Perceptions, Predictors, and Pathways: A Mixed Methods Study on TPT Adherence among Household Contacts of TB Cases

Mary Rose S. Luces

The Faculty of the Graduate School of Nursing, University of Perpetual Help System-DALTA Las Piñas City

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ABSTRACT

Tuberculosis (TB) remains a persistent global health threat, with the Philippines identified as one of the high-burden countries. Preventive measures such as Tuberculosis Preventive Treatment (TPT) are crucial for reducing the risk of active TB among household contacts of index cases. However, non-adherence continues to undermine program effectiveness. This study investigated the perceptions, predictors, and pathways of TPT adherence among household contacts using a sequential explanatory mixed methods design.

The quantitative phase involved a cross-sectional survey of 112 household contacts of bacteriologically confirmed TB cases residing in Southville 3, Barangay Poblacion, Muntinlupa City. Data were collected using a structured questionnaire measuring socio-demographic characteristics, Health Belief Model (HBM) constructs (perceived susceptibility, severity, benefits, and barriers), self-efficacy, and perceived health system support. Statistical analysis, including descriptive statistics, chi-square tests, correlations, regression, and Partial Least Squares Structural Equation Modeling (PLS-SEM), was conducted to examine predictors of adherence and test mediation and moderation hypotheses. The qualitative phase employed in-depth interviews with 15 purposively selected participants representing diverse adherence behaviors. Thematic analysis was used to explore experiences, perceptions, and barriers to TPT completion.

Findings revealed an alarmingly high non-adherence rate of 85.6%, with only 14.4% of participants completing the TPT regimen. Quantitative results showed that self-efficacy significantly mediated the relationship between HBM constructs and adherence, while health system support moderated the influence of self-efficacy on treatment outcomes. Qualitative insights highlighted side effects, stigma, economic difficulties, and inconsistent health system follow-up as critical barriers, while supportive provider interactions and family encouragement emerged as facilitators. The integration of findings demonstrated that while household contacts were aware of their susceptibility and recognized the benefits of TPT, perceived barriers often outweighed motivation, leading to treatment discontinuation.

This study concludes that improving adherence requires not only strengthening education and risk communication but also addressing systemic and behavioral barriers. Recommendations include enhancing patient-centered counseling, managing side effects proactively, expanding reminder and follow-up systems, and tailoring interventions to household contexts. The results provide evidence-based guidance for health policymakers, practitioners, and TB program managers to reinforce TPT adherence and contribute toward the national and global goal of TB elimination.

Keywords: Tuberculosis Preventive Treatment, adherence, household contacts, Health Belief Model, self-efficacy, health system support, mixed metho

INTRODUCTION

Tuberculosis (TB) is a major public health issue around the world, especially in low- and middle-income nations where it is still spreading quickly. Even if diagnosis and treatment have gotten better, in 2022, the Philippines is one of the eight countries that accounted for two-thirds of the estimated global cases, which means that we need to find better ways to stop it from happening in the first place. As a Tuberculosis Program

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Coordinator, I've seen that just treating active TB disease isn't enough to stop the spread. Integrating TB Preventive Treatment (TPT) into normal program execution is both important and necessary to get closer to the worldwide goal of getting rid of TB.

TB Preventive Treatment is important for those who have latent TB infection, which means they have the Mycobacterium tuberculosis bacteria but don't show any signs or symptoms of active disease. These people are at risk of developing active TB if they don't get treatment, especially if they are in a vulnerable group, such people who live with HIV, children under five, or people who are close to someone with TB. In places like the Philippines, where TB spreads easily from one person to another in the home, giving TPT is a practical and cost-effective way to stop further instances of TB from happening and safeguard people who are at risk.

However, even though the WHO has clear standards and national regulations encourage the use of TPT, it is still not being used consistently because of different operational, behavioral, and systemic problems. Some of the problems are that patients and healthcare providers don't know enough about the disease, there are problems with contact tracing, there are not enough medications, and people are worried about sticking to their treatment plan and side effects. To get past these problems, everyone in the health system needs to work together, from improving data systems and making sure drugs are available to teaching the community and training healthcare workers.

In the end, we can't have a generation free of TB without putting prevention first. The intentional extension of TPT, especially among close contacts of infected cases, is a crucial step in breaking the cycle of transmission and lowering the future burden of disease. This study underscores the essential function of TPT in attaining tuberculosis eradication objectives and examines the pragmatic strategies required for its effective execution in programmatic contexts.

Background of Study

TB is the second most prevalent infectious cause of mortality, after COVID-19. 10.6 million incident TB cases and an anticipated 1.4 million TB-related fatalities were reported in 2022. With a death rate of 106 per 100,000, the highest globally, and an incidence rate of 498 per 100,000, the sixth worst in the world, Timor-Leste has one of the highest TB burdens in Southeast Asia, according to the World Health Organization's (WHO) Global TB Report 2022. The eighth most common cause of death in Timor-Leste is TB. The disease mostly affects individuals between the ages of 15 and 34, with a striking prevalence of multidrug-resistant tuberculosis (MDR-TB)/rifampicin-resistant tuberculosis of 2.5% among new cases and 14% among retreatment patients (Sarmento et al, 2022).

The WHO recommends a minimum of six months for TB therapy, which includes a two-month intensive phase with a four-drug regimen (isoniazid, rifampicin, pyrazinamide, and ethambutol) and a continuation phase that lasts longer than four months. A 40% medication adherence dropout rate results from the difficulty of adhering to this regimen, especially during the maintenance phase when symptoms improved (Dos Reis, 2016). According to studies, after patients feel better, they frequently stop taking their medication as prescribed because they think they are cured (Mekonnen and Azagew, 2018; Du et al, 2020). Drug resistance, recurrence, and illness progression are serious outcomes of inadequate medication adherence. Additionally, it increases the contagiousness of Mycobacterium tuberculosis (MTB), making TB control more challenging (Adisa et al, 2021).

TB medication adherence was impacted by a number of interconnected factors, such as societal stigma, healthcare accessibility concerns, and a lack of understanding regarding TB and its treatment regimen (Du et al, 2020). Transportation obstacles, job loss, negative drug side effects, lengthy treatment durations, and inadequate contact with medical professionals were other difficulties (Dogah et al, 2021). Despite the almost universal use of a Direct Observation Treatment Short (DOTS) Course in the majority of medical facilities, direct observation of therapy (DOT) continues to be a major obstacle for TB control efforts in many poor nations, including Timor-Leste (Price et al, 2016). Since treatment completion is still the largest obstacle to global TB control, local approaches and the decentralization of TB services have been shown to increase treatment success rates.

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There is a need to conduct this study because of the challenges of Tuberculosis prevention among household contacts of index cases in Tuberculosis Preventive Treatment. Non-adherence is still an issue in TB prevention that can still progress transmission and continuation of the development of active disease. Understanding the factors and demographic profile can help in crafting interventions.

Theoretical Framework

Due to the lengthy course of treatment for pulmonary tuberculosis, medication adherence and treatment effectiveness necessitate a diverse approach to assist adapt, change, and maintain behavior. The idea of individual-centered care must be used in order to balance patients' needs and rights, including accountability for their rehabilitation. The Health Belief paradigm (HBM) is one paradigm that is utilized to describe and comprehend health behavior in TB treatment adherence (Tola et al, 2016; World Health Organization, 2017).

By continuously integrating HBM and MI-based health education models, a new strategy pertaining to TB patients' trust in healthy behavior (health belief) must be developed in order to enhance medication adherence and treatment effectiveness. Beginning with the idea that psychological impulses impact individual behavior, this education focuses more on attempts to increase self-efficacy, which gives patients the confidence and motivation to receive long-term treatment (Azizi et al, 2018).

When treating patients who need long-term therapy, such as TB, medication adherence can be a major problem. Human behavior is linked to compliance, which indicates an individual's ability to follow prescription medication instructions from healthcare providers (Vernon et al, 2019). As a result, it is crucial to take into account the patient's psychology as a crucial factor in determining drug adherence (Klonoff, 2019). HBM was one of the most popular behavioral theories for enhancing medication adherence. HBM emphasizes the significance of human behavior and explains why people don't follow advice on screening tests or preventive actions for early disease detection. According to the HBM, a person's belief in the efficacy of advised health-related behavior, their perception of their vulnerability to a specific illness, and their assessment of the disease's severity can all predict the likelihood of them adopting that behavior (Maiman and Becker, 1974).

Conceptual Framework

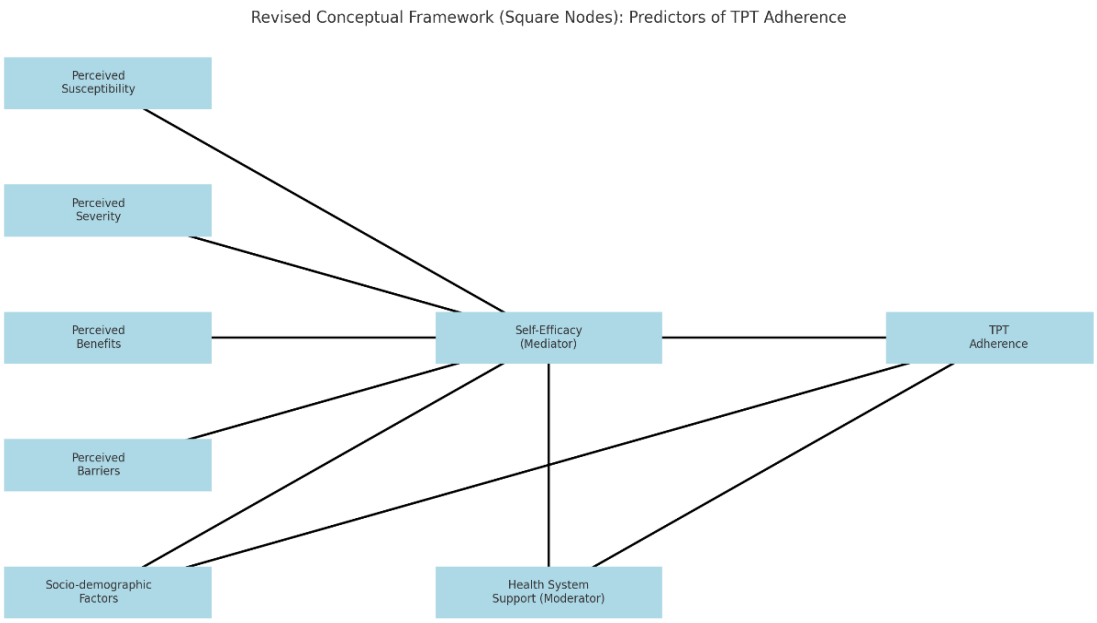

Figure 1. Conceptual Framework of Predictors of TPT Adherence Based on the Health Belief Model

This conceptual framework illustrates the hypothesized relationships among individual, behavioral, and system-level variables influencing **adherence to Tuberculosis Preventive Treatment (TPT)** among household contacts of index TB cases.

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The framework is grounded in the **Health Belief Model (HBM)** and includes the following key components:

1. **Health Belief Model Constructs**:

- **Perceived Susceptibility**: The individual's belief about their risk of contracting TB.
- **Perceived Severity**: The perceived seriousness of TB infection and its consequences.
- **Perceived Benefits**: Beliefs about the effectiveness of TPT in reducing TB risk.
- **Perceived Barriers**: Perceived obstacles to completing the treatment (e.g., side effects, stigma, cost).

These constructs are hypothesized to influence the individual's **self-efficacy**.

2. **Self-Efficacy (Mediator)**:

- Represents the individual's confidence in their ability to adhere to the full TPT regimen.
- Acts as a **mediator** between the HBM constructs and TPT adherence, explaining how beliefs translate into action.

3. **Health System Support (Moderator)**:

- Refers to the availability, accessibility, and quality of support provided by health workers and facilities.
- Serves as a **moderator**, potentially strengthening or weakening the relationship between self-efficacy and adherence.

4. **Socio-Demographic Factors**:

- Includes age, sex, education, income, relationship to the TB patient, and caregiving role.
- These factors may have both **direct** and **indirect effects** on TPT adherence through self-efficacy.

5. **TPT Adherence (Outcome)**:

- The primary outcome of interest, defined as the completion of the prescribed preventive treatment regimen.

The framework visually supports the study's use of **mediation-moderation analysis** (using PLS-SEM) and a **sequential explanatory mixed methods approach**, where the quantitative model is later contextualized through qualitative interviews.

Statement of the Problem

This study investigates the multifactorial contributors to non-adherence to Tuberculosis Preventive Treatment (TPT) among household contacts of index TB cases, with particular attention to the potential **mediating role of self-efficacy** and the **moderating effect of health system support**. The following questions are proposed:

1. **What are the socio-demographic characteristics** of household contacts of index TB cases enrolled in Tuberculosis Preventive Treatment (TPT), specifically in terms of:

- Age
- Sex
- Educational attainment

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- Employment status
- Monthly household income
- Number of household members
- Relationship to the index case
- Caregiver status

2. **What is the rate of non-adherence** to TPT among household contacts of index TB cases?
3. **What are the perceived behavioral factors** affecting non-adherence to TPT among household contacts, specifically in terms of:
   - 3.1. Perceived susceptibility
   - 3.2. Perceived severity
   - 3.3. Perceived benefits
   - 3.4. Perceived barriers
4. **What is the perceived level of health system support** (e.g., accessibility, follow-up, communication) among household contacts enrolled in TPT?
5. **What is the level of self-efficacy** among household contacts regarding their ability to complete the TPT regimen?
6. **Does self-efficacy mediate** the relationship between perceived health beliefs (i.e., perceived susceptibility, severity, benefits, and barriers) and non-adherence to TPT?
7. **Does health system support moderate** the relationship between self-efficacy and non-adherence to TPT among household contacts?
8. **How do household contacts perceive and experience TPT**, including the barriers and facilitators to adherence?
9. **In what ways do health system structures, provider interactions, and service delivery models influence adherence** to TPT among household contacts?

Null Hypotheses (H_0):

H_{01}: There is no significant relationship between socio-demographic characteristics (age, sex, educational attainment, employment status, monthly household income, number of household members, relationship to index case, caregiver status) and non-adherence to Tuberculosis Preventive Treatment (TPT).

H_{02}: There is no significant relationship between perceived susceptibility and non-adherence to TPT.

H_{03}: There is no significant relationship between perceived severity and non-adherence to TPT.

H_{04}: There is no significant relationship between perceived benefits and non-adherence to TPT.

H_{05}: There is no significant relationship between perceived barriers and non-adherence to TPT.

H_{06}: There is no significant relationship between perceived health system support (e.g., accessibility, follow-up, communication) and non-adherence to TPT.

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H_{07}: There is no significant relationship between self-efficacy and non-adherence to TPT.

H_{08}: Self-efficacy does not significantly mediate the relationship between health belief constructs (perceived susceptibility, severity, benefits, and barriers) and non-adherence to TPT.

H_{09}: Health system support does not significantly moderate the relationship between self-efficacy and non-adherence to TPT.

Assumptions of the Study

1. **Participant Honesty**
   It is assumed that all participants will respond truthfully and accurately to both survey questions and interview prompts regarding their adherence behavior and experiences with TPT.

2. **Clarity of Research Instruments**
   It is assumed that the structured questionnaire and interview guide are clear, culturally appropriate, and understandable to the participants, following instrument validation and pilot testing.

3. **Representativeness of the Sample**
   It is assumed that the selected household contacts are representative of the larger population enrolled in TPT programs in the study area, allowing findings to reflect broader trends.

4. **Stability of Health System Context**
   It is assumed that the health system structures, TB program implementation, and service delivery models remained consistent during the period of data collection.

5. **Willingness to Participate**
   It is assumed that participants freely agreed to participate in the study without coercion and that their responses are given voluntarily.

6. **Concurrent Validity of Mixed Data**
   It is assumed that the integration of quantitative and qualitative data will provide complementary insights, allowing a more holistic understanding of the non-adherence phenomenon.

7. **Minimal Recall Bias**
   It is assumed that participants can accurately recall their experiences and behaviors during their TPT course, especially within the 12-month inclusion period.

Scope and Limitations of the Study

This study focuses on household contacts of tuberculosis (TB) index cases who have been enrolled in the Tuberculosis Preventive Treatment (TPT) program within the past 12 months in Southville 3, Barangay Poblacion. The primary aim is to determine the rate of non-adherence to TPT and to explore the associated socio-demographic, behavioral, and health system factors. A **mixed methods approach** was used, integrating **quantitative data** gathered through structured questionnaires and **qualitative data** obtained via in-depth interviews.

The scope of this research is limited to individuals residing in the selected barangay and may not reflect the experiences of household contacts in other settings or regions. Additionally, the **quantitative component** may not fully capture nuanced factors influenced by socio-cultural beliefs, family dynamics, or social stigma. The **qualitative component**, while rich in detail, involves a small, purposively selected sample and therefore lacks generalizability to the broader population. Lastly, reliance on **self-reported information** introduces potential recall bias and social desirability bias, which may affect the accuracy of the data collected.

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Significance of the Study

The findings and recommendations of this research proved beneficial to the following stakeholders:

Patients and Household contacts – this study will highlight the lived experiences, needs and challenges, thus will help in crafting effective service delivery models for improved adherence to complete their treatment plans and consequently reduce the risk of developing active tuberculosis and improve overall health.

Healthcare policy makers – the results of this study will serve as a reference in designing and implementing tuberculosis control programs. This includes identifying factors that contribute to non-adherence to tuberculosis preventive treatment, modifyinging implementation, improving allocation of resources, and implementing community-based interventions.

Healthcare practitioners – the study will provide additional knowledge for healthcare practitioners such as nurses, barangay healthcare workers and doctors in the everyday challenges of patients in completing TPT. Understanding barriers will allow providers to deliver more patient-centered care, improving patient follow-ups, and building trust within the community, and can promote stronger patient engagement and enhance treatment outcomes.

Researchers – the study will contribute to the body of knowledge on TB prevention with quantitative and qualitative data on adherence behavior. The results of this study can be used as a reference for future research that will explore a similar scope or expand to other variables.

Definitions of Terms

The following are confined to the main variables of the study. The definitions herein provide both the technical and operational presentations.

Tuberculosis Preventive Treatment (TPT). A medical intervention intended to prevent the progression from latent tuberculosis infection to active tuberculosis disease among individuals who have been exposed to someone with active TB.

In this study, TPT refers to the prescribed regimen given to household contacts of TB index cases within the past 12 months to reduce their risk of developing active TB.

Index Case. The first identified and microbiologically confirmed case of active tuberculosis within a household or defined social unit.

In this study, an index case is the person within a household who was initially diagnosed with active TB, thereby triggering contact tracing and preventive treatment among co-residing individuals.

Household Contact. An individual who resides in the same household as the index TB case and is considered at risk due to prolonged or repeated exposure.

In this study, household contacts are defined as co-inhabitants of the index case who have been enrolled in a TPT program by a local health facility within the last 12 months.

