33% or 5 out of 15 managed to have a good level of knowledge and a remarkable 27% of the rest of the participants were classified as having excellent level of knowledge. Moreover, the mean from pre-test and post-test scores suggest a significant change in the knowledge classification of the group, from the majority being under poor level to becoming excellent level after the TBAY health intervention.

Similarly, the study of Panaligan and Guiang (2012) concludes that the participants' understanding of tuberculosis increased from 65.22% to 86.83% following a health education intervention ($p<0.001$). In addition, the paper of Maki et al. al (2021) understanding the effect of an educational intervention on awareness of various aspects of pulmonary tuberculosis in patients with the disease indicates that there was an improvement in the scores for all tuberculosis variables after the educational intervention, and the differences were all statistically significant. The study recommends that misconceptions concerning the causation of tuberculosis should be addressed through patient education and community awareness campaigns.

1.2.1 Level of Perception about Tuberculosis among control participants

DOMAIN	BEFORE (1st Phase)		AFTER PLACEBO (2nd Phase)	
	Cumulative total of the mean	Interpretation	Cumulative total of the mean	Interpretation
Perceived Susceptibility (Statement 1-6)	9.24	Poor belief	9.91	Poor belief
Perceived Severity (Statement 7-9)	6.19	Strong belief	6.45	Strong belief
Perceived Benefit (Statement 10)	2	Neutral/No belief	1.73	Poor belief

HEALTH BELIEF SCALE SCORING SYSTEM
Domain 1: Perceived Susceptibility (6 items)
Strong belief if cumulative total score more than 12 (>12)
Neutral/ No belief if cumulative total score equal to 12(=12)
Poor belief if cumulative total score less than 12(<12)

Domain 2: Perceived Severity (3 items)
Strong belief if cumulative total score more than 6 (>6)
Neutral/ No belief if cumulative total score equal to 6 (=6)
Poor belief if cumulative total score less than 6 (< 6)

Domain 3: Perceived Benefit (1 item)
Strong belief if cumulative total score more than 2 (>2)
Neutral/ No belief if cumulative total score equal to 2(=2)
Poor belief if cumulative total score less than 2 (<2)

Table 3: Level of Perception about Tuberculosis among control participants

This table summarizes the level of perception about tuberculosis among control participants under each of three (3) domains.

In this data, the perceived susceptibility to TB of the participants is classified as a poor belief for both phases. On the other hand, a strong belief on perceived severity was observed before and after the placebo. Finally, at the beginning, most of the control participants has a neutral or no belief of perceived benefit, but later it changed to having poor belief after placebo. The findings of this classification indicates that the perception of the participants, regardless of the level, remains the same even after another period.

Similarly, the research of Ondicho et al. al (2018) investigated tuberculosis knowledge and perceptions among patients in a pastoralist community in Kenya and discovered that the majority of participants had numerous incorrect ideas and myths about tuberculosis's etiology and transmission. The majority of participants saw tuberculosis as a contagious disease that spreads quickly from one person to another. The majority of participants perceived the treatment process as a significant challenge in dealing with the sickness.

1.2.2 Level of Perception about Tuberculosis among experimental participant

DOMAIN	BEFORE TBAY		AFTER TBAY	
	Cumulative total of the mean	Interpretation	Cumulative total of the mean	Interpretation
Perceived Susceptibility (Statement 1-6)	11	Poor belief	18.02	Strong belief
Perceived Severity (Statement 7-9)	5.8	Poor belief	5.78	Poor belief
Perceived Benefit (Statement 10)	2.0	Neutral/No belief	0.8	Poor belief

HEALTH BELIEF SCALE SCORING SYSTEM
Domain 1: Perceived Susceptibility (6 items)
Strong belief if cumulative total score more than 12 (>12)
Neutral/ No belief if cumulative total score equal to 12(=12)
Poor belief if cumulative total score less than 12(<12)

Domain 2: Perceived Severity (3 items)
Strong belief if cumulative total score more than 6 (>6)
Neutral/ No belief if cumulative total score equal to 6 (=6)
Poor belief if cumulative total score less than 6 (< 6)

Domain 3: Perceived Benefit (1 item)
Strong belief if cumulative total score more than 2 (>2)
Neutral/ No belief if cumulative total score equal to 2(=2)
Poor belief if cumulative total score less than 2 (<2)

Table 4. The level of Perceptions about tuberculosis among experimental participants

Table 4 shows the level of perception of the experimental participants in the three (3) identified domains of the health belief model.

Under perceived susceptibility, the cumulative total of the mean before TBAY demonstrates that most participants have a poor belief. This is the opposite after the TBAY intervention, where the perception under this domain improved to having strong belief. On the other side, the perceived severity of TB before the intervention was poor, but after undergoing TBAY, the response remained poor. Similarly, before TBAY, the participants

have no belief in perceived benefit. However, after receiving treatment, participants' perceived benefit level is categorized as poor belief. To sum up, the findings from this level classification suggest a major change in the perception of the experimental participants after the TBAY health intervention.

The results are comparable to the findings of Kusuma et al. al (2023), where nearly half of the participants (45%) are uncomfortable with people who have tuberculosis (TB).

This is consistent with the findings in Ghana, where the community stated that TB sufferers should not be seen in the community or permitted to attend public functions because they can infect others. The general public's concern stems from discrimination against tuberculosis patients, which is most common in low-income communities. A previous study identified several variables contributing to this discrimination, including germaphobia, a link between TB and other forms of prejudice such as poverty, low caste, and unsuitable behavior, and a belief that TB is God's judgment.