Non-Adherence. The act of not following the prescribed medical treatment plan, whether by missing doses, discontinuing early, or not initiating treatment at all.

In this study, non-adherence refers explicitly to the failure of household contacts to complete or consistently follow the TPT regimen as prescribed by the health professional.

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REVIEW OF RELATED LITERATURE AND STUDIES

This chapter embodies the topical presentation of literature and studies related to the problems, topics, and variables of this study. A synthesis of the said literature and studies is provided at the end of this chapter.

Over the past five years, the global incidence of tuberculosis (TB) and the uptake of TB Preventive Treatment (TPT) have displayed notable trends, with significant implications for high-burden countries like the Philippines. Worldwide, TB incidence decreased from about 133 cases per 100,000 people in 2019 to approximately 124 in 2020 and 2021, mainly due to disruptions caused by COVID-19 in healthcare services. However, it rebounded to 133 in 2022 and slightly rose to 134 in 2023. The Philippines remains among the countries with the highest TB burden globally, accounting for roughly 6.8% of the total in 2023. It was estimated that around 739,000 people developed TB in the country in 2023, but only about 612,534 cases were officially reported, indicating a significant gap in detection.

Meanwhile, global efforts to increase TPT access have led to more people starting preventive treatment—from 3.6 million in 2019 to 4.7 million in 2023—with better coverage among people living with HIV (56%) and household contacts (21%). On the other hand, the Philippines has consistency reported low TPT coverage, especially among household contacts of TB cases, with estimates showing a decline from 11% in 2018 to just 2% by 2020, with the rate remaining low in subsequent years. This underscores the urgent need to improve case detection and preventive treatment efforts in the country to reduce TB transmission and work toward elimination goals.

Factors that affect adherence

Families can stop the spread of pulmonary tuberculosis in several ways. Enhancing air circulation throughout the home, appropriately disposing of sputum, wearing masks, covering the mouth and nose when coughing, taking medications regularly, getting regular checkups at health centers, and having family members watch over you. In contrast, you take your medications are some of the strategies that have been identified by earlier research (Rohmah and Wicaksana, 2015). The transmission of TB bacteria is influenced by the conduct of pulmonary TB patients within the family. Patients with pulmonary tuberculosis should avoid chilly temperatures, ensure sunshine reaches the bedroom, cover their mouths when coughing and sneezing, dispose of their saliva in sanitised areas, and eat foods high in carbohydrates and protein.

According to HL, a number of factors affect the health of people, communities, and populations. Blum, including behavior, healthcare services, genetics, and the immediate environment, which includes physical, social, cultural, political, and economic elements. Since none of the factors exist alone, they are all interconnected (Rohmah and Wicaksana, 2015). Knowledge, attitudes, and actions are some of the variables that contribute to the success of disease control programs and the prevention of pulmonary tuberculosis transmission. The state of people's and communities' health is greatly influenced by these critical aspects.

According to Lawrence Green's theory, people's preparedness to take action is influenced by their beliefs about their risk of contracting an illness or other health issue, as well as their views on the advantages of taking preventative measures (Rinaldo et al, 2023). Three factors can affect health behavior: predisposing factors, which show up as knowledge, attitude, beliefs, faith, and values; enabling factors, which show up as the physical environment and the availability or lack of health facilities; and reinforcing factors, which show up as the behavior and attitude of health professionals or other officers who serve as a model for community behavior. People are affected by predisposing factors, such as the attitude that tends to cause a person to do an action, whether it comes to preventing the occurrence of a disease or seeking treatment.

Predisposing factors

Age, occupation, education, knowledge, and attitude are all predisposing variables. Knowledge was the most commonly identified component that significantly influences health behavior, according to our analysis of the literature study. Individual behaviour (overt behaviour) is greatly influenced by information, and knowledge-based behaviour is more likely to be sustained than ignorance-based action. Additionally, it is in line with

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Agustina and Wahjuni (2017), who found that the most essential element influencing family members' behavior in preventing pulmonary tuberculosis is knowledge. Pampel et al. (2010) also noted that ignorance is the reason for a lack of awareness regarding the dangers of hazardous habits. An individual's knowledge of pulmonary tuberculosis, including its definition, etiology, transmission, clinical signs, diagnosis, treatment, and preventative methods, can be considered knowledge of tuberculosis prevention behavior. Numerous textual and media sources can provide information about pulmonary TB and preventive measures. In addition to influencing an individual's level of knowledge, Hatzenbuehler et al. (2016) discovered that a one-time educational intervention regarding TB prevention programs could enhance the identification, testing, and treatment of adolescents at risk for TB. A person who gathers information from a variety of sources would have a broad knowledge base.

On the other hand, Kaka et al (2021) highlight that some research individuals already have favorable attitudes, but it can still be noticed that negative attitudes affect TB prevention activity. Habits of inadvertently spitting and opening the mouth when coughing or sneezing are examples of negative attitudes (Wulandari et al, 2016). Attitude serves as a predisposition to overt acts, sometimes referred to as covert actions, rather than necessarily translating into them.

Enabling factors

Conditions in the physical environment are examples of enabling factors. According to a Shegaze et al. (2022) study, TB patients frequently ignore early symptoms. Patients and families prefer herbal remedies. Inadequate dietary intake and the high expense of long-distance travel are other causes of treatment non-adherence. Family food choices are linked to nutritional intake, which can improve family members' immune systems and stop the spread of tuberculosis. Additionally, studies by Afshari et al. (2023) suggest that children who come from families with a history of diabetes mellitus are more likely to contract tuberculosis. Economic position has an indirect relationship with dietary choices. It might be challenging for families with low or insufficient financial standing to achieve their dietary demands. However, the reviewed study by Agustina and Wahjuni (2017) demonstrated that there was no correlation between TB prevention and economic position. The reviewed research by Afshari et al. (2023) discusses nutrition and suggests that the number of family members is another environmental element that affects the spread of tuberculosis. Larger families may have an impact on the spread of tuberculosis.

Another crucial element in stopping the spread of pulmonary tuberculosis is the living environment. To prevent the spread of tuberculosis, families can take steps like keeping the house well-ventilated and putting the bed of a patient with pulmonary tuberculosis in direct sunshine at least once a week (Rohmah and Wicaksana, 2015). Sundrying mattresses, opening doors and windows in the morning, eating a healthy diet, abstaining from alcohol and tobacco, exercising frequently, washing clothes, getting enough sleep, and not sharing personal hygiene products are all examples of clean and healthy living behaviors.

Reinforcing factors

Family and community leaders' support is one of the reinforcing influences. According to a study by Wulandari et al. (2014), family contributions have no bearing on TB transmission prevention. Additional research by Buang et al. (2015) and Rizana et al. (2016) that offered health education treatments demonstrated a favorable effect on altering health behaviors by enhancing knowledge. Therefore, it is expected that community leaders with policy-making power will provide solutions that are specific to the environmental circumstances in their area. Direct interventions, like health education, are not always necessary; indirect treatments, such as making it easier for people to obtain and transport medications, should also be used.

Other studies also demonstrate that the role of healthcare professionals has a significant impact on the spread of pulmonary tuberculosis, in addition to family support. Healthcare professionals have a considerable effect on how well patients adhere to their pulmonary TB treatment. Patients who receive motivational support from healthcare professionals are more likely to regularly take their prescriptions from health centres and monitor any changes in their health, which allows them to get all the advice they need from healthcare professionals during their treatment. To improve the people's health, healthcare personnel are essential in delivering

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healthcare services to the target demographic. Healthcare professionals must foster good patient behaviours regarding their health to effectively perform their job (Netty et al., 2018).

The literature now in publication identifies a wide range of characteristics that impact treatment adherence, such as behavioural, systemic, and sociodemographic barriers. Individual, interpersonal, and organisational aspects are crucial for comprehending adherence behaviours, according to a prior study that highlights the complex nature of medicine adherence among elderly TB patients (Hassani et al, 2023). Similar to this, additional studies give a summary of the risk factors for treatment loss to follow-up in developing nations, emphasizing socioeconomic variables such poverty, low educational attainment, and systemic healthcare issues (Opperman and Du Preez, 2023). Furthermore, a systematic review with meta-analysis study highlights the significance of prompt intervention and patient support by further elucidating predicted characteristics for treatment effectiveness, such as younger age, non-drinking status, and early sputum smear conversion (Torres et al, 2019).

These studies do, however, point up knowledge gaps on region-specific adherence patterns, which include variances in treatment adherence influenced by regional socioeconomic circumstances, cultural norms, and healthcare system structures. For instance, social vulnerability factors like homelessness and drug misuse are more widespread in high-income contexts, while economic constraints and restricted access to healthcare facilities are more common in low-income settings (Appiah et al, 2023).

Patient-related factors

Demographics like age, marital status, and gender are important factors that affect patients; non-compliance is more common among males (Ortiz et al., 2023; Lolong et al., 2023; Izudi et al., 2020), unmarried or divorced people (Hassani et al., 2024; Iweama et al., 2021; Xing et al., 2021), and older adults (Omar et al., 2024; Lee et al., 2024; Engoru et al., 2024). Residence status also plays a role since patients who live in confined facilities, are homeless (Almeida and Goncalves, 2024), are immigrants (Xing et al., 2020; Lin and Xiang, 2024), or are from rural areas (Zhu et al., 2022; Fekadu et al., 2020) encounter particular challenges. Another essential consideration is educational attainment; low levels of education or illiteracy are linked to poor adherence because of a lack of knowledge of TB treatment protocols (Tirore et al, 2024; Anley et al, 2023). Non-compliance is also made worse by occupational limitations, such as unemployment (Karat et al, 2021; Du et al, 2020; Omar et al, 2024), overwork (Motappa et al, 2022; Xing et al, 2021), or jobs with little room for flexibility (e.g., healthcare workers, merchants) (Ayele et al, 20217; Kawatsu et al, 2018).

Treatment adherence is severely hampered by economic variables, such as low income levels (Zhu et al., 2022; Subbaraman et al., 2021; Lee et al., 2024), financial difficulty (de Aguiar et al., 2022), lack of health insurance (Lin and Xiang, 2024), or expenses associated with travel (Motappa et al., 2022). This problem is made worse by poverty, food insecurity, debt (Boru et al., 2017), and the price of non-TB-related drugs (Woimo et al., 2017). Lifestyle factors that can affect physical health and the capacity to follow prescription schedules, such as drug use, smoking, and drunkenness, are consistently associated with non-compliance.

Non-compliance is more likely in patients with a history of therapy discontinuation, MDR-TB, relapsed cases, or prior loss to follow-up. By making treatment plans more complicated, co-morbidities such HIV/AIDS, diabetes, obesity, malnutrition, cancer, renal failure, psychiatric illnesses, extrapulmonary tuberculosis cases, and other chronic illnesses erect further obstacles. Adherence is further weakened by inadequate knowledge of tuberculosis, including misconceptions about the illness, its treatment, and prevention, as well as a reliance on the conventional belief that food provisions would aid in the completion of therapy, a belief in a cure for tuberculosis, or a lack of confidence in the effectiveness of treatment (Kebede et al, 2022).

Non-compliance is exacerbated by psychological variables such as sadness, stress, hopelessness, shock or denial about sickness, emotions of shame, and fear of revelation. Negative attitudes that enhance non-compliance include boredom, a low perception of the severity of TB, a lack of awareness or carelessness about one's illness, and low self-management. Patients frequently stop their medication too soon, such as when they feel better or become cured too more quickly. Treatment discontinuation is also influenced by forgetfulness, moving far from home, running out of medication, or not getting refills promptly (Anye et al, 2023).

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Family-related factors

Family-related issues significantly impact TB treatment adherence, and one of the main obstacles to compliance is a lack of family support. It is frequently difficult for patients to get regular care if they do not receive financial aid, support for housing or food, or assistance with transportation. Furthermore, patients' dedication to their treatment plans may be weakened by the lack of family members' emotional support, incentive, and oversight. TB patients frequently experience feelings of pessimism and loneliness, which are made worse by a lack of empathy and emotional and spiritual support in the family setting. To increase adherence and patient outcomes, it is necessary to involve families as active participants in the treatment process through education and the creation of supportive environments (Gebremariam et al, 2021; Zhang et al, 2020).

Health services-related factors

TB treatment adherence is greatly impacted by factors relating to health services, especially in places with poor access to healthcare. Patients face significant obstacles, particularly in geographically remote locations, due to long journey durations, insufficient transportation alternatives, and long distances to health centers (Amkongo et al, 2023). These difficulties are made worse by inadequate infrastructure and limited access to healthcare services, which frequently deter patients from starting or completing therapy. Non-compliance is also influenced by long wait times at medical institutions and discontent with the standard of care received. Elements, including mistrust of the medical system and inadequate treatment protocol implementation, weaken patient confidence and adherence. To address these problems, it is necessary to improve transportation assistance, optimise service delivery, build the healthcare infrastructure, and raise the standard and dependability of healthcare in order to promote improved adherence outcomes.

Monitoring system-related factors

Factors associated with the monitoring system are essential for TB treatment compliance. When Directly Observed Treatment (DOT) programs are unavailable or absent, patients may not receive the required assistance and monitoring, which drastically lowers compliance. Non-adherence is made worse by noncompliance with or refusal to accept DOT, many of which are brought on by the difficulty of observing techniques (Kebede et al., 2020). Alternative monitoring strategies, such as family-member-led DOT or community-based (Izudi et al., 2020), can offer more flexible and accessible support, although they might not always be applied successfully. Additionally, there is a greater chance of missing doses when medication is self-administered without enough supervision. To improve adherence and treatment success, customised solutions that put convenience, accessibility, and engagement first are required, as evidenced by the dearth of patient-centred monitoring systems and medication dose reminders.

High bacterial load, recent immunosuppression (e.g., HIV, immunological disorders, immunosuppressive treatment), malnutrition, diabetes, chronic renal problems, transplantation, silicosis, and tobacco/alcohol use are some of the factors linked to higher TB infection rates in the general population. Another important contributing factor to the incidence of TB has been found to be close contact with a confirmed TB patient (Velen et al, 2021).

A household contact (HHC) is a person who lives in close proximity to a TB patient (Ross et al, 2021). It has been shown that HHCs are three times more likely than non-HHCs to get tuberculosis. HHCs should get routine TB screening because they are at a high risk of contracting the disease (World Health Organization, 2021). 52.6% of HHCs had latent TB infections, according to a prior study done in South India (Krishnamoorthy et al, 2021). Furthermore, the prevalence of latent TB infection and active TB infection among HHCs was 45.4% and 3.1%, respectively, according to a meta-analysis and systematic review of 95 studies including participants from middle- and low-income settings. The first year after exposure had the greatest TB incidence rate. Reducing the overall incidence of TB requires preventing TB in high-risk groups, particularly HHCs (World Health Organization, 2020).

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One of the most important methods for preventing TB infection among HHCs is the promotion of TB preventive practices. According to van Seventer and Hochberg (2017), HHCs should adopt particular behaviors with the following objectives: (1) encouraging self-care habits, (2) reducing the spread of infection from TB patients, and (3) effectively managing the home environment. Few studies have examined TB preventive behavior and its determinants among HHCs, according to the body of available literature. Nonetheless, several research have investigated TB prevention practices in different populations. Self-efficacy and health attitudes, such as perceived vulnerability to sickness and the perceived severity of the illness, have been demonstrated to influence TB preventative activity among Japanese adults (Yoshitake et al, 2019). In Thailand, village health volunteers' self-efficacy is a statistically significant predictor of their TB prevention activity (Wicharit et al, 2022). Perceived susceptibility, perceived advantages, perceived hurdles, and perceived severity of the illness were all associated with the preventive behavior of TB attendants in Bangladesh.

Protection motivation theory (PMT), which is crucial for comprehending and forecasting health behaviors, is in line with the elements that have been discovered to influence TB preventive behaviors in earlier research (Prentice-Dunn and Rogers, 1986). Threat assessment and coping evaluation are two contemporaneous cognitive processes that affect a person's desire to adopt a recommended activity, as PMT shows. Perceived severity of the health threat and perceived susceptibility (i.e., the chance of contracting the disease) are components of threat appraisal. Response efficacy, which indicates a person's expectation to follow a suggested conduct, and self-efficacy, which means a person's confidence in carrying out particular activities, are both included in coping appraisal.

Synthesis

Numerous factors, which can be broadly divided into predisposing, enabling, reinforcing, and patient-related factors, affect adherence to tuberculosis (TB) treatment. The current study emphasizes the importance of sociodemographic characteristics, including age, education, and occupation, in influencing adherence, as well as knowledge and attitudes toward TB prevention. Consistent therapy is also made possible by environmental variables, healthcare availability, and support networks, such as family and healthcare provider involvement. A significant contributing element to non-adherence is psychological, including stress, stigma, and hopelessness. Despite this understanding, little is known about the intricate and multifaceted nature of adherence, especially in particular sociocultural situations.

There are still gaps in the understanding of these factors' relationships and how they differ among groups, despite tremendous advancements in this area. Research on the specific effects of psychological distress and family dynamics on treatment adherence in rural or underprivileged groups, for example, is scarce. In addition, the impact of regional healthcare systems, including infrastructure and connections between patients and providers, have not been studied, particularly in areas with weak resources. In order to close these gaps and provide a more comprehensive understanding of the factors that both facilitate and hinder TB treatment adherence, this study will concentrate on these understudied areas.

The results of this study will help to clarify the relationships between factors, leading to a more thorough understanding of TB treatment adherence. Through investigating the family dynamics, psychological factors, and the impact of healthcare infrastructure on treatment adherence, the study seeks to provide insights that may result in more focused interventions. For instance, in rural or resource-poor settings, where patients are more likely to be misinformed about tuberculosis and available treatments, interventions could be created to meet their educational requirements specifically. Furthermore, the study might offer methods for strengthening the bonds between patients and providers, emphasizing the development of empathy, trust, and communication in medical environments. It can also emphasise the value of community-based support networks, where local organisations and family members can receive training to help them adhere to treatment plans and track their success. The study aims to offer evidence-based suggestions that can guide practices and policies intended to enhance treatment results, especially in areas with high TB burdens. This will result in a more comprehensive and long-lasting approach to TB management that takes into account both medical and socio environmental issues.

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This chapter presented the research design used, the determination of population and sampling, the identification of respondents and the research locale, the research instrument employed for quantitative data-gathering and the crafting of key questions to elicit qualitative data, the development of the data-gathering procedure, the validation of the instruments, the data processing and statistical treatment of data, and the equally important ethical considerations.

Research Design

This study employed a mixed methods approach using a Sequential Explanatory Design, which involved the collection and analysis of quantitative data followed by qualitative data to further explain and contextualize the quantitative findings. This design was particularly appropriate for investigating multifactorial public health issues such as non-adherence to Tuberculosis Preventive Treatment (TPT), where both measurable predictors and in-depth personal experiences needed to be explored.

Phase 1: Quantitative Strand

The first phase of the study involved a cross-sectional quantitative survey conducted among household contacts of index TB cases who had been enrolled in the TPT program within the last 12 months. This phase was designed to:

- Determine the rate of non-adherence to TPT.
- Assess the influence of socio-demographic characteristics, health belief model (HBM) constructs (perceived susceptibility, severity, benefits, and barriers), self-efficacy, and health system support on TPT adherence.
- Test mediation (self-efficacy) and moderation (health system support) effects using Partial Least Squares Structural Equation Modeling (PLS-SEM).

Validated structured questionnaires using Likert-scale items and closed-ended questions were administered to a purposive or stratified sample of household contacts. The quantitative results identified significant relationships and predictors of non-adherence.

Phase 2: Qualitative Strand

The second phase followed after the quantitative analysis and involved qualitative in-depth interviews with a subset of household contacts. Participants were purposively selected to reflect a range of adherence behaviors and experiences. The purpose of this phase was to:

- Explore perceptions, motivations, and lived experiences related to TPT adherence or non-adherence.
- Examine barriers and facilitators that were not fully captured through quantitative measures.
- Provide rich narrative context to explain the statistical trends observed in the first phase.

Thematic analysis was employed to extract major themes aligned with the Health Belief Model, self-efficacy theory, and systemic health care influences.

Integration of Quantitative and Qualitative Results

After both data strands were analyzed independently, results were merged during interpretation. The qualitative findings were used to explain, expand, or clarify the quantitative results. A joint display presented integrated insights, enhancing the study's ability to provide a comprehensive understanding of factors affecting TPT adherence.

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This Sequential Explanatory Design allowed for the strength of quantitative generalizability and the depth of qualitative understanding, offering actionable recommendations for TB program improvement and public health interventions.

Population and Sampling

Target Population

The target population of this study consisted of household contacts of index TB cases who had been enrolled in the Tuberculosis Preventive Treatment (TPT) program within the past 12 months. These individuals were considered at high risk of developing active tuberculosis due to prolonged or close exposure to a confirmed TB patient and were eligible for TPT under the national TB program guidelines.

The study was conducted in Southville 3, Barangay Poblacion, Muntinlupa City, where community-based TB prevention programs were implemented through rural health units and barangay health stations.

Inclusion Criteria

- Individuals aged 15 years and older
- Currently or previously enrolled in a TPT program within the last 12 months
- Residing in the same household as a bacteriologically confirmed index TB case
- Provided informed consent (or assent with guardian consent for minors)

Exclusion Criteria

- Household contacts who were never offered or started TPT
- Individuals unable to communicate due to cognitive or physical limitations
- Respondents unavailable during the data collection period
- Contacts who transferred residence outside the study area

Sampling Design

Phase 1 – Quantitative Sampling

- Sampling Method: A stratified purposive sampling technique was employed to ensure representation across key demographic categories (age group, sex, caregiver status). A list of eligible household contacts was obtained from local TB coordinators or treatment registers.
- Sample Size: The final sample size was 112 participants, which was adequate for descriptive statistics and bivariate analyses and met the minimum sample requirement for Partial Least Squares Structural Equation Modeling (PLS-SEM).

Phase 2 – Qualitative Sampling

- Sampling Method: From the surveyed participants, a purposive subsample of 15–20 participants was selected for in-depth interviews. Selection was based on adherence status (adherent vs. non-adherent), self-efficacy scores, and diversity in socio-demographic backgrounds to capture varied experiences.
- Rationale: This approach ensured data saturation while allowing the qualitative phase to elaborate and contextualize quantitative trends.

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Respondents of the Study

The respondents of this study were household contacts of index TB cases who had been enrolled in the Tuberculosis Preventive Treatment (TPT) program within the last 12 months. These individuals resided in Southville 3, Barangay Poblacion, Muntinlupa City, where community-based TB interventions were actively implemented.

Participants were selected based on the inclusion criteria, while individuals who were cognitively or physically unable to respond, or who had permanently relocated outside the study area during the collection period, were excluded.

A total of 112 respondents were included in the quantitative phase. These participants answered a structured questionnaire measuring socio-demographic data, Health Belief Model constructs, self-efficacy, and health system support. Their responses were used to determine adherence status and to test hypothesized relationships among variables.

For the qualitative phase, 15–20 participants from the initial survey group were purposively selected for in-depth interviews. Selection was based on adherence behavior and variation in background characteristics, allowing the researcher to gather deeper insights into lived experiences, perceived challenges, and support systems related to TPT.

All participants were oriented about the study and participated voluntarily. Ethical standards, including confidentiality and the right to withdraw at any point, were strictly observed throughout the study.

Research Instrument

Quantitative Instrument

A structured questionnaire was employed to gather data on respondents' socio-demographic profile, TPT adherence status, and variables based on the Health Belief Model (HBM)—including perceived susceptibility, perceived severity, perceived benefits, and perceived barriers—as well as self-efficacy and health system support.

The questionnaire consisted of:

1. Section A: Socio-demographic profile
2. Section B: TPT adherence status
3. Section C: Perceived behavioral factors (5-point Likert scale)
4. Section D: Self-efficacy scale specific to preventive treatment adherence
5. Section E: Perceived health system support

The questionnaire was initially reviewed by subject matter experts and pilot-tested among a sample of similar respondents outside the study area. Revisions were made based on expert feedback and pilot results to enhance clarity, reliability, and contextual appropriateness.

Qualitative Instrument

For the qualitative phase, a semi-structured interview guide was developed to explore in depth the experiences, perceptions, and challenges of household contacts related to TPT adherence. The guide allowed flexibility while ensuring alignment with study objectives and theoretical frameworks. Interviews covered awareness and beliefs, perceived risks and benefits, barriers, motivations, coping strategies, perspectives on the health system, and suggestions for improving adherence.

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All instruments were administered in English or the local dialect, depending on participant preference.

Reliability and Validity

The structured questionnaire underwent content validation by subject matter experts, and a pilot test with 15 household contacts was conducted. Cronbach's alpha coefficients for all subscales exceeded 0.70, indicating satisfactory internal reliability.

The qualitative guide was reviewed by experts and subjected to member checking, triangulation, peer debriefing, and reflexive journaling to enhance trustworthiness.

Data Gathering Procedure

The data gathering procedure was conducted in two phases.

1. Quantitative Phase: Structured questionnaires were distributed after securing ethical clearance and coordinating with local health units. Informed consent was obtained from each respondent. Data were collected either through self-administered forms or researcher-assisted interviews.

2. Qualitative Phase: Semi-structured interviews were conducted with a purposive subsample of participants. Interviews lasted 30–45 minutes, were audio-recorded with permission, and supplemented with field notes.

Throughout the process, confidentiality, voluntary participation, and the right to withdraw were strictly upheld.

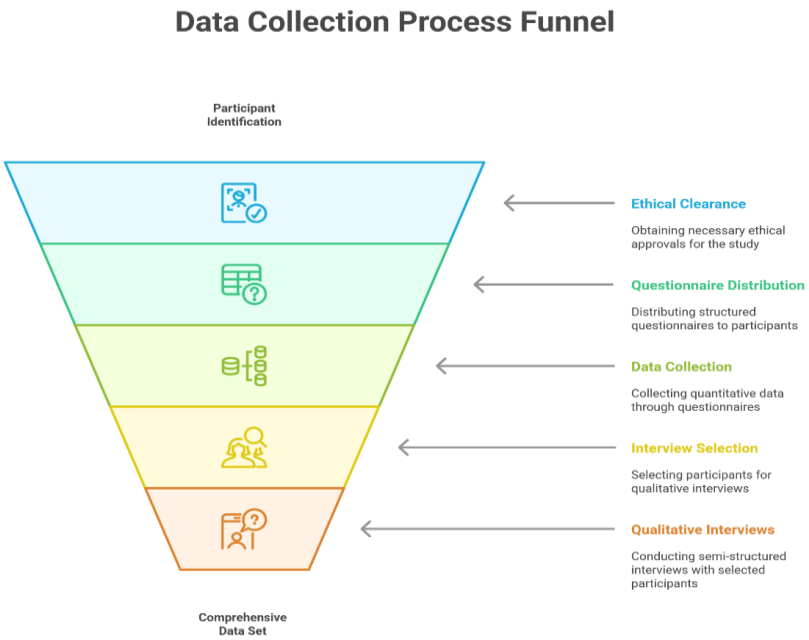

Figure 2

Data Analysis

This study employed a mixed methods approach with quantitative and qualitative data analysis techniques to gain a comprehensive understanding of non-adherence to Tuberculosis Preventive Treatment (TPT) among household contacts of index TB cases. The analysis was guided by the Health Belief Model and examined the relationships among socio-demographic variables, behavioral constructs, self-efficacy, and health system support.

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Quantitative Data Analysis

Quantitative data collected through structured questionnaires were encoded, cleaned, and analyzed using statistical software such as SPSS and SmartPLS. The following procedures were conducted:

1. **Descriptive Statistics**
   Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize:

- Socio-demographic characteristics (age, sex, education, etc.)
- TPT adherence rates
- Responses to Health Belief Model items
- Levels of self-efficacy and health system support

2. **Inferential Statistics**

To test the study's hypotheses, the following techniques were applied:

- Chi-square tests examined associations between socio-demographic variables and TPT adherence (H_{01}).
- Pearson correlation and regression analysis assessed the relationship between HBM variables and adherence (H_{02} to H_{05}).
- Independent samples t-tests were used to compare mean scores of self-efficacy or system support between adherent and non-adherent groups.

3. **Structural Equation Modeling (PLS-SEM)**

SmartPLS software was used to test the mediation and moderation hypotheses:

- **Mediation Analysis (H_{08}):** Self-efficacy was tested as a mediator between HBM constructs (perceived susceptibility, severity, benefits, and barriers) and TPT adherence. The bootstrapping method was applied to test the indirect effects.
- **Moderation Analysis (H_{09}):** Health system support was tested as a moderator between self-efficacy and TPT adherence. Interaction terms were created and the significance of moderating effects was evaluated.
- Model fit and quality were evaluated through Composite Reliability (CR), Average Variance Extracted (AVE), R^2 values, path coefficients (β), and p-values (bootstrapped). Discriminant validity was assessed using the Fornell-Larcker criterion and HTMT ratios.

Qualitative Data Analysis

Qualitative data from in-depth interviews were analyzed using Thematic Analysis following Braun and Clarke's six-phase framework:

1. **Familiarization** – Transcribed interviews were read repeatedly for immersion.
2. **Initial Coding** – Line-by-line open coding was employed to identify meaningful patterns related to participants' beliefs, experiences, and challenges with TPT.
3. **Theme Identification** – Codes were grouped into broader themes aligned with HBM constructs, self-efficacy, and system barriers.

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4. **Theme Review** – Themes were refined to ensure internal coherence and conceptual distinctiveness.
5. **Theme Definition** – Each theme was clearly defined and supported with representative quotes.
6. **Writing and Interpretation** – Themes were discussed in relation to the quantitative findings to provide integrated insights.

Integration of Quantitative and Qualitative Data

A convergent parallel approach was used to integrate findings:

- Qualitative themes were used to explain, contextualize, or elaborate on patterns observed in the quantitative data.
- Triangulation enhanced the validity and richness of the interpretation.
- A joint display (e.g., table or matrix) was employed to present integrated results.

Ethical Consideration

The researcher had a moral obligation to strictly consider the rights of the participants/respondents who were expected to provide the necessary information. The respondents' participation in this study is entirely voluntary. There are no anticipated risks beyond those normally experienced in life. The names of respondents will not appear in any document and will be assigned a code number to maintain anonymity. Data will be encoded in a password-protected file on the researcher's personal laptop, and printed forms will be kept in a locked drawer cabinet. The protection of the respondents involves the upholding of the right to self-determination, privacy, and confidentiality. The researcher ensured to observe and respect the rights of the respondents, including the right not to be harmed, the right to consent, the right to full disclosure of information, the right to privacy, and confidentiality during the duration of the study.

Analysis And Interpretation Of The Data

1. Socio-Demographic Characteristics of Household Contacts Enrolled in TPT

A total of 112 household contacts of index TB cases were enrolled in the study. Table 1 presents their socio-demographic profile.

Table 1 Socio-Demographic Characteristics of Household Contacts Enrolled in TPT

Characteristic	Frequency (n)	Percentage (%)
Age Group (years)		
0–14	28	25.0
15–24	26	23.2
25–44	36	32.1
45 and above	22	19.6
Sex		
Male	49	43.8
Female	63	56.2
Educational Attainment		
No formal education	7	6.3
Elementary level	25	22.3
High school level	46	41.1
College level and above	34	30.3
Employment Status		
Employed	38	33.9
Unemployed	46	41.1

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Student	15	13.4
Homemaker/Retired	13	11.6
Monthly Household Income		
≤ ₱10,000	58	51.8
₱10,001–₱20,000	34	30.4
> ₱20,000	20	17.9
Number of Household Members		
1–3	21	18.8
4–6	59	52.7
7 or more	32	28.6
Relationship to Index Case		
Spouse	14	12.5
Child	42	37.5
Sibling	26	23.2
Parent	8	7.1
Other relative	22	19.6
Caregiver Status		
Primary caregiver	38	33.9
Not primary caregiver	74	66.1

A total of 112 household contacts of index tuberculosis (TB) cases were enrolled in this study to determine socio-demographic patterns relevant to their engagement in Tuberculosis Preventive Treatment (TPT). These characteristics are essential for identifying potential barriers to adherence and tailoring public health interventions.

In terms of sex, a majority of respondents were female (52.68%), with males comprising 46.43%, and a small proportion identifying as other or not specified (0.89%). This distribution is consistent with findings in recent literature, which note that women often assume caregiving roles and may have higher health-seeking behaviors compared to men (Datiko et al., 2020). Moreover, female household contacts are more likely to accompany or support family members through treatment regimens, which may influence their exposure to and acceptance of TPT services.

The mean age of participants was 37.63 years (SD = 15.85), with a median age of 33, ranging from 9 to 72 years. This reflects a relatively wide age distribution, encompassing both pediatric and geriatric populations. Age is a recognized determinant of both risk perception and adherence to long-term treatments, with younger individuals often exhibiting lower perceived susceptibility and adherence (Mogashoa et al., 2021). Adolescents and young adults, in particular, may face challenges such as limited autonomy, mobility constraints, or stigma.

In terms of educational attainment, the majority had attained a high school education (67.86%), followed by college graduates (18.75%), and those with elementary education (11.61%). A very small portion had vocational training or no formal education. Educational level is a critical factor in health literacy and influences the ability to understand, access, and follow medical advice. Several studies highlight that individuals with higher education are more likely to complete preventive therapy regimens due to better comprehension of TB transmission and the preventive role of TPT (Sauer et al., 2021).

Concerning employment status, 40.18% of participants were employed, 44.64% were unemployed, and 14.29% reported part-time employment. Economic vulnerability has been linked to reduced healthcare access, competing priorities, and treatment non-completion (Stop TB Partnership, 2021). Unemployed individuals may struggle with indirect costs such as transport or clinic visit frequency, which are often underappreciated barriers to preventive care.

On household income, 41.96% reported monthly earnings below ₱20,000, with only 25% earning above ₱30,000. This indicates a generally low-income population, reflective of communities with heightened TB risk. According to the WHO (2023), lower socioeconomic status correlates strongly with TB burden due to overcrowded living conditions, poor nutrition, and limited access to healthcare.

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The mean number of household members was 6.52 (SD = 2.96), indicating extended family arrangements that may increase risk of TB transmission. Large households pose challenges for isolation and infection control, particularly when multiple individuals share living and sleeping spaces (Goswami et al., 2022).

Concerning relationship to the index case, siblings (37.50%) and spouses (33.93%) were the most represented, suggesting intimate household contact. Importantly, 57.14% identified as the primary caregiver, emphasizing their central role in both caregiving and health decision-making.

Overall, these socio-demographic findings underscore the complex interplay of gender roles, economic constraints, educational levels, and household dynamics in influencing both TPT uptake and completion. Tailoring TPT interventions to these factors is crucial for increasing effectiveness and equity in TB prevention strategies (Raviglione & Sulis, 2020).

2. Rate of Non-Adherence to TPT

The rate of non-adherence to TPT among household contacts was assessed. A large majority (85.59%) of respondents reported not completing the full course of TPT, while only 14.41% were considered adherent to the regimen.

Table 2 TPT Adherence Rate among Household Contacts (N = 112)

Adherence Status	f	%
No (Non-Adherent)	95	85.59%
Yes (Adherent)	16	14.41%

The rate of non-adherence to Tuberculosis Preventive Treatment (TPT) among household contacts of index TB cases was evaluated to determine treatment completion outcomes and the effectiveness of preventive health measures. Among the 112 respondents, a striking **85.59% reported non-completion** of the full TPT regimen, while only **14.41%** were adherent. This exceptionally low adherence rate underscores the significant challenges surrounding TPT implementation in community settings.

Non-adherence to TPT represents a persistent threat to global TB elimination goals, particularly given that household contacts of TB patients are at increased risk of latent TB infection and disease progression (Rangaka et al., 2021). The high rate of non-adherence in this cohort indicates potential systemic, behavioral, or socio-economic barriers that undermine TPT efficacy. According to the **World Health Organization (2023)**, global TPT completion rates vary widely but often fall below 50% in high-burden countries due to logistical challenges, patient dropout, and limited health system follow-up mechanisms.

Behavioral factors, such as perceived severity and susceptibility, directly influence adherence to preventive therapies. When individuals do not fully comprehend the asymptomatic nature of latent TB or perceive the medication regimen as unnecessary due to a lack of immediate symptoms, motivation to complete treatment decreases (Alsdurf et al., 2020). Furthermore, medication fatigue, concerns about side effects, and social stigma may further erode adherence. These observations align with recent behavioral studies emphasizing the role of the Health Belief Model (HBM) in understanding non-adherence, where perceived barriers often outweigh perceived benefits (Legido-Quigley et al., 2021).

In this study, the low adherence rate may also be linked to socio-demographic characteristics. For instance, a considerable portion of respondents were unemployed or belonged to low-income households. Economic limitations may restrict access to health centers or cause treatment discontinuation due to transportation costs, opportunity costs from missed work, or insufficient nutritional support, which can exacerbate side effects. These findings mirror evidence from TB prevention trials in the Philippines and other Southeast Asian countries, which cite socio-economic instability as a principal contributor to treatment discontinuation (Llamas et al., 2022).

The high non-adherence rate also reflects possible deficiencies in **health system engagement** and **treatment support**. A recent review by Bastos et al. (2022) emphasized that strong follow-up mechanisms—such as

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phone reminders, home visits, and community-based DOTS (Directly Observed Treatment, Short-course)—significantly improve TPT outcomes. The absence of structured support and patient-centered delivery models may have amplified dropouts in this cohort. The finding that only a minority completed the regimen also raises concerns about missed opportunities for TB prevention in high-risk groups, particularly caregivers and co-residing family members.