2.1.1 Test of Differences in the Knowledge Between Pre-test and After TB ALAMIN YAN (TBAY) Health Intervention

TYPE OF ASSESSMENT	MEAN +- SD	t-test	P-value
Pre-test	**4.82 +- 1.59**	**1.21**	**0.12**
After TBAY	**7.73 +- 1.18**		

Table 5: Test of Differences in the Knowledge Between Pre-test and After TB ALAMIN YAN (TBAY) Health Intervention

This table presents the result of the test of difference in knowledge scores before and after the TBAY health intervention among the experimental participants.

For knowledge, the pre-test mean score is 4.82 (SD=1.59), while the post-test mean dramatically increased to 7.73 (SD=1.18). The sample mean between pre-test and post-test scores is not equal. The result is significant at $p<0.05$. Therefore, the null hypothesis is rejected.

This finding aligns with the study of Maki et. al (2021) where in the knowledge score about the origin of tuberculosis among the participants is significantly low compare to the improved scores after the educational intervention. The findings indicate that structured health interventions similar to TBAY are effective in enhancing the knowledge about the disease.

2.1.2 Test of Differences in the Perception Between Pre-test and After TB ALAMIN YAN (TBAY) Health Intervention

	Sum of positive ranks	Sum of negative ranks	W-value	P-value	Remarks
Perception of Experimental group before and after TBAY (TB Ay Alamin) N=15	0	120	W-value=0 Critical value=30	0.0003	Significant

Table 6: Test of Differences in the Perception Between Pre-test and After TB ALAMIN YAN (TBAY) Health Intervention

The table presents the test for significance of perception among the experimental group in two different periods (before and after TBAY) using the Wilcoxon matched-pairs signed rank.

The derived W-value (W=0, Critical value=30) and P-value (P=0.0003) indicate that there is a significant difference in the responses of the treatment participants for both phases in relation to perception of tuberculosis. Therefore, there is no enough evidence to accept null hypothesis 2.

Glass Delta Size of the difference between control and experimental group for Knowledge Assessment

GROUP	Mean+-SD	Glass delta
CONTROL	4.33+-1.19	1.64 (Large Size Effect)
EXPERIMENTAL	6.28+-1.39	

Table 7: Glass Delta Size of the difference between control and experimental group for Knowledge Assessment

The table shows the effect size of TBAY health intervention as measured by Glass delta, which demonstrates a significant impact on participants' knowledge.

The mean pre-test and post-test scores for the experimental intervention group (M = 6.28, SD = 1.39) were marginally higher than the mean pre-test and post-test scores for the control group (M = 4.33, SD = 1.19). Generally, the measure of practical significance (d=1.64) indicates a large size effect

Glass Delta Size of the difference between control and experimental group for Perception Assessment

GROUP	Mean+-SD	Glass delta
CONTROL	41.76+- 0.40	1.001 (Large Size Effect)
EXPERIMENTAL	2.17+-0.87	

Table 8: Glass Delta Size of the difference between control and experimental group for Perception Assessment

The table shows the effect size of TBAY health intervention as measured by Glass delta, which demonstrates a significant impact on participants' perception.

The mean pre-test and post-test scores for the experimental intervention group (M = 6.28, SD = 1.39) were marginally higher than the mean pre-test and post-test scores for the control group (M = 4.33, SD = 1.19). Generally, the measure of practical significance (d=1.64) indicates a large-scale effect

Conclusion

SUMMARY OF FINDINGS

After having presented the results and discussions of this undertaking, the research will now infer the summary of findings:

1. TBAY intervention was an effective measure in enhancing the knowledge and perception of the community about the disease. Its impact is indicated by the dramatic transition in the knowledge and perception classification among experimental participants. The following findings support the gathered literatures highlighting the role of a structured health intervention in enhancing the target parameters.

2. The TBAY health intervention resulted in a statistical difference in both knowledge and perception among experimental participants.

3. The practical significance of TBAY is considered as large size effect.

CONCLUSIONS

Based on the findings, the following conclusions were drawn:

1. The TBAY health intervention successfully enhanced the knowledge and perception of the experimental participants about tuberculosis. The improvement is manifested by the transition of most of the participants level of knowledge from having poor level prior the intervention to becoming good level after TBAY implementation. Moreover, TBAY can be used as reference in formulating health interventions focused on enhancing the knowledge and perception about a disease through a culturally sensitive approach.

2. There is a significant difference in the sample mean between pre-test and post-test scores among experimental participants. The statistical value represents the efficacy of TBAY in enhancing the knowledge and perception of a certain group regarding tuberculosis..

3. The measure of practical significance indicates a large size effect.

RECOMMENDATIONS:

Based on the abovementioned findings and conclusions, the researcher recommends the following:

1. A culturally sensitive health education approach similar to TBAY (TB Ay Alamin) must be considered. Programs that respect cultural practices, including language, can potentially strengthen the trust of the local communities in the modern healthcare system, thus increasing their health-seeking behavior.

2. Ensuring that diagnostic, treatment, and health intervention services are accessible among rural and underserved areas can health improve TB diagnostics in Brooke's Point and the rest of the Philippines.

3. Schools must integrate TB education into health curricula to raise awareness starting from the young population.

4. Future research on the role of cultural sensitivity as part of successful implementation of health interventions must be conducted.

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List all the material used from various sources for making this project proposal

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