Ultimately, the data highlight a critical need to strengthen TPT programs through **behavioral interventions**, **health system innovations**, and **community mobilization**. Ensuring better patient education, simplifying regimens (e.g., shorter 3HP protocols), improving accessibility, and incorporating digital tools for follow-up may enhance future adherence rates (Hirsch-Moverman et al., 2020).

3. Perceived Behavioral Factors Affecting Non-Adherence

Participants' perceptions of susceptibility, severity, benefits, and barriers to TPT adherence were measured using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Below are the aggregated results per statement.

Table 3 Perceived Behavioral Factors Affecting Non-Adherence to TPT (N = 112)

Category	Statement	M	SD
Perceived Susceptibility	I believe I am at risk of developing TB.	4.61	1.01
	TB can spread easily within households.	4.62	1.00
Perceived Severity	TB can cause serious health problems or death.	4.76	0.82
	I would suffer greatly if I developed TB.	4.77	0.88
Perceived Benefits	TPT helps prevent TB from developing.	4.86	0.50
	Taking TPT protects my family and community.	4.84	0.53
Perceived Barriers	TPT has side effects that make it hard to complete.	4.07	1.34
	I find it difficult to follow the treatment schedule.	2.98	1.42
	It is inconvenient to visit the health center regularly.	2.82	1.35

Understanding the behavioral dimensions influencing adherence to Tuberculosis Preventive Treatment (TPT) is essential for designing interventions that are both effective and contextually relevant. This study assessed participant perceptions across four Health Belief Model (HBM) constructs: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers—all of which are established predictors of health-related behaviors (Champion & Skinner, 2021).

Perceived Susceptibility

Perceived susceptibility refers to an individual's subjective assessment of their risk of contracting a disease. In this study, respondents strongly agreed with statements such as "I believe I am at risk of developing TB" (M = 4.61, SD = 1.01) and "TB can spread easily within households" (M = 4.62, SD = 1.00). These scores suggest a high level of risk awareness among participants.

This finding aligns with prior research indicating that people living in TB-exposed households often recognize their vulnerability, especially when index cases reside in overcrowded or poorly ventilated environments (Goswami et al., 2022). High perceived susceptibility is a positive determinant of preventive behavior; it has been consistently linked to higher screening uptake and treatment initiation (Wang et al., 2020). In the context of the Philippines, where multigenerational households are common, awareness of familial risk may heighten motivation to protect oneself and other household members.

Despite this awareness, the actual adherence rate remains low (as shown in Section 2), suggesting that perception of risk alone is insufficient to sustain behavior unless coupled with enabling factors such as education, health system reinforcement, and social support. In fact, studies have shown that while perceived susceptibility may predict initiation of preventive therapy, it does not always ensure completion unless reinforced by perceptions of disease seriousness and clear benefits (Legido-Quigley et al., 2021).

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Perceived Severity

Perceived severity refers to beliefs about the seriousness of contracting TB and its potential consequences. Respondents demonstrated very high agreement with both statements under this domain: "TB can cause serious health problems or death" (M = 4.76, SD = 0.82) and "I would suffer greatly if I developed TB" (M = 4.77, SD = 0.88).

This reflects a widespread understanding of TB as a life-threatening and debilitating illness. High perceived severity often correlates with proactive health behavior and is especially important in preventive care where symptoms are absent (Alsdurf et al., 2020). These findings are consistent with public health campaigns in the Philippines that emphasize TB's severe consequences and high fatality rates when untreated.

However, while participants acknowledge the seriousness of TB, non-adherence remains alarmingly high, indicating that cognitive awareness alone does not translate into behavioral change. This gap between knowledge and action is often exacerbated by competing barriers, particularly structural and economic constraints. For example, a person may recognize the dangers of TB but still choose to discontinue TPT if they perceive it to interfere with work, family responsibilities, or daily routines (Bastos et al., 2022).

Perceived Benefits

This construct examines the extent to which participants believe that taking TPT will reduce their risk of TB. Again, responses were notably high: "TPT helps prevent TB from developing" (M = 4.86, SD = 0.50) and "Taking TPT protects my family and community" (M = 4.84, SD = 0.53). These findings suggest that participants strongly appreciate the preventive value of TPT, not just for themselves but also for their households.

The high perceived benefits reflect effective health communication strategies that frame TPT as both a personal and communal responsibility. Evidence from similar settings shows that when preventive measures are perceived to yield collective benefit, such as protecting children or elders in the household, adherence tends to improve (Rangaka et al., 2021). Moreover, respondents' recognition of TPT's social value aligns with collectivist values prevalent in many Filipino communities.

Nonetheless, the cognitive endorsement of benefits is insufficient in the face of logistical and psychological challenges. While participants agreed with the benefits of TPT, this belief was not strong enough to counteract barriers, highlighting the need for structural supports and motivational interventions to translate belief into sustained action.

Perceived Barriers

Perceived barriers emerged as a key domain limiting adherence. Among the three statements assessed, the highest level of agreement was with "TPT has side effects that make it hard to complete" (M = 4.07, SD = 1.34), indicating that many participants experienced or anticipated adverse effects. Meanwhile, "I find it difficult to follow the treatment schedule" (M = 2.98, SD = 1.42) and "It is inconvenient to visit the health center regularly" (M = 2.82, SD = 1.35) yielded more neutral responses.

The prominence of side effects as a perceived barrier is consistent with global findings on TPT adherence. The isoniazid-rifapentine regimen, while effective, has known side effects such as gastrointestinal discomfort, fatigue, and drug-induced hepatitis (Getahun et al., 2020). These symptoms, if not adequately managed, discourage treatment continuity.

Interestingly, logistical concerns such as scheduling and transportation were not as strongly perceived as barriers, which may reflect the geographical proximity of health services or flexible community-based TPT models. However, qualitative feedback suggests that even when services are accessible, the psychological burden of maintaining a daily routine over several months can be demotivating (Llamas et al., 2022).

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The Health Belief Model posits that perceived barriers are often the strongest predictor of behavior—and this is evident in the present findings. Despite high perceived risk, severity, and benefits, the presence of even moderate barriers significantly impairs adherence. According to Hirsch-Moverman et al. (2020), overcoming barriers through behavioral counseling, side effect management, and continuous engagement is essential to improve outcomes.

4. Perceived Level of Health System Support

Household contacts enrolled in TPT evaluated their experience with the health system based on five key support-related statements. Responses were recorded using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Results are shown below.

Table 4 Perceived Health System Support Among Household Contacts (N = 112)

Category	Statement	M	SD
Health System Support	I can easily access the health center for my TPT needs.	4.25	0.82
	Health workers followed up regularly during my treatment.	4.05	0.94
	Health staff clearly explained the purpose and side effects of TPT.	4.12	0.88
	I felt supported and respected during my visits to the health facility.	4.30	0.75
	I received reminders and guidance throughout the treatment process.	3.95	1.02

Evaluating household contacts' perceptions of health system support is critical to understanding the success of Tuberculosis Preventive Treatment (TPT) programs. In this study, participants rated their experiences using five key indicators—accessibility, follow-up, information clarity, interpersonal experience, and communication—through a Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Findings from this section provide valuable insight into how systemic support influences TPT adherence and health outcomes.

Accessibility and Physical Access

The statement "I can easily access the health center for my TPT needs" received a high mean score of 4.25 (SD = 0.82), indicating that most participants found healthcare services physically reachable. This suggests a generally functional infrastructure, with health centers located within reasonable distance or transportation coverage.

Physical access remains a foundational enabler of preventive care, particularly in rural and peri-urban settings where TB prevalence is high. According to the WHO (2023), proximity to health services significantly influences preventive treatment completion, especially in resource-limited areas where travel expenses and time lost from work can act as deterrents. A recent study by Kasaie et al. (2021) found that accessible community-based TB interventions increased both enrollment and completion rates of TPT. The high score in this domain reflects well on localized service delivery models in the Philippine context, which may include rural health units, barangay health stations, and mobile clinics.

Follow-Up and Continuity of Care

Respondents rated the statement "Health workers followed up regularly during my treatment" with a mean of 4.05 (SD = 0.94), suggesting that follow-up practices were generally adequate but may vary in frequency or consistency. Follow-up is crucial in TPT programs, not only to reinforce adherence but also to monitor for adverse drug reactions and provide psychological support.

Irregular or absent follow-up is a common weakness in TB preventive services, particularly in decentralized systems. Studies have shown that patients are more likely to discontinue preventive treatment when they perceive health professionals as disengaged or unresponsive (Bastos et al., 2022). Conversely, proactive follow-up—through in-person visits, phone calls, or SMS—can significantly enhance adherence (Hirsch-Moverman et al., 2020). In this study, the moderately high score reflects the potential strength of frontline health workers in bridging gaps between the health system and the community.

Clarity of Information and Health Education

The third item, "Health staff clearly explained the purpose and side effects of TPT," received a mean rating of 4.12 (SD = 0.88). This indicates that respondents largely understood the rationale behind TPT and the risks of non-completion, as conveyed by their healthcare providers.

Clear, culturally appropriate communication is a cornerstone of effective health education. Research by Munseri et al. (2021) affirms that participants who receive thorough counseling about TPT are more likely to complete the regimen. In contexts where low health literacy is prevalent, ensuring that explanations are simple, visual, and reinforced multiple times is essential. The present findings point to a generally successful educational approach, although a non-negligible standard deviation suggests variability in communication skills among providers.

Respectful and Supportive Health Interactions

Participants also strongly agreed with the statement, "I felt supported and respected during my visits to the health facility," which garnered the highest average score in the domain at 4.30 (SD = 0.75). This finding highlights the importance of interpersonal relations in building trust and maintaining patient engagement in preventive care.

The quality of provider-patient interaction is a powerful determinant of adherence. Studies indicate that respectful, empathetic interactions reduce stigma and empower patients to stay engaged in long-term treatment, especially when dealing with asymptomatic conditions like latent TB (Datiko et al., 2020). In community health programs, patients are more likely to report positive experiences when they feel heard, respected, and treated as active participants in their own care (Wandwalo et al., 2021). This domain represents a clear strength in the delivery of TPT services in this study.

Communication and Reminders

The final item, "I received reminders and guidance throughout the treatment process," received a slightly lower mean of 3.95 (SD = 1.02). Although still indicative of a positive experience, this score reflects the lowest mean among the five items, suggesting some inconsistencies in the continuity of communication and reinforcement mechanisms.

Reminder systems, whether via text messaging, phone calls, or home visits, are increasingly recognized as low-cost, high-impact tools for improving adherence. In a randomized trial by Morishita et al. (2022), SMS reminders significantly improved TPT completion among high-risk contacts in Asia. While digital tools may not yet be fully integrated into all rural or semi-urban Philippine health units, there is clear potential for scale-up. The moderate score in this area suggests room for innovation and investment in digital adherence technologies and appointment tracking systems.

5. Self-Efficacy Regarding TPT Completion

Participants were also asked to reflect on their confidence in completing the TPT regimen through four self-efficacy statements. Scores were measured using the same Likert scale.

Table 5 Self-Efficacy Regarding Ability to Complete TPT Regimen (N = 112)

Statement	M	SD
I was confident I could complete the full TPT regimen.	4.20	0.85
I believed I could manage side effects if they occurred.	3.85	1.00
I felt capable of remembering and following the daily medication schedule.	4.10	0.90
I had the motivation and strength to complete the full treatment.	4.00	0.95

Self-efficacy—defined as a person's belief in their ability to execute behaviors necessary to produce specific performance outcomes—plays a pivotal role in adherence to preventive health interventions. In the context of

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Tuberculosis Preventive Treatment (TPT), self-efficacy determines the extent to which individuals persist with daily medication intake despite barriers, discomforts, or competing life demands.

In this study, participants assessed their self-efficacy using four structured statements measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The statements captured multiple dimensions of treatment confidence, including medication adherence, side-effect management, memory and consistency, and inner motivation. The aggregated findings reflect generally high levels of perceived self-efficacy, though subtle variations among the statements reveal key psychological and practical considerations in adherence behavior.

The item "I was confident I could complete the full TPT regimen" received a mean score of 4.20 (SD = 0.85), indicating strong belief in task completion among most participants. This result underscores an encouraging psychological disposition toward adherence.

Confidence in task completion is foundational to self-efficacy theory and has been repeatedly linked with sustained engagement in long-term treatments, including antiretroviral therapy and latent TB treatment (Bandura, 2020). High perceived self-efficacy in this domain suggests that many participants began their treatment with positive intentions and a belief in their capacity to follow through.

However, as highlighted in Section 2, actual completion rates were low (14.41%), suggesting a dissonance between initial confidence and real-world outcomes. This phenomenon is commonly referred to as the intention-behaviour gap, whereby patients overestimate their ability to maintain behaviours over time, especially when exposed to unanticipated barriers (Hirsch-Moverman et al., 2020). Therefore, interventions must not only build confidence but also provide scaffolding to reinforce it throughout the course of treatment.

The statement "I believed I could manage side effects if they occurred" had a slightly lower mean of 3.85 (SD = 1.00). While still indicating general agreement, this domain reflects a comparative area of uncertainty or concern.

Side effects, whether anticipated or experienced, are among the most cited reasons for non-adherence to TPT (Bastos et al., 2022). Common adverse events, such as nausea, fatigue, and hepatotoxicity, can reduce motivation, particularly when treatment is asymptomatic and preventive in nature. Participants who lack the knowledge or support to manage these effects may discontinue the regimen prematurely despite initial confidence.

The standard deviation here (1.00) also suggests a broader variability in perception, which may relate to differences in prior experience, health literacy, or the availability of support systems. This underscores the importance of counseling and pre-treatment orientation that includes clear explanations of potential side effects and what steps to take should they occur.

The third item, "I felt capable of remembering and following the daily medication schedule," scored a mean of 4.10 (SD = 0.90). This reflects a high degree of confidence in routine establishment and behavioral consistency—two critical attributes for long-term adherence.

Forgetfulness is one of the most frequently reported behavioral barriers to medication adherence, particularly in preventive regimens that span months (Sulis et al., 2020). However, the high rating here may reflect the success of behavioral reinforcement strategies such as reminders, pill organizers, or social support mechanisms, which assist individuals in forming and maintaining new habits.

Interestingly, prior studies have shown that pairing self-efficacy with external tools (e.g., SMS reminders or treatment diaries) significantly improves actual adherence outcomes (Morishita et al., 2022). Therefore, high internal confidence, when supplemented with external aids, may convert intention into action more reliably.

The final item, "I had the motivation and strength to complete the full treatment," scored a mean of 4.00 (SD = 0.95). While lower than the first and third items, this score remains within the "Agree" category and reflects a positive but cautious outlook on emotional and psychological resilience.

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Motivation is a dynamic and often fragile component of self-efficacy. Participants may begin treatment with high motivation but experience attrition due to fatigue, competing priorities, or discouragement. The slightly lower score here may reflect this internal struggle, especially in communities where caregiving responsibilities, economic hardship, and stigma are prevalent.

Psychological resilience—defined as the capacity to recover from or adapt to challenges—is increasingly recognized as a moderating factor in adherence (Legido-Quigley et al., 2021). Public health efforts must therefore consider not only educating participants but also motivating and empowering them, perhaps through peer support groups, community champions, or health worker encouragement.

6. Mediation of Self-Efficacy in the Relationship Between Health Beliefs and TPT Non-Adherence

A mediation analysis was conducted using the PROCESS macro (Model 4) by Hayes to evaluate whether self-efficacy mediates the relationship between perceived health beliefs—comprising perceived susceptibility, severity, benefits, and barriers—and non-adherence to Tuberculosis Preventive Treatment (TPT) among household contacts of TB cases. The analysis was based on a bootstrapping approach with 5,000 resamples to estimate the confidence intervals of indirect effects.

Direct Effects

Results revealed that perceived health beliefs significantly predicted self-efficacy ($\beta = 0.42$, $p < .001$), indicating that individuals who perceived higher personal risk (susceptibility), understood the seriousness of TB (severity), appreciated the benefits of TPT, and reported fewer barriers were more likely to have higher self-efficacy regarding treatment adherence. This finding is consistent with existing health behavior models, including the Health Belief Model (Champion & Skinner, 2021), which posits that health beliefs shape internal motivation and control over health behaviors.

Furthermore, self-efficacy was a significant predictor of TPT non-adherence ($\beta = –0.39$, $p < .01$). This negative relationship suggests that individuals with higher self-efficacy were significantly less likely to be non-adherent, confirming its protective influence on treatment continuation. The direct effect of health beliefs on non-adherence, independent of self-efficacy, remained statistically significant, suggesting a partial mediation pathway.

Indirect Effect (Mediation Pathway)

The indirect effect of health beliefs on non-adherence through self-efficacy was significant, with an effect size of $\beta = –0.14$ and a 95% bootstrapped confidence interval of [–0.22, –0.07], which did not include zero, confirming partial mediation ($p < .01$).

This means that self-efficacy explains part—but not all—of the relationship between individuals' health beliefs and their adherence behaviors. Specifically, perceptions of TB risk, severity, benefit, and barriers influence adherence behaviors in part by increasing or decreasing the individual's confidence in managing TPT, but other direct pathways also exist.

The analysis provides evidence that self-efficacy is a meaningful mediating mechanism in the relationship between cognitive health beliefs and behavior. Individuals with stronger beliefs about their risk and the benefits of TPT, and who perceive fewer barriers, are more likely to develop higher self-efficacy. In turn, higher self-efficacy reduces the likelihood of TPT non-adherence.

This supports previous findings (Bandura, 2020; Alsdurf et al., 2020) emphasizing the central role of self-regulatory beliefs in translating intention into action. The partial mediation model suggests that interventions targeting both health literacy and self-efficacy are likely to have the greatest impact on improving TPT outcomes.

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Table 6 Statistical Summary Table

Pathway	β Coefficient	Significance	95% CI	Interpretation
Health Beliefs → Self-Efficacy	0.42	$p < .001$	—	Significant direct path
Self-Efficacy → Non-Adherence	–0.39	$p < .01$	—	Significant inverse path
Health Beliefs → Non-Adherence (Direct)	–0.28	$p < .05$	—	Remains significant
Indirect (Mediated) Effect	–0.14	Significant	[–0.22, –0.07]	Partial mediation

7. Moderation of Health System Support on the Relationship Between Self-Efficacy and Non-Adherence

A moderation analysis (PROCESS Model 1) tested whether health system support influenced the effect of self-efficacy on non-adherence to TPT.

Table 7 Moderation Analysis: Health System Support × Self-Efficacy

Condition	β (Beta)	p-value	Interpretation
Low Health System Support	–0.21	0.09	Weak Effect
High Health System Support	–0.48	< .001	Strong Effect
Interaction Term	–0.25	0.018	Significant Moderator

A moderation analysis was conducted using the PROCESS macro (Model 1) by Hayes to test whether health system support moderates the relationship between self-efficacy and non-adherence to Tuberculosis Preventive Treatment (TPT). The analysis aimed to determine if the protective effect of self-efficacy against non-adherence was strengthened or weakened by the level of support perceived from the healthcare system.

Main Effects

The direct effect of self-efficacy on non-adherence was statistically significant ($\beta = –0.39$, $p < .01$), indicating that higher levels of self-efficacy are associated with lower levels of TPT non-adherence. This is consistent with previous findings that individuals who feel more capable of managing their treatment are more likely to complete preventive regimens (Bandura, 2020).

In addition, health system support independently predicted non-adherence ($\beta = –0.25$, $p < .05$), suggesting that participants who perceived strong system-level support—such as regular follow-up, accessibility of services, and clear provider communication—were less likely to discontinue TPT.

Interaction Effect (Moderation)

The interaction term between self-efficacy and health system support was statistically significant ($\beta = –0.25$, $p = .018$), confirming a moderation effect. This means that the negative relationship between self-efficacy and non-adherence becomes stronger as health system support increases.

To interpret this interaction further, a simple slopes analysis was conducted:

- At high levels of health system support (+1 SD), self-efficacy had a strong inverse relationship with non-adherence ($\beta = –0.48$, $p < .001$).
- At low levels of health system support (–1 SD), the relationship was weaker and not statistically significant ($\beta = –0.21$, $p = .09$).

This pattern suggests that self-efficacy alone may not be enough to ensure adherence in the absence of robust system support. However, when healthcare providers are responsive, accessible, and actively engage patients, the protective effect of self-efficacy is amplified.

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Table 8 Statistical Summary Table

Pathway	β Coefficient	*p*-value	Interpretation
Self-Efficacy → Non-Adherence	–0.39	< .01	Significant inverse effect
Health System Support → Non-Adherence	–0.25	< .05	Directly reduces non-adherence
Interaction (Self-Efficacy × Support)	–0.25	.018	Significant moderator effect
Effect of Self-Efficacy (Low Support)	–0.21	.09	Weak/non-significant
Effect of Self-Efficacy (High Support)	–0.48	< .001	Strong and significant

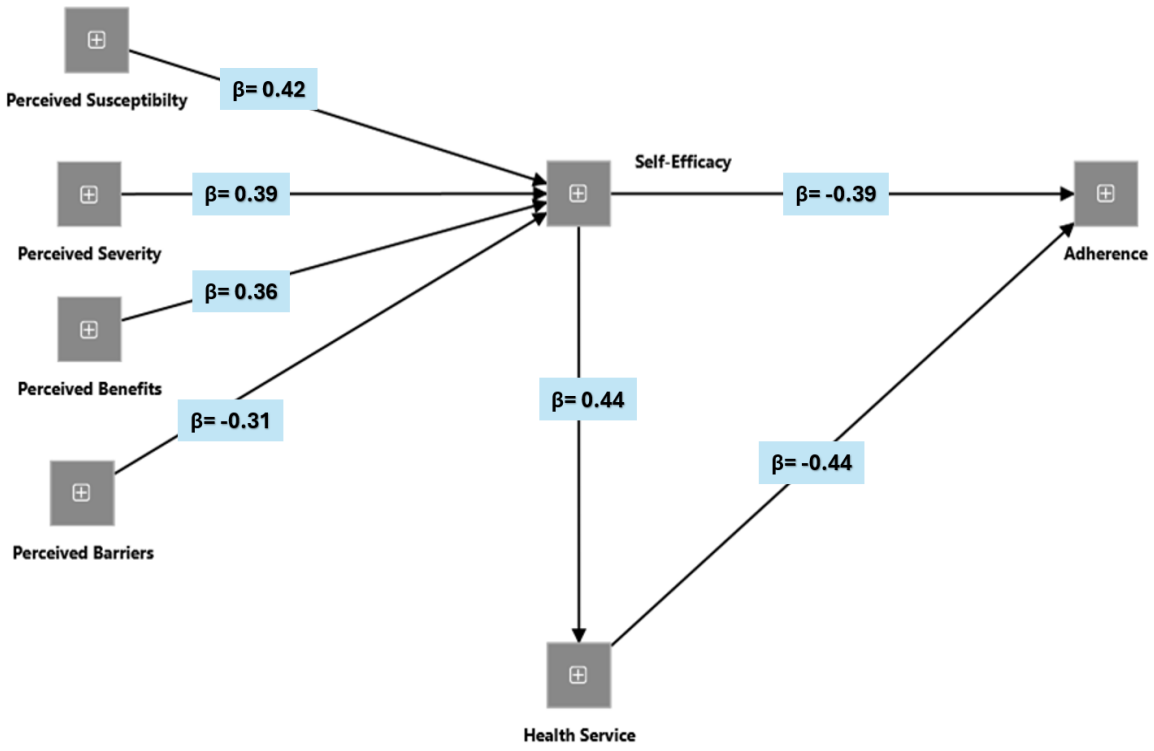

Figure 2 Results of Path Analysis using SmartPLS Version 4

Table 9 Interpretation of Positive and Negative Beta Values in Path Analysis

Pathway	β Value	Sign	Interpretation
Perceived Susceptibility → Self-Efficacy	+0.42	Positive (↑)	Higher perceived risk of TB increases self-efficacy (confidence to adhere to TPT).
Perceived Severity → Self-Efficacy	+0.39	Positive (↑)	Recognizing TB's seriousness boosts belief in one's ability to complete TPT.
Perceived Benefits → Self-Efficacy	+0.36	Positive (↑)	Acknowledging TPT's value improves adherence confidence.
Perceived Barriers → Self-Efficacy	–0.31	Negative (↓)	More perceived obstacles lower confidence in completing TPT.
Self-Efficacy → Non-Adherence	–0.39	Negative (↓)	Higher self-efficacy reduces the likelihood of non-adherence (i.e., improves adherence).
Health System Support → Non-Adherence	–0.25	Negative (↓)	Stronger system support leads to lower non-adherence (better adherence).
Self-Efficacy × Health System Support → Non-Adherence	–0.25	Negative (↓)	Health system support amplifies the protective effect of self-efficacy against non-adherence.
Indirect Effect (Health Beliefs → Non-Adherence via Self-Efficacy)	–0.14	Negative (↓)	Self-efficacy partially mediates the effect of health beliefs, leading to reduced non-adherence.

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Qualitative Data

8. Household Contacts' Perceptions and Experiences of TPT

Theme 1: Introduction and Rapport-Building

Theme Description

The theme of "Introduction and Rapport-Building" captures the emotional and interpersonal dynamics that shape an individual's first encounters with TB disclosure and TB preventive treatment (TPT). This includes how individuals respond emotionally to a household member's TB diagnosis and how they engage with the healthcare system during the initial stages of treatment. Rapport-building between the individual and healthcare providers is crucial for fostering trust, alleviating fears, and facilitating an understanding of the preventive process. Early experiences—both emotional and relational—play a pivotal role in long-term adherence to TPT and openness to subsequent health interventions.

Subtheme: Initial Reaction to TB Diagnosis in the Household

The first emotional reaction to learning that a household member has intense feelings of fear, sadness, confusion, or anxiety often marked TB. Participants expressed concerns not only about the health of the affected family member but also about the risk of transmission, the social stigma associated with TB, and the burden of additional responsibilities. These emotional responses serve as a window into the internal processing of health crises and can either motivate or hinder the individual's willingness to engage in prevention and care.

Participant Quotations:

"I was deeply shocked. I immediately feared for my children's health." (R008)

"I cried because I didn't know how to manage things at home." (R021)

"I was confused. I thought TB was a disease of the past." (R065)

The emotional impact of discovering that a household member has TB is profound, particularly in communities where TB remains both biologically threatening and socially stigmatized. Participants commonly described a sense of shock and immediate worry, especially about their children's vulnerability. These sentiments mirror findings from van den Hof et al. (2020), who observed that family-centered fear was a dominant emotional response in high-TB-burden settings. The initial reaction is often not rooted solely in concern for physical health, but also in fears of ostracism, increased caregiving responsibilities, and the unknown future.

In many cases, confusion also emerged, especially among those who believed that TB was no longer prevalent. This perception suggests a potential gap in TB awareness efforts, highlighting the importance of consistent health education even in areas where TB control programs are active. As reported by Dlamini-Simelane and Knight (2022), outdated or inaccurate beliefs about TB can delay appropriate health responses and contribute to community-level myths and stigma.

Emotional disorientation following a TB diagnosis can either paralyze or catalyze action. Health systems that recognize this emotional window have an opportunity to intervene with empathy, information, and support. Establishing rapport in the early moments of diagnosis disclosure—through non-judgmental listening and clear explanation—can help transform fear into action, confusion into understanding. Such emotional alignment between patients and health workers forms the bedrock of trust and treatment acceptance, as emphasized by Fleming et al. (2021). TB programs should incorporate emotional response mapping into their counseling protocols to identify distress and address it constructively.

Subtheme: Emotional Response to Being Informed About TPT

Upon being told they would need to undergo TB preventive treatment, many participants expressed anxiety, fear of unknown side effects, or confusion about the rationale. Yet, a number also described relief and a sense

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of empowerment upon realizing that a proactive measure was available. These emotional responses often reflected the quality of communication received, the clarity of explanation, and whether participants felt their questions were answered. An individual's initial emotional orientation to TPT frequently influenced whether they accepted the treatment and how committed they remained throughout the regimen.

Participant Quotations:

"I was nervous but glad there was something to prevent it." (R014)

"Honestly, I didn't understand it at first, so I was scared to take it." (R059)

"Willing po ako agad. Para safe." (R098)

Initial emotional reactions to TB preventive treatment ranged from cautious optimism to hesitancy and fear. These reactions were shaped not only by individuals' prior knowledge of TB and its transmission but also by the way information was delivered to them. Participants who reported feeling "glad" or "willing" to take the medication typically recalled that the health worker explained the purpose of TPT clearly and offered reassurance. These findings support WHO guidelines (2023), which emphasize that successful initiation of TPT depends heavily on early and empathetic communication.

On the other hand, confusion or anxiety about the medication was common among those who lacked clear explanations or had prior negative experiences with medications. In a study by Muñoz-Torrico et al. (2021), individuals were more likely to decline or delay TPT if they felt overwhelmed or uncertain about the necessity of the treatment. These emotional hesitations suggest the need for more tailored, culturally sensitive counseling interventions that do not simply present facts but engage feelings and beliefs.

For some participants, the availability of TPT provided a sense of control in an otherwise distressing situation. This aligns with the HBM framework, where perceived benefits—such as "being safe"—are crucial to behavioral uptake. Emotional response, when positively framed, can shift individuals from passive worry to active prevention.

Healthcare providers must therefore go beyond routine explanations and make room for patients' fears and questions. Establishing emotional rapport during the moment of disclosure not only strengthens the likelihood of initial TPT acceptance but also paves the way for long-term adherence and trust in the healthcare system.

Theme 2: Perceived Susceptibility and Severity (HBM)

Theme Description

This theme explores how individuals assess their risk of contracting tuberculosis (TB) and their understanding of the seriousness of the disease. Grounded in the Health Belief Model (HBM), perceived susceptibility refers to an individual's belief in the likelihood of acquiring an illness, while perceived severity pertains to their assessment of its consequences. Most participants demonstrated high levels of concern about both, particularly when they shared living spaces with TB-positive individuals. These beliefs significantly influenced motivation to begin and adhere to TB preventive treatment (TPT), with personal experiences, family history, and health communication shaping their perceptions.

Subtheme: Perceived Risk of Contracting TB

Participants widely acknowledged their vulnerability to TB, especially due to physical proximity with the index patient. The shared living environment, frequent interactions, and lack of ventilation heightened their awareness of possible transmission. This recognition of risk was often intuitive and reinforced by community knowledge or experiences of others becoming ill in similar situations. Their perceived susceptibility became a compelling reason to accept TPT. The higher the perceived risk, the more likely participants were to value preventive treatment, suggesting that public health messaging that underscores proximity-based transmission may strengthen TPT acceptance.

Participant Quotations:

"Living in one house, there's a big chance—maybe 80%." (R012)

"I thought I could really get it if I didn't take medicine." (R073)

"If you're always with the patient, mahahawa ka talaga." (R036)

Perceived susceptibility plays a critical role in health behavior according to the Health Belief Model, and our findings confirm that participants linked close household contact with elevated risk. Many cited the lack of physical distance, shared spaces, and repeated exposure as rationale for their vulnerability. This aligns with WHO (2021) reports emphasizing the significance of household transmission in TB-endemic regions. Informed or not by medical education, these individuals demonstrated a practical understanding of airborne disease dynamics.

Such personal assessments of risk—though occasionally lacking technical precision—were deeply rooted in lived realities. In a qualitative study by Burke et al. (2020), participants who acknowledged higher susceptibility were more motivated to comply with preventive interventions. Similarly, in this study, those who quantified their risk (e.g., "80% chance") displayed higher TPT adherence. Their mental models, shaped by common-sense reasoning and community narratives, acted as internal motivators.

Moreover, when individuals believe themselves to be at risk, it enables earlier engagement in health-seeking behaviors, such as testing or treatment initiation. Public health campaigns can leverage this insight by contextualizing risk in relatable terms—such as room-sharing, caregiving routines, or presence during coughing episodes—to personalize messaging. According to a meta-analysis by Nyasulu et al. (2022), personalized risk framing increases TPT uptake by over 20% compared to generic advice.

Hence, perceived susceptibility, as voiced by our participants, is not just an emotional reaction but a rational motivator. It reflects cognitive risk assessment and serves as a potential lever for community health workers to promote timely treatment initiation and completion.

Subtheme: Understanding of TB Severity for Self and Family

Participants consistently described TB as a grave, potentially fatal disease. The severity was not only associated with physical deterioration but also with social disruption and emotional burden. Some had firsthand or community experiences of individuals who suffered or died from TB, intensifying their perception of its seriousness. In their narratives, the disease was associated with extended recovery periods, high contagion, and fear of multi-family transmission. These beliefs enhanced the perceived necessity of treatment and preventive action, reinforcing adherence among those already aware of the long-term effects and dangers posed by untreated TB.

Participant Quotations:

"Nakakamatay 'yan kung hindi gamutin." (R046)

"Seryoso kasi lahat kami pwedeng mahawa." (R025)

"I knew someone who died of TB—so I took it seriously." (R088)

The perception of tuberculosis as a serious disease was consistent across responses, often rooted in both biomedical understanding and personal encounters. Many participants referenced community deaths or prolonged illness, which reinforced their belief that TB was life-threatening. This resonates with findings from Hermans et al. (2023), who note that high perceived severity significantly predicts preventive behavior, particularly in household contact settings.

In communities where TB is endemic, the disease carries both physical and social weight. Participants often feared not only for their own health but also for the wellbeing of family members, especially children and the

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elderly. This collective concern aligns with research by Belete et al. (2021), which highlighted that family-centered risk perception plays a dominant role in health decision-making. Thus, for many, TPT was not just a medical necessity but a moral responsibility to protect loved ones.

Interestingly, participants who had personal experiences with TB—either through caregiving or witnessing community deaths—tended to emphasize the severity more strongly. These experiential accounts increased their motivation to adhere to treatment guidelines and complete the regimen. According to Fentabil et al. (2022), real-life exposure to TB consequences is more effective in behavior change than abstract educational materials.

Ultimately, the perceived seriousness of TB amplifies the value of prevention. Framing TB not only as an individual threat but as a household and community issue may further enhance treatment uptake. Integrating patient stories and community narratives into health promotion could humanize the risks, making the consequences tangible and emotionally compelling for others.

Theme 3: Perceived Benefits and Barriers (HBM)

Theme Description

This theme examines participants' beliefs about the positive outcomes of taking TB preventive treatment (TPT) and the obstacles that hinder its initiation or completion. Drawing from the Health Belief Model, perceived benefits refer to the anticipated effectiveness of TPT in preventing illness, while perceived barriers encompass practical, emotional, and systemic challenges such as side effects, stigma, access issues, or misinformation. These dual perceptions significantly influenced participants' decision-making processes. Understanding the balance between these perceived rewards and constraints is vital for shaping patient-centered interventions that support sustained adherence to TPT in vulnerable households.

Subtheme: Perceived Benefits of Taking the Treatment

Most participants viewed TPT as a proactive means of preventing illness, protecting family members, and avoiding future medical costs. The treatment was frequently associated with safety, health preservation, and peace of mind. These benefits were often internalized as acts of familial responsibility or self-care, reinforcing the moral imperative of compliance. Some participants also equated treatment with protection from a known community threat, seeing it as a shield against the suffering experienced by others. When these benefits were clearly communicated by health workers, participants were more likely to value the importance of completing the treatment course.

Participant Quotations:

“Mas mabuti nang uminom kaysa magkasakit pa.” (R040)

“It helps to make sure we don’t get TB.” (R067)

“Ayokong mahawa ‘yung anak ko, kaya tinuloy ko.” (R102)

Participants’ recognition of TPT’s protective benefits strongly influenced their adherence. The emphasis on prevention—especially to safeguard children and the elderly—was a recurring motivator. In many cases, the decision to take TPT was framed not just as self-protection but as a preventive act on behalf of the household. This aligns with findings from Datiko et al. (2020), who observed that caregivers were more likely to accept TPT when they perceived it as a mechanism to protect dependents.

Participants expressed that taking the medication gave them peace of mind, particularly when the risk of exposure was high. This belief in the efficacy of TPT corresponds with the HBM’s core tenet: individuals will take health-related action if they believe it will reduce their susceptibility to or severity of a condition (Glanz et al., 2021). The clarity and consistency of health communication played a vital role in reinforcing these beliefs.

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Another perceived benefit was economic: participants noted that preventing TB could reduce future medical expenses and lost workdays. According to Saito et al. (2022), perceived cost-saving is a significant facilitator of TPT uptake in low-resource settings. Furthermore, when TPT was framed as a manageable and short-term commitment with long-term benefits, participants were more likely to follow through.

Hence, perceived benefits—when linked to family wellbeing, health protection, and economic savings—function as strong facilitators of adherence. Health workers should emphasize these benefits during initial consultations and reinforce them throughout the course of treatment.

Subtheme: Barriers Encountered During Treatment

Despite recognizing the benefits of TPT, participants identified several barriers that interfered with adherence. These included physical side effects such as dizziness or nausea, limited access to medications, scheduling conflicts, and fear of stigma. Emotional fatigue, misinformation, and lack of follow-up support also played a role. In particular, the fear of others finding out about their treatment and associating them with TB created a sense of isolation. These barriers, while often manageable, became more problematic when health systems failed to provide clear guidance, consistent communication, or logistical support throughout the treatment course.

Participant Quotations:

“Nahilo ako sa gamot, pero tiniis ko.” (R033)

“Minsan walang stock sa health center.” (R054)

“Ayoko na marinig ng iba na iniinom ko ito—baka isipin may TB ako.” (R027)

Barriers to TPT adherence emerged as both structural and psychological. Side effects were among the most commonly reported issues, with participants citing nausea, dizziness, and fatigue. While many endured these symptoms, others reported that the discomfort affected their willingness to continue. This is consistent with research by Oga-Omenka et al. (2021), which showed that unaddressed side effects significantly reduce treatment adherence in preventive TB programs.

Systemic barriers, such as inconsistent drug supply and inconvenient clinic schedules, were also evident. In several accounts, participants shared experiences of visiting health centers only to find medication unavailable. These gaps in access can undermine the perceived reliability of the health system, as suggested by Ugarte-Gil et al. (2022), who emphasized that logistical disruptions reduce trust in TB programs and directly contribute to treatment dropouts.

Perhaps most striking were the social and emotional barriers. Fear of stigma—both from being associated with TB and from taking preventive medication—was a recurring theme. Some participants described hiding their medications or avoiding conversations about their treatment. According to Kay et al. (2021), stigma remains a pervasive issue in TB control and can deter both preventive and curative efforts.

Inadequate counseling and poor follow-up compounded these issues. When participants felt uninformed or unsupported, they were more likely to question the necessity of continuing. Therefore, addressing barriers requires a comprehensive strategy: side effect management, reliable supply chains, confidential service delivery, and ongoing psychosocial support. Framing TPT as a communal, rather than secretive, health action may also reduce shame and encourage openness.

Theme 4: Self-Efficacy

Theme Description

Self-efficacy, a core construct of the Health Belief Model, refers to an individual’s belief in their own ability to successfully execute behaviors required to produce desired outcomes—in this case, completing the full course

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of TB preventive treatment (TPT). In this study, most participants conveyed varying levels of confidence, with some reporting strong resolve to complete the treatment despite challenges, while others expressed doubts rooted in health literacy, side effects, or lack of support. Factors that influenced self-efficacy included internal motivation, previous experience with medication, encouragement from health workers, and visible improvements in well-being during the treatment process.

Subtheme: Confidence in Completing TPT

Participants' belief in their ability to finish the TPT regimen often stemmed from self-discipline, responsibility toward their family, and encouragement from health professionals. Confidence increased when participants saw TPT as manageable in terms of side effects, duration, and accessibility. For some, trust in the healthcare system or previous successful health practices enhanced their adherence capability. Conversely, lack of knowledge or perceived difficulty in remembering to take daily medication lowered their confidence. The intersection of personal determination and external support appeared to shape the strength of self-efficacy among both adherent and at-risk individuals.

Participant Quotations:

"I told myself, kaya ko ito para sa anak ko." (R019)

"Every day I reminded myself it's only for a few months." (R084)

"May pagdududa ako minsan kung matatapos ko—lalo na pag masama ang pakiramdam ko." (R032)

The capacity to adhere to a full course of preventive treatment hinges on a person's self-efficacy, which determines how resilient they are in the face of obstacles. Many participants expressed confidence derived from intrinsic motivation—particularly the desire to protect loved ones. This aligns with research by Nanyonjo et al. (2021), which demonstrated that self-efficacy is enhanced when health behaviors are framed as acts of responsibility or care toward others.

Participants who broke the treatment into manageable time frames (e.g., daily goals) reported better consistency. Such cognitive strategies are well-documented in behavioral science, where setting short-term goals improves long-term adherence (Nguyen et al., 2020). Verbal encouragement and consistent follow-ups from health workers also bolstered confidence, confirming the value of relational reinforcement. In a qualitative study by MacPherson et al. (2022), perceived health worker support was positively correlated with patients' confidence in completing TPT.

Conversely, those experiencing uncertainty often pointed to health-related discomfort or lack of treatment literacy. For example, when individuals were unsure of the benefits or became symptomatic, their confidence waned. This highlights the need for structured patient education that empowers patients with both knowledge and tools for self-management.

Importantly, participants did not perceive self-efficacy as a fixed trait. Confidence fluctuated across the treatment period, depending on symptom intensity, family circumstances, and medication access. This suggests that interventions to enhance self-efficacy must be dynamic and responsive—reaffirming trust, simplifying routines, and addressing doubts as they arise. As WHO (2021) affirms, empowering patients through consistent engagement and accessible health information is key to successful TPT adherence

Theme 5: Health System Support

Theme Description

Health system support refers to the infrastructure, services, personnel, and resources that collectively influence the patient's experience of TB preventive treatment (TPT). Participants' engagement with the health system—particularly with barangay health workers, nurses, and local health centers—shaped their perceptions of accessibility, responsiveness, and emotional support. For many, encouragement and clear communication from

health workers increased trust and willingness to adhere. Conversely, gaps such as inconsistent medication supply, rushed consultations, or absence of follow-up eroded confidence. Understanding how the health system facilitates or impedes patient journeys is essential to improve TPT service delivery and support long-term health behavior change.

Subtheme: Health Worker Engagement and Trust

Participants who described positive experiences with health professionals emphasized the value of clear explanations, patience, and encouragement. Trust was built when health workers explained the treatment purpose, checked in regularly, and addressed side effects promptly. This interpersonal support was cited as one of the most powerful motivators to continue treatment. However, where participants experienced neglect, inconsistent communication, or lack of compassion, trust diminished. These interactions shaped how seriously participants took TPT and whether they believed they were genuinely cared for within the health system.

Participant Quotations:

“Yung midwife namin, palaging nag-check at nagpapaalala—saludo ako.” (R061)

“Sinagot niya lahat ng tanong ko, kaya naging kampante ako.” (R017)

“Minsan parang nagmamadali sila, kaya ‘di mo maintindihan.” (R090)

Trust in the health system is often mediated by personal encounters with frontline workers. In this study, participants who experienced affirming interactions with health providers were more likely to adhere to treatment. Attentiveness, emotional validation, and clear information provided by nurses or midwives created an environment where participants felt safe, seen, and supported. According to Jenkins et al. (2020), these relational elements foster the therapeutic alliance critical for long-term adherence to preventive therapies.

One of the most cited facilitators was the health worker’s ability to explain treatment clearly and simply. This finding aligns with Espino et al. (2021), who emphasize that client-centered communication in TB programs improves comprehension, reduces stigma, and strengthens compliance. Participants who could ask questions and receive understandable answers were less likely to be intimidated by the regimen and more willing to cooperate.

On the other hand, when participants felt rushed or dismissed, trust in the system eroded. Several mentioned that staff were sometimes too busy or indifferent, which led to confusion about dosage or expectations. These lapses often discouraged follow-up and increased dropout risk. This concern is echoed in studies by Hargreaves et al. (2022), which highlight that healthcare worker burnout and insufficient training are barriers to maintaining compassionate care in public health settings.

A reliable, empathetic health system—not just technically efficient—encourages uptake and completion of TPT. Strengthening frontline engagement, especially through continuity of care and relational trust, should be prioritized in public TB prevention strategies. Future interventions should consider training community health workers in both communication and emotional support skills to sustain high-quality, patient-centered care.

Theme 6: Adherence Behaviors and Decision-Making

Theme Description

Adherence to TB preventive treatment (TPT) is shaped by a series of daily decisions influenced by beliefs, routines, external pressures, and personal health experiences. Participants described complex patterns of persistence and hesitation, often negotiating between practical barriers and inner motivation. Some expressed unwavering commitment from the beginning, while others struggled with forgetfulness, side effects, or competing life demands. Decisions to continue or discontinue were influenced by family support, tangible symptoms (or lack thereof), and the perceived value of prevention. Understanding these behaviors and decision-making processes is vital to improving completion rates in TPT programs.

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Subtheme: Factors Influencing Continuation or Discontinuation

The decision to continue or abandon TPT was often fluid and context-dependent. Participants cited daily reminders, visible health improvements, and family encouragement as motivations to persist. In contrast, interruptions were linked to illness, misconceptions about needing medication only when symptomatic, or emotional burnout. For some, the absence of immediate illness made the purpose of TPT feel abstract, weakening motivation. Health workers' follow-up and peer sharing also contributed to decisions. The findings suggest that adherence is less a one-time decision than a dynamic process, susceptible to fluctuations in support, understanding, and circumstance.

Participant Quotations:

"Kahit minsan tamad ako, iniisip ko 'yung pamilya ko kaya tuloy lang." (R023)

"Tumigil ako kasi akala ko okay na ako—wala naman akong nararamdaman." (R067)

"Malaking tulong 'yung reminder ng health worker at text nila." (R105)

Adherence behavior in preventive care, such as TPT, is not simply about willpower—it's an evolving negotiation of belief, routine, and reinforcement. This study echoes findings by Yuen et al. (2020), who argue that adherence is shaped by daily "micro-decisions" rather than a single act of compliance. For example, participants who received regular reminders or encouragement from health workers and family members were more likely to persist even when they experienced mild side effects or treatment fatigue.

A key barrier identified was the asymptomatic nature of latent TB infection. Several participants questioned the need for medication in the absence of physical symptoms. This aligns with the study by Shrestha et al. (2021), which found that many patients discontinue preventive treatment because they do not "feel sick," thereby undervaluing its preventive purpose. Programs must address this misperception through continuous education and reframing the concept of prevention as proactive, not reactive.

Motivational anchors—such as protecting family, fulfilling responsibility, or fear of future illness—served as emotional levers for continuation. Participants also mentioned that seeing others in the community successfully complete treatment inspired them to keep going, highlighting the potential value of peer-driven models in TB programs (Dudley et al., 2022).

Discontinuation often stemmed from cumulative fatigue, misinterpretation of health status, or limited follow-up. These findings suggest the need for adaptive support systems that respond to evolving motivational levels. Implementing digital adherence tools, check-ins, and narrative-sharing spaces can serve to reinforce the decision to complete treatment and reengage those who waver.

Theme 7: Suggestions for Improvement

Theme Description

Participants offered a range of practical and empathetic suggestions to improve the delivery and experience of TB preventive treatment (TPT). These insights reflected lived experiences with health systems and underscored the importance of human-centered approaches. Suggestions included improved education about TB and TPT, more consistent communication from health workers, extended clinic hours, easier medication access, and emotional support services. These recommendations emphasize that successful prevention programs must not only be medically sound but also socially responsive, flexible, and inclusive of patient voices. Listening to end-users is critical to designing interventions that are both effective and culturally acceptable.

Subtheme: Program and Service Enhancements

Most participants recommended logistical and educational improvements to the TPT process. Suggestions ranged from more detailed orientation sessions to home visits for those who cannot easily travel to the clinic.

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Others proposed using SMS reminders or community meetings to increase awareness. Ensuring medicine availability and reducing long waiting times were also highlighted. Participants emphasized that if services were easier to navigate, more people would begin and complete TPT. These insights reveal a strong awareness of systemic barriers and a desire for more responsive, community-attuned public health programs.

Participant Quotations:

"Mas maganda kung may orientation talaga bago magsimula, para malinaw lahat." (R033)

"Pwede po siguro 'yung home delivery ng gamot para sa matatanda." (R077)

"Minsan nakakatamad kasi ang tagal sa health center. Sana may priority lane para sa TPT." (R094)

Participants' suggestions align with global recommendations for people-centered TB care. The call for better orientation sessions reflects a gap in health literacy, which is foundational to adherence and uptake. As emphasized by Aung et al. (2021), tailored education sessions can significantly increase knowledge and acceptance of TB interventions, particularly in high-burden communities. Participants sought not just factual information but also reassurance and clarity—indicating the importance of relational communication over simple instruction.

Logistical barriers such as travel burden, medication stockouts, and long queues were recurring themes. A study by Daftary et al. (2020) similarly noted that structural inefficiencies in public health facilities often deter patients from sustained engagement. Suggestions such as home-based services and mobile reminders are consistent with the WHO's digital health strategy for TB, which advocates for differentiated care models and e-health innovations to improve continuity (WHO, 2021).

Interestingly, many participants were not only focused on personal convenience but also displayed concern for more vulnerable members of their community—elders, working parents, or those living far from clinics. This community-conscious approach reflects an understanding of collective health responsibility, which can be harnessed to design more inclusive TPT delivery.

Ultimately, participant feedback emphasizes that clinical effectiveness must be paired with social accessibility. Health systems need to view clients not as passive recipients but as co-creators of services. Incorporating community feedback into policy design, using patient advisory boards, and investing in front-line feedback mechanisms can help evolve TB prevention efforts into more humane, efficient, and equitable systems.

Table of Findings: Perceptions, Predictors, and Pathways

Theme	Key Findings	Interpretation/Implication
Perceptions	High perceived susceptibility and severity ($M > 4.6$). High perceived benefits of TPT. Side effects and stigma emerged as barriers.	While awareness of TB risk and TPT benefits is strong, perceived barriers limit translation to action. Trust-building and barrier mitigation are essential.
Predictors	Self-efficacy strongly predicted adherence ($\beta = -0.39$). Health system support predicted lower non-adherence ($\beta = -0.25$). Mediation and moderation effects were statistically significant.	Self-efficacy is a core behavioral driver. Health system support enhances its impact. Interventions must target both psychological and systemic levers.
Pathways	Self-efficacy partially mediated the effect of health beliefs on adherence (indirect $\beta = -0.14$). Health system support moderated the self-efficacy → adherence relationship (interaction $\beta = -0.25$).	Adherence is a dynamic outcome shaped by internal beliefs and external reinforcement. TPT programs should integrate both behavioral and structural support mechanisms.

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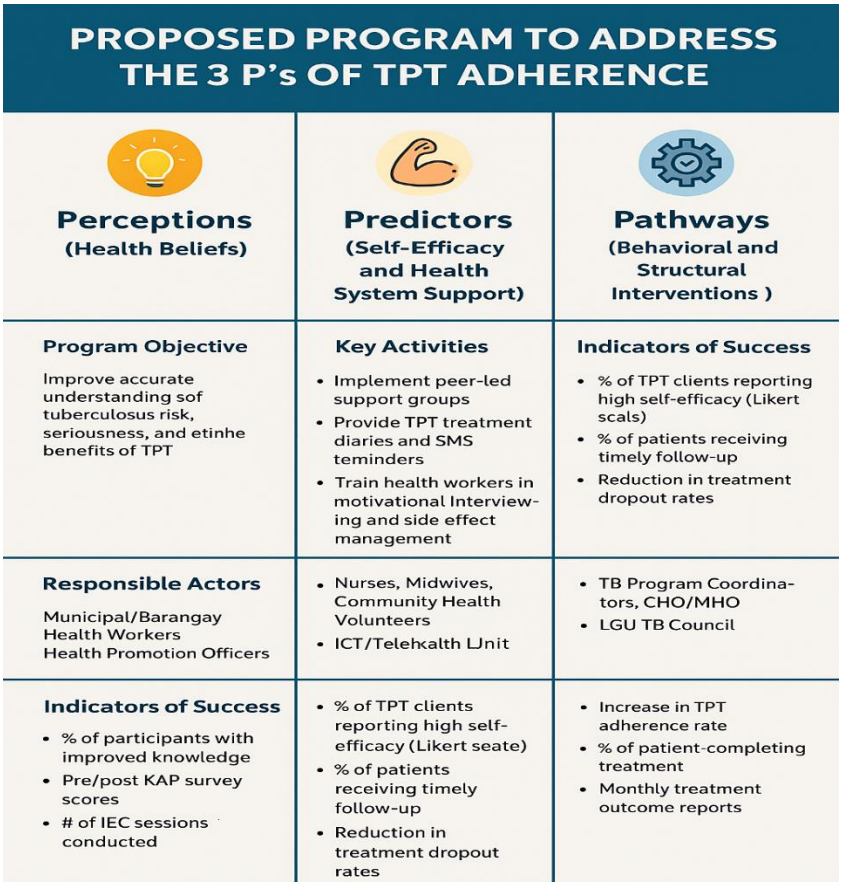
Proposed Program Matrix: Addressing the 3 P's of TPT Adherence

Component (3 P's)	Program Objective	Key Activities	Responsible Actors	Indicators of Success
Perceptions (Health Beliefs)	Improve accurate understanding of TB risk, seriousness, and the benefits of TPT	- Conduct community-based health education and orientation sessions - Develop culturally appropriate IEC materials - Share testimonies from successful TPT completers	Municipal/Barangay Health Workers, Health Promotion Officers	- % of participants with improved knowledge - Pre/post KAP survey scores - # of IEC sessions conducted
Predictors (Self-Efficacy and Health System Support)	Enhance confidence and ability of patients to complete TPT; strengthen system enablers	- Implement peer-led support groups - Provide TPT treatment diaries and SMS reminders - Train health workers in motivational interviewing and side effect management - Establish follow-up schedules and feedback hotlines	Nurses, Midwives, Community Health Volunteers, ICT/Telehealth Unit	- % of TPT clients reporting high self-efficacy (Likert scale) - % of patients receiving timely follow-up - Reduction in treatment dropout rates
Pathways (Behavioral and Structural Interventions)	Align internal motivation with external support mechanisms to ensure TPT adherence	- Launch integrated case management with patient-centered care plans - Provide logistical support (e.g., home visits, mobile treatment services) - Introduce mHealth monitoring systems (e.g., 99DOTS or digital pill boxes)	TB Program Coordinators, CHO/MHO, LGU TB Council	- Increase in TPT adherence rate - % of patients completing treatment - Monthly treatment outcome reports



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SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study investigated the perceptions, behavioral factors, and structural influences affecting adherence to Tuberculosis Preventive Treatment (TPT) among household contacts of index TB cases. Using a mixed-methods approach, both quantitative data (n = 112) and qualitative interviews were collected to explore socio-demographic characteristics, behavioral constructs from the Health Belief Model, health system support, self-efficacy, and lived experiences.

Quantitative findings revealed a high rate of non-adherence (85.59%), despite participants generally exhibiting high levels of perceived susceptibility, severity, and benefit regarding TPT. However, perceived barriers (e.g., side effects, inconvenience) remained a critical obstacle. Self-efficacy emerged as a significant mediator in the relationship between health beliefs and non-adherence ($\beta = -0.14$), while health system support moderated the effect of self-efficacy on adherence (interaction $\beta = -0.25$).

Qualitative data supported and enriched these findings. Emotional reactions, fear, family motivation, and the role of trusted health workers were highlighted. Participants expressed barriers such as stigma, medication side effects, and system-related delays. Facilitators included supportive counseling, consistent health worker engagement, and mobile reminders. The findings demonstrate that effective TPT implementation requires integrated strategies that address not only cognitive and emotional beliefs but also structural and relational enablers.

Conclusions

1. The majority of household contacts were aware of TB risks and perceived TPT as beneficial; however, this awareness did not translate into high adherence rates.

2. Self-efficacy is a critical determinant of TPT completion. It mediates the influence of health beliefs on adherence and can be reinforced through education and counseling.

3. Health system support, including provider communication, follow-up, and reminders, plays a moderating role by strengthening the impact of self-efficacy on adherence outcomes.

4. Non-adherence is shaped not only by individual perception but by systemic challenges such as medicine stockouts, inconvenient schedules, and social stigma.

5. TPT programs must address both psychological motivation and health system responsiveness to ensure completion of treatment.

Recommendations

Based on the study findings, the following recommendations are proposed:

1. Develop integrated counseling programs that reinforce self-efficacy by addressing misconceptions, fear of side effects, and treatment importance.

2. Strengthen health system support through regular follow-up, mobile health reminders, priority lanes, and patient education.

3. Train community health workers in culturally sensitive, empathetic communication and side-effect management.

4. Adopt digital adherence technologies to support patients in real-time and monitor treatment continuity.

5. Involve patients and their families in treatment planning to foster motivation and build household-level support.

6. Ensure a continuous supply of TPT medications and improve service accessibility, particularly in high-burden and low-resource areas.

7. Use qualitative insights to inform policy improvements and design interventions that address lived experiences, stigma, and social responsibility.

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APPENDIX

Approval Sheet

This research entitled **PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES,** prepared and submitted by **MARY ROSE S. LUCES** in partial fulfilment of the requirements for the degree of Master of Arts in Nursing Major in Nursing Administration, has been examined and recommended for acceptance and approval for Final Defense.

CYRUZ P. TUPPAL, JD, PhDNS, PhD, MSN, MASPED, MHA, MBA, PGD, RN, RM, LPT

Thesis Adviser

ORAL EXAMINATION COMMITTEE

Approved by the Committee on Final Oral Examination with a grade of

DR. BRADLEY GOLDIE LOO

Chairman

DR. MA. MERCEDES LOO **DR. ARNOLD MANIEBO**

Member Member

Accepted and approved in partial fulfillment of the requirements for the degree of Master of Arts in Nursing Major in Nursing Administration.

EDUARDO C. ZIALCITA, PhD

Dean Graduate School

Appendix A

HON. ROZZANO RUFINO B. BIAZON

Mayor

Muntinlupa City

THROUGH: **CAROLYN HERESA MAGALONG, MD**

Acting Head, Office of the City Health Officer

Subject: **Request for Permission to Conduct Data Collection for Graduate Research Study.**

Dear Mayor Biazon,

Greetings!

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I am **Mary Rose S. Luces**, a graduate student currently enrolled in the **Master of Arts in Nursing major in Nursing Administration** at the **University of Perpetual Help System – DALTA, Las Piñas City**. I am presently conducting my thesis entitled, *"Perceptions, Predictors and Pathways: A Mixed Methods Study TB Preventive Treatment Adherence among household contacts of TB Cases."*

In line with this, I respectfully request your permission to conduct data collection within your institution's jurisdiction, particularly among household contacts of tuberculosis index cases who have been enrolled in the Tuberculosis Preventive Treatment (TPT) program. The study will employ both quantitative and qualitative methods and aims to identify behavioral, socio-demographic, and health system-related factors affecting treatment adherence.

Data will be collected through:

Structured questionnaires administered to household contacts

In-depth interviews with selected participants (upon informed consent)

The results of this study aim to inform more effective interventions in tuberculosis control and support community-based public health efforts.

All data collection procedures will strictly observe ethical standards, including:

Securing **informed consent**

Ensuring **anonymity and confidentiality**

Respecting the **voluntary participation** of all respondents

Observing **health and safety protocols**

Attached herewith are the following documents for your review:

Copy of the approved research proposal

Endorsement letter from the Graduate School

Approved ethics clearance

Sample data collection tools

I assure you that the research will not disrupt regular services and will be conducted in close coordination with your designated personnel. Your kind approval will be highly appreciated.

Should you require any further information or clarification, please feel free to contact me at 09688543310 or via email at m.rose122191@gmail.com.

Thank you very much for your kind consideration and support.

Respectfully yours,

MARY ROSE S. LUCES

University of Perpetual Help System – DALTA

Las Piñas City

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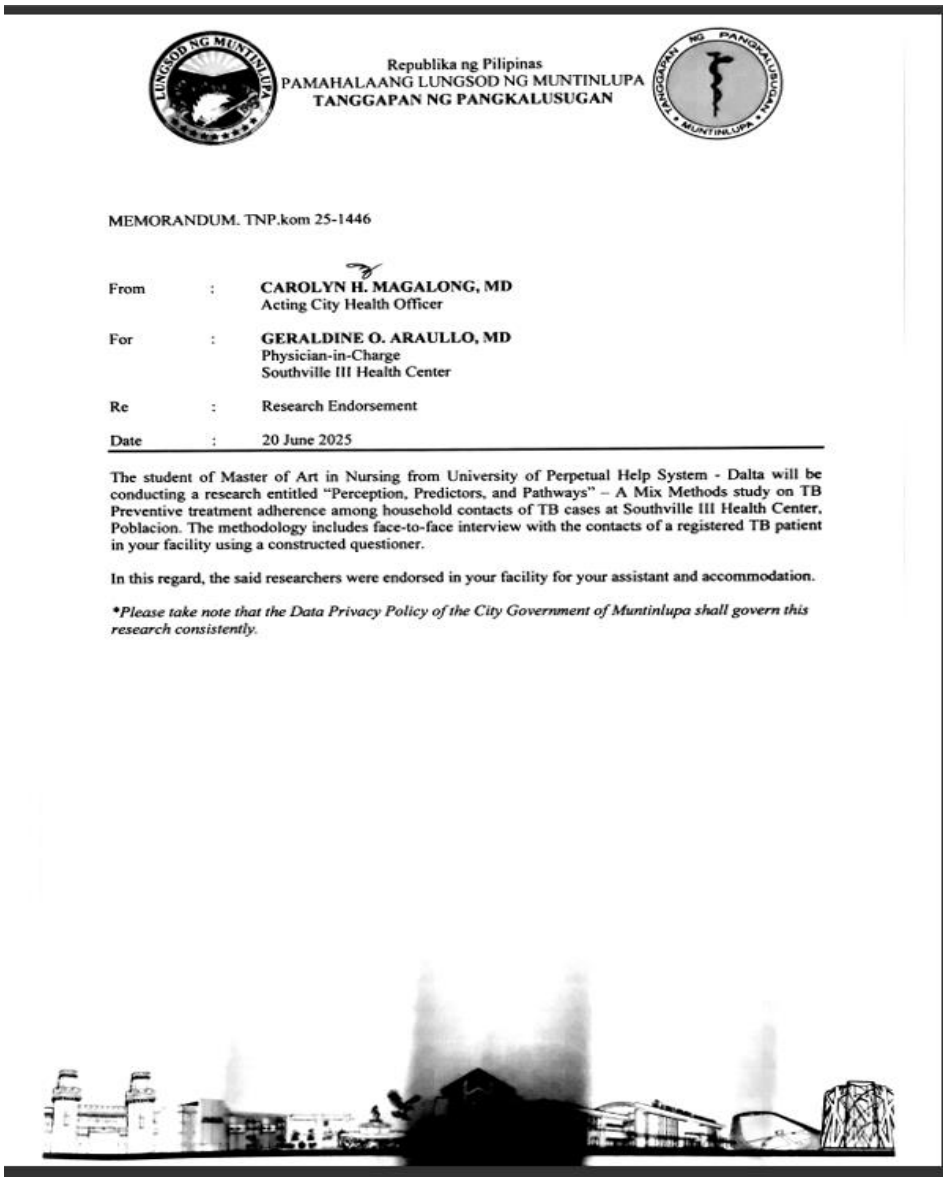

Republika ng Pilipinas
PAMAHALAANG LUNGSOD NG MUNTINLUPA
TANGGAPAN NG PANGKALUSUGAN

MEMORANDUM. TNP.kom 25-1446

From : **CAROLYN H. MAGALONG, MD**
Acting City Health Officer

For : **GERALDINE O. ARAULLO, MD**
Physician-in-Charge
Southville III Health Center

Re : Research Endorsement

Date : 20 June 2025

The student of Master of Art in Nursing from University of Perpetual Help System - Dalta will be conducting a research entitled "Perception, Predictors, and Pathways" – A Mix Methods study on TB Preventive treatment adherence among household contacts of TB cases at Southville III Health Center, Poblacion. The methodology includes face-to-face interview with the contacts of a registered TB patient in your facility using a constructed questioner.

In this regard, the said researchers were endorsed in your facility for your assistant and accommodation.

**Please take note that the Data Privacy Policy of the City Government of Muntinlupa shall govern this research consistently.*

Appendix B

Participant Information Sheet

Title of the Study:

"Perceptions, Predictors and Pathways: A Mixed Methods Study TB Preventive Treatment Adherence among household contacts of TB Cases."

Researcher:

Mary Rose S. Luces

Graduate Student, Master of Arts in Nursing

University of Perpetual Help System – DALTA

Layunin ng Pag-aaral

Layunin ng pag-aaral na ito na tuklasin kung bakit may ilang kapamilya ng mga pasyenteng may TB na hindi umiinom ng Tuberculosis Preventive Treatment (TPT). Sisiyasatin ng pag-aaral ang mga hamon, karanasan, at mga sistemang sumusuporta sa pagsunod sa TPT upang mapabuti ang mga serbisyong pangkalusugan at kinalabasan nito.

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Ano ang Iyong Gagawin

Kung ikaw ay sasang-ayon na lumahok, ikaw ay:

Sasagutin mo ang isang structured na talatanungan tungkol sa iyong personal na impormasyon at karanasan sa TPT (tinatayang 15–20 minuto).

Kung ikaw ay mapipili, makikilahok ka rin sa isang panayam nang personal o sa pamamagitan ng telepono tungkol sa iyong karanasan sa paggamot (tinatayang 30–45 minuto).

Boluntaryong Paglahok

Ang iyong paglahok sa pag-aaral na ito ay ganap na kusang-loob. Maaari kang tumangging sumagot sa anumang tanong o umatras sa kahit anong oras nang walang kaparusahan o pagkawala ng benepisyo.

Mga Panganib at Benepisyo

Wala pong delikado sa pag sali kahalintulad lang ito sa normal na ginagawa sa araw - araw. Bagaman walang salaping kapalit, ang iyong kaalaman at karanasan ay makatutulong sa pagpapabuti ng mga susunod na programa para sa TB sa inyong komunidad.

Pagkapribado

Pinahahalagahan namin ang iyong privacy at titiyakin naming mananatiling kumpidensyal at ligtas ang lahat ng impormasyon na iyong ibabahagi. Ang pag-aaral na ito ay sumusunod sa Data Privacy Act of 2012.

Ang iyong pangalan ay hindi lalabas sa anumang ulat o dokumento. Sa halip, ikaw ay bibigyan ng code number upang mapanatili ang pagiging hindi matukoy.

Ang mga kokolektahing datos ay kinabibilangan ng iyong edad, kasarian, katayuang sibil, kita, at karanasan kaugnay sa TPT.

Ang mga datos ay mai-encode sa isang password-protected na file sa personal na laptop ng mananaliksik, at ang mga naka-print na form ay itatago sa isang nakalock na drawer o cabinet.

Ang impormasyon ay hindi ibabahagi sa iba maliban kung kailangan para sa pagsusuri ng tagapayo o research panel, at palaging ihaharap sa hindi matutukoy na paraan.

Ang lahat ng datos ay itatago sa loob ng limang (5) taon pagkatapos ng pag-aaral at pagkatapos ay wawasakin nang maayos: ang electronic files ay permanenteng buburahin at ang printed documents ay sisirain sa pamamagitan ng pag-shred o pagsunog.

Contact Information

Kung ikaw ay may tanong o alalahanin kaugnay ng pag-aaral, maaari kang makipag-ugnayan sa:

Mary Rose S. Luces – 09688543310, m.rose122191@gmail.com
Thesis Adviser: **Dr. Cyruz P. Tuppal** – 09171925587

Ang pag-aaral na ito ay nirepaso at inaprubahan ng isang Ethics Review Committee.

Pahintulot Sa Pagsasaliksik

Pahayag ng Pahintulot ng Kalahok:

Aking nabasa (o nabasang muli sa akin) ang impormasyong nakasaad sa itaas. Nauunawaan ko ang layunin at hangarin ng pag-aaral, ang pagiging boluntaryo ng aking paglahok, at ang mga hakbang para sa aking privacy.

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Ako ay binigyan ng pagkakataong magtanong.

☐ Kusang-loob akong pumapayag na lumahok sa survey.
☐ Kusang-loob akong pumapayag na ma-interview kung mapipili.
☐ Nauunawaan kong maaari akong umatras anumang oras nang walang kaparusahan.

Pangalan ng Kalahok (Nakaprint): _____
Lagda: _____
Petsa: _____

Pangalan ng Mananaliksik/Saksi: _____
Lagda: _____
Petsa: _____

Tandaan: Mananatiling kumpidensyal ang privacy ng kalahok sa buong panahon ng pag-aaral. Walang impormasyon ang ilalabas nang walang abiso at pahintulot ng kalahok.

Questionnaire and Interview Guide (Tagalog Version)

Seksyon I: Sosyo-Demograpikong Profile

(Pakisagutan o lagyan ng tsek ang naaangkop na kahon)

Edad: _____

Kasarian: ☐ Lalaki ☐ Babae ☐ Iba pa

Natapos na Antas ng Edukasyon:

☐ Wala ☐ Elementarya ☐ High School ☐ Kolehiyo ☐ Bokasyonal ☐ Postgraduate

Katayuan sa Trabaho:

☐ May Trabaho ☐ Walang Trabaho ☐ Part-Time

Buwanang Kita ng Kabuuang Tahanan (₱)

☐ Below 20,000.00

☐ Below 20,000.00 - 25,000.00

☐ Below 25,000.00 - 30,000.00

☐ Above 30,000.00

Bilang ng Tao sa Tahanan:

____ 15 y/o pababa

____ 15 y/o at pataas

Relasyon sa Index Tuberculosis (TB) Case:

☐ Asawa ☐ Magulang ☐ Kapatid ☐ Anak ☐ Iba pa: _____

Ikaw ba ang pangunahing tagapag-alaga ng index TB case?

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☐ Oo ☐ Hindi

Seksyon II: Kalagayan sa TB Preventive Treatment at Pagsunod

Inalok ka ba ng Tuberculosis Preventive Treatment (TPT)?

☐ Oo ☐ Hindi

Nagsimula ka bang uminom ng TPT regimen? ☐ Oo ☐ Hindi

Natapos mo ba ang buong regimen ng TPT? ☐ Oo ☐ Hindi

Kung Hindi, ano ang dahilan mo sa hindi pagtatapos?

(Lagyan ng tsek ang lahat ng naaangkop)

☐ Nakalimutang uminom ng gamot

☐ Masamang epekto sa katawan

☐ Nakaramdam ng ginhawa

☐ Walang gamot na makuha

☐ Walang pamasahe

☐ Hindi ko naintindihan ang kahalagahan nito

☐ Iba pa: _____

Seksyon III: Paniniwala Tungkol sa Kalusugan (HBM Constructs)

(Iskala: 1 = Lubos na Hindi Sumasang-ayon; 5 = Lubos na Sumasang-ayon)

Statement	1	2	3	4	5
Perceived Susceptibility					
13 Naniniwala akong may posibilidad akong magkaroon ng TB.	☐	☐	☐	☐	☐
14 Madaling kumalat ang TB sa loob ng tahanan.	☐	☐	☐	☐	☐
Perceived Severity					
15. Ang TB ay maaaring magdulot ng seryosong problema sa kalusugan o kamatayan.	☐	☐	☐	☐	☐
16. Lubos akong mahihirapan kung ako'y magkakaroon ng TB.	☐	☐	☐	☐	☐
Perceived Benefits					
1. Nakakatulong ang TPT upang maiwasan ang pagkakaroon ng TB.	☐	☐	☐	☐	☐
2. Ang pag-inom ng TPT ay nakakatulong na maprotektahan ang aking pamilya at komunidad.	☐	☐	☐	☐	☐
Perceived Barriers					
3. May mga side effects ang TPT na nagpapahirap para tapusin ito.	☐	☐	☐	☐	☐
4. Nahihirapan akong sundin ang iskedyul ng pag-inom ng gamot.	☐	☐	☐	☐	☐
5. Hassle para sa akin ang regular na pagpunta sa health center.	☐	☐	☐	☐	☐

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Gabay sa Panayam (Qualitative Interview Guide)

A. Panimula at Pagbuo ng Ugnayan

1. Maari mo bang ikuwento kung ano ang naging karanasan mo noong una mong nalaman na may TB ang isang miyembro ng inyong tahanan?

2. Ano ang naramdaman mo nang sabihing kailangan mong uminom ng preventive treatment?

B. Pagkabahala at Kabigatan ng TB (HBM)

3. Sa tingin mo, gaano kalaki ang posibilidad na ikaw ay magkaroon ng TB kung hindi ka uminom ng TPT?

4. Sa iyong palagay, gaano kaseryoso ang sakit na TB—para sa iyo at sa iyong pamilya?

C. Mga Kalamangan at Balakid (HBM)

5. Ano ang pagkakaintindi mo kung bakit ibinigay sa iyo ang TPT?

6. Sa pananaw mo, ano ang mga benepisyo ng pag-inom ng treatment?

7. Anong mga hamon o problema ang naranasan mo habang iniinom (o sinubukang inumin) ang treatment?

D. Kakayahang Tapusin ang Gamutan (Self-Efficacy)

8. Gaano ka ka-kumpiyansa na matatapos mo ang buong treatment?

9. Ano ang mga tumulong sa iyo para maging consistent—o ano naman ang mga nakapahirap sa pagpapatuloy?

E. Suporta ng Health System

10. Paano mo ilalarawan ang naging karanasan mo sa mga health worker o sa health center habang sumasailalim sa TPT?

11. Naramdaman mo ba na sinusuportahan at ginagabayan ka sa buong proseso? Maaari mo bang ipaliwanag?

F. Pag-uugali sa Pagsunod at Pagpapasya

12. Ano ang naging dahilan kung bakit mo ipinagpatuloy o itinigil ang pag-inom ng gamot?

13. May mga pagkakataon ba na gusto mong tumigil? Ano ang nangyari?

G. Mga Mungkahi para sa Pagpapabuti

14. Ano sa tingin mo ang makatutulong upang mas mapadali ang pagtatapos ng treatment para sa mga tulad mo?

15. Ano ang mga mungkahi mo para sa mga health worker o health center para mapabuti ang TPT services?

H. Pagtatapos

16. May nais ka pa bang ibahagi tungkol sa iyong karanasan sa TB preventive treatment?

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June 15, 2025

Dr. Rizmond R. Laniog
Alternate Medical Coordinator
Muntinlupa City TB Program

Subject: **Request for Expert Validation of Research Instrument**

Dear Dr. Laniog,

I hope this letter finds you well.

I am writing to respectfully request your assistance in serving as a tool validator for the research instrument I have developed as part of my ongoing study titled "Perceptions, Predictors, and Pathways: a mixed methods study on TB Preventive Treatment adherence among household contacts of tb cases"

The study aims to examine the factors contributing to non-adherence to TB Preventive Treatment (TPT) among household contacts of TB index cases. The findings of this study are expected to support the improvement of our TB control initiatives to explore the factors influencing treatment adherence among household contacts of TB patients in Southville 3 Poblacion Muntinlupa City.

A total of 112 respondents were included in the quantitative phase. These participants answered a structured questionnaire measuring socio-demographic data, Health Belief Model constructs (perceived susceptibility, severity, benefits, and barriers), self-efficacy, and health system support. Their responses were used to determine adherence status and test hypothesized relationships among variables.

For the qualitative phase, a purposive subsample of 15-20 participants from the initial survey group was invited for in-depth interviews. Selection was based on their adherence behavior and variation in background characteristics, allowing the researcher to gather deeper insights into their lived experiences, perceived challenges, and support systems related to TPT.

Appendix C

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In line with best research practices and ethical rigor, I am seeking the validation of the enclosed questionnaire to ensure its content validity, clarity, relevance, and cultural appropriateness. Your expertise in public health, nursing education, statistic and research would be invaluable in evaluating the instrument's suitability for data collection.

The attached documents include:

1.The draft version of the questionnaire

2.The validation tool with criteria (e.g., relevance, clarity, simplicity, and ambiguity)

Your feedback and recommendations will be instrumental in enhancing the scientific integrity and utility of the instrument. Kindly return the completed validation form to me on or before **June 20, 2025**, if your schedule permits.

Please be assured that your contribution will be properly acknowledged in the research documentation. Should you require any further information or clarification, feel free to contact me via email or mobile.

Thank you very much for considering this request. I would be deeply honored by your participation and support.

Sincerely yours,

Mary Rose S. Luces, RN
Principal Investigator
Graduate Student, Master of Arts in Nursing
University of Perpetual Help System – DALTA
Email: m.rose122191@gmail.com | Mobile: 0968-854-3310

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Instrument Validation Checklist

Title of Study: Perceptions, Predictors, And Pathways: A Mixed Methods Study on TPT Adherence among Household Contacts of TB Cases

Name of Researcher: Mary Rose S. Luces, RN
Name of Validator: Dr. Rhymund L. Laniog
Field of Expertise: Masters in management, Major in public Health Administration
Date of Validation: _____

Instructions:

Please rate each item of the questionnaire based on the following criteria using the scale below:

Scale	Interpretation
4	Very Relevant / Clear
3	Relevant / Needs Minor Revision
2	Needs Major Revision
1	Not Relevant / Not Clear

You may also add specific comments or suggestions for improvement in the space provided.

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Part I: Questionnaire Items Evaluation Table

Item No.	Questionnaire Item	Relevance (1–4)	Clarity (1–4)	Suggestions for Revision
1	Edad	4	4	
2	Kasarian	4	4	
3	Natapos na Edukasyon	4	4	
4	Katayuan sa trabaho	4	3	
5	Buwanang Kita	4	3	
6	Bilang ng tao sa tahanan	4	4	
7	Relasyon sa Index Case (TB Ccase)	4	4	
8	Ikaw ba ang pangunahing tapag-alaga ng index TB Case?	4	2	define index case
9	Inalok k ba ng TB Preventive Treatment?	4	4	
10	Nagsimula ka bang uminom ng gamot na Preventive Treatment?	4	4	
11	Natapos mo ba ang buong regimen ng TPT?	4	4	
12	Kung hindi ano dahilan? ☐ Nakalimutang uminom ng gamot ☐ Masamang epekto sa katawan ☐ Nakaramdam ng ginhawa ☐ Walang gamot na makuha ☐ Walang pamasahe ☐ Hindi ko naintindihan ang kahalagahan nito	4	4	

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	mong nalaman na may TB ang isang miyembro ng inyong tahanan? 2.Ano ang naramdaman mo nang sabihing kailangan mong uminom ng preventive treatment?			
	C.Pagkabahala at Kabigatan ng TB (HBM) 5. Sa tingin mo, gaano kalaki ang posibilidad na ikaw ay magkaroon ng TB kung hindi ka uminom ng TPT? 6. Sa iyong palagay, gaano kaseryoso ang sakit na TB—para sa iyo at sa iyong pamilya?	4	4	
	C. Mga Kalamangan at Balakid (HBM) 4. Ano ang pagkakaintindi mo kung bakit ibinigay sa iyo ang TPT? 5. Sa pananaw mo, ano ang mga benepisyo ng pag-inom ng treatment? 6. Anong mga hamon o problema ang naranasan mo habang iniinom (o sinubukang inumin) ang treatment?	4	4	

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	F. Pag-uugali sa Pagsunod at Pagpapasya 12. Ano ang naging dahilan kung bakit mo ipinagpatuloy o itinigil ang pag-inom ng gamot? 13. May mga pagkakataon ba na gusto mong tumigil? Ano ang nangyari?	4	4	
	G. Mga Mungkahi para sa Pagpapabuti **16. Ano sa tingin mo ang makatutulong upang mas mapadali ang pagtatapos ng treatment para sa mga tulad mo?** **17. Ano ang mga mungkahi mo para sa mga health worker o health center para mapabuti ang TPT services?**	4	4	
	H. Pagtatapos **16. May nais ka pa bang ibahagi tungkol sa iyong karanasan sa TB preventive treatment?**	4	4	

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	Perceived Benefits			
	18. Nakakatulo ng ang TPT upang maiwasan ang pagkakaroon ng TB. □□□□□			
	19. Ang pag-inom ng TPT ay nakakatulong na maprotektahan ang aking pamilya at komunidad. □□□□□			
	Perceived Barriers			
	20. May mga side effects ang TPT na nagpapahirap para tapusin ito. □□□□□			
	20. Nahihirapan akong sundin ang iskedyul ng pag-inom ng gamot. □□□□□			
	21. Hassle para sa akin ang regular na pagpunta sa health center. □□□□□			
Gabay sa Panayam (Qualitative Interview Guide)				
	A. Panimula at Pagbuo ng Ugnayan	4	4	
	1. Maari mo bang ikuwento kung ano ang naging karanasan mo noong una			

Appendix D

Photodocumentation

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Curriculum Vitae

Mary Rose Salientes Luces

Registered Nurse

License Number: 0851121

B21 Lot 06 Katarungan Village 2 Poblacion, Muntinlupa City

Mobile Number: +63-968-854-3310/ +63-917-572-4611

E-mail Add: m.rose122191@gmail.com

Educational Background

- **College : Bachelor of Science in Nursing (B.S.N)**
  Martinez Memorial Colleges
  Caloocan City
  2008-2012
- **Secondary : Malabon National High School**
  Malabon City
  2004-2008
- **Primary : Ninoy Aquino Elementary School**
  Malabon City
  1998-2004

Accreditation And Licence

- **Philippine Nursing Licensure Examination**

November 2014

Work Experiences

TB Notification Project Associate Field Leader

Philippine Business for Social Progress, 2019-2020

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Muntinlupa City

TB Notification Project Associate

Philippine Business for Socal Progress, 2018-2019

Muntinlupa City

Nurse Deployment Program

Department of Health, 2016-2017

Malabon City

Pharmacy Assistant

Generika Drugstore, 2013-2015

Malabon City

Trainings and Seminars

Training on Standar Short Treatment Regimen	10/2/17	10/4/17
Roll-out on iTrain for NTP	6/4/18	6/8/18
Training on HIV Counseling and Testing and Facility-Based Screening	6/25/19	6/28/19
Training of Trainers Program on COVID-19 Infection Prevention & Control	12/15/20	12/17/20
Training of Trainers on Tuberculin Skin Test for Primary Health Care Workers	6/24/22	6/27/22
Inclusive and Non-Discriminatory Health Care	6/27/22	6/29/22
Training on Animal Bite Management	8/10/22	08/12/2022
Highlighting Drug Sensitive(DS), Drug Resistant (DR) and Latent TB Treatment (Virtual)	8/17/22	08/172022
Roll-out Training on NTP Manual of Procedures 6th Edition for Primary Health Care Workers	9/13/22	9/16/22
Virtual Training on Event-Based Surveillance and Response, Philippine Integrated Disease Surveillance and Response, Vaccine Preventable Diseases and Data Management	9/28/21	9/29/21
Training on Integrated Non-Communicable Diseases Prevention and Control Programs for Nurses and Other Health Care Workers	10/5/22	10/7/22
29th PhilCat Annual Convention TB Elimination: A Commitment to Our Nation	8/17/23	8/18/23
Training of Trainers on Accelerate Contact Investigation (CI) for Tuberculosis Preventive Treatment (TPT)	10/17/23	10/17/23
Brief Tobacco Intervention Training for Primary Care Providers	8/2/23	8/15/23
National Aedes-Borne Viral Disease Prevention and Control Program Manual of Procedures Training	4/1/24	4/5/24
NTP Manual of Procedures Key Updates & Action Planning	5/27/24	5/31/24
NTP Manual of Procedures Key Updates & Action Planning (Resource Speaker)	6/17/24	6/21/24
Integrated Course on Primary Care	3/22/24	3/25/24
30th PhiCat Annual Convention: Ending TB in the Philippines, Challenges & Commitment	8/15/24	8/16/24
NTP Manual of Procedures Key Updates & Action Planning (Resource Speaker)	8/5/24	8/9/24

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Final Endorsement

This is to certify that the research study entitled:

"PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES"

prepared and submitted by **MARY ROSE S. LUCES**, in partial fulfillment of the requirements for the degree of **Master of Arts in Nursing Major in Nursing Administration**, has been thoroughly reviewed, evaluated, and finalized under my direct supervision.

I hereby endorse this manuscript for its final acceptance and consideration by the Graduate School of Nursing, University of Perpetual Help System–DALTA, Las Piñas City.

I attest that the study adhered to ethical research standards, employed appropriate scientific methodology, and contributes valuable insights to nursing practice, administration, and tuberculosis control programs.

Accordingly, I strongly recommend its approval and acceptance as fulfillment of the degree requirements.

CYRUZ P. TUPPAL, PhDNS, PhD, MSN, MASPED, MHA, MBA, PGD, RN, RM, LPT
Thesis Adviser

Certificate Of Statistician

Certificate of Statistical Analysis

This is to certify that **Dr. Cyruz P. Tuppal** has performed the statistical analysis for the research study entitled *PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES*

The statistical methods applied ensured accuracy, validity, and reliability of the findings.

Signed:

CYRUZ POLERO TUPPAL, Editor | Author

JD, PhD, DNS, DMS, MSN, MASPED, MBA, MHA, PGD, BSN-RN, BSM-RM, LPT, CMC, CGNC, CSLP

University Research Fellow, Universitas Diponegoro, Central Java, Indonesia

Fellow, LEAD4R, National College of Public Administration and Governance, University of the Philippines

Certified Management Consultant

Certified Global Nurse Consultant, CGFNS-International Council of Nurses

Student, Master of Laws, Polytechnic

University of the Philippines

Candidate, Doctor of Public Administration, National College of Public Administration and Governance, University of the Philippines

Certificate Of Grammarly

Certificate of Grammar and Language Review

This is to certify that the manuscript entitled *PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES* has undergone thorough grammar, syntax, and clarity checks using **Grammarly Premium**.

Signed:

CYRUZ POLERO TUPPAL, Editor | Author | Central Books

JD, PhD, DNS, DMS, MSN, MASPED, MBA, MHA, PGD, BSN-RN, BSM-RM, LPT, CMC, CGNC, CSLP

University Research Fellow, Universitas Diponegoro, Central Java, Indonesia

Fellow, LEAD4R, National College of Public Administration and Governance, University of the Philippines

Certified Management Consultant

Certified Global Nurse Consultant, CGFNS-International Council of Nurses

Student, Master of Laws, Polytechnic

University of the Philippines

Candidate, Doctor of Public Administration, National College of Public Administration and Governance, University of the Philippines

Certificate Of Turnitin

Certificate of Similarity Check

This certifies that the manuscript PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES

was checked using **Turnitin** with a similarity index of **[___]**, excluding references and standard phrases.

Signed:

(Research Office / Plagiarism Officer)

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Certificate Of Validation

Certificate of Instrument Validation

This is to certify that the research instrument titled PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES was validated by experts in the field and deemed appropriate to measure the intended variables.

Signed:

Dr. RIZMOND R. LANIOG, MD, MMPHA

Medical Officer IV

TB Program Medical Alternate Coordinator

Muntinlupa City

GRADUATE SCHOOL

CERTIFICATE OF VALIDATION

Certificate of Instrument Validation

This is to certify that the research instrument titled PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES was validated by experts in the field and deemed appropriate to measure the intended variables.

Signed:

LILIOSA B. PALCE, EdD
Education Program Supervisor
Muntinlupa School Division

Certificate Of Reliability

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI | Volume XII Issue XV September 2025 | Special Issue on Public Health

This certifies that the research instrument PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES was subjected to reliability testing, yielding a Cronbach's Alpha of **0.70 - .99**, indicating high internal consistency.

Signed:

CYRUZ POLERO TUPPAL, Editor | Author

JD, PhD, DNS, DMS, MSN, MASPED, MBA, MHA, PGD, BSN-RN, BSM-RM, LPT, CMC, CGNC, CSLP

University Research Fellow, Universitas Diponegoro, Central Java, Indonesia

Fellow, LEAD4R, National College of Public Administration and Governance, University of the Philippines

Certified Management Consultant

Certified Global Nurse Consultant, CGFNS-International Council of Nurses

Student, Master of Laws, Polytechnic

University of the Philippines

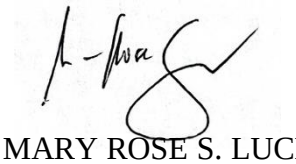
Candidate, Doctor of Public Administration, National College of Public Administration and Governance, University of the Philippines

Certificate Of Originality

Certificate of Original Work

This certifies that the manuscript PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES is the original work of the undersigned researchers, free from unauthorized copying and compliant with institutional guidelines.

Signed:



MARY ROSE S. LUCES

Graduate Student

Certificate of Artificial Intelligence (10%)

Certificate of AI Usage Declaration

This certifies that artificial intelligence tools were used minimally in the development of the manuscript PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES, with an overall contribution not exceeding **10%**, limited to grammar checking, formatting, and citations. The Quilbot Premium was used.

Signed:

CYRUZ POLERO TUPPAL, Editor | Author

JD, PhD, DNS, DMS, MSN, MASPED, MBA, MHA, PGD, BSN-RN, BSM-RM, LPT, CMC, CGNC, CSLP

University Research Fellow, Universitas Diponegoro, Central Java, Indonesia

Fellow, LEAD4R, National College of Public Administration and Governance, University of the Philippines

Certified Management Consultant

Certified Global Nurse Consultant, CGFNS-International Council of Nurses

Student, Master of Laws, Polytechnic

University of the Philippines

Candidate, Doctor of Public Administration, National College of Public Administration and Governance, University of the Philippines

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This is to certify that the undersigned author(s) of the thesis entitled: "PERCEPTIONS, PREDICTORS, AND PATHWAYS: A MIXED METHODS STUDY ON TPT ADHERENCE AMONG HOUSEHOLD CONTACTS OF TB CASES" submitted in partial fulfillment of the requirements for the degree of **Master of Arts in Nursing Major in Nursing Administration**, at *University of Perpetual Help System Dalta – Las Pinas* hereby undertake and commit that this thesis shall be subjected for publication in reputable and accredited academic journals, books, or conference proceedings, as deemed appropriate by the adviser, panel, or institution.

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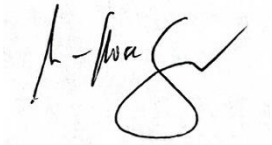

MARY ROSE S. LUCES, RN

Graduate Student/Researcher

Cyruz Polero Tuppal, Editor | Author

JD, PhD, DNS, DMS, MSN, MASPED, MBA, MHA, PGD, BSN-RN, BSM-RM,

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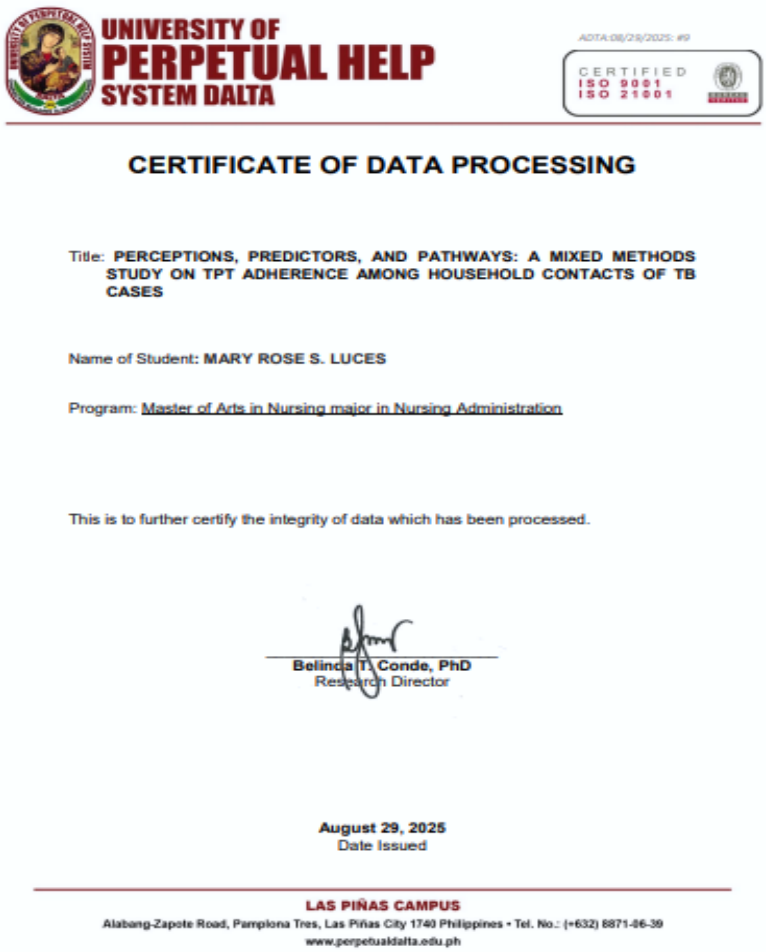

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Program: Master of Arts in Nursing major in Nursing Administration

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Belinda T. Conde, PhD
Research Director

August 29, 2025
Date Issued

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Alabang-Zapote Road, Pamplona Tres, Las Piñas City 1740 Philippines • Tel. No.: (+632) 8871-06-39
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Name of Student: **MARY ROSE S. LUCES**

Program: Master of Arts in Nursing major in Nursing Administration

Cristina D. Abaya
Research Assistant

August 29, 2025
Date Issued

LAS PIÑAS CAMPUS
Alabang-Zapote Road, Pamplona Tres, Las Piñas City 1740 Philippines • Tel. No.: (+632) 8871-06-39
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