The Mediation of Social Support in PTB Care Towards PTB Prevention Program

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ABSTRACT

Purpose: This study aimed to determine the factors to self-care management among pulmonary tuberculosis patients in terms of perceived threat, cognitive factor, and health care delivery system as mediated by social support. **Methods:** Stratified, random, and purposive sampling techniques were employed to survey 282 respondents who were newly diagnosed of PTB, The respondents were represented from different areas of the Philippines such as Luzon, Visayas, and Mindanao. A descriptive–correlational research design was utilized in this study. Descriptive and inferential statistics were also used to analyze and interpret the results. **Findings:** The results of the study showed that respondents have *high perceived* threat on PTB and an *average* cognitive factor. The health care delivery system services in terms of medical utilities and diagnostics, referral system, and health education strategies were *good*. Respondents have *high social support* from family and friends. The self-care management of the respondent was *good*. The predictors of self-care management were the respondents' cognitive factor, health education strategies, and social support. There was no significant difference found in the self-care management of the respondents in terms of their age, educational attainment, and economic status. However, a significant difference exists in the self-care management of the respondents considering their gender. The SEM indicated that social support fully mediated the medical utilities and diagnostics to self-care management. **Value:** Based on the findings, *a healthy self-heal thy self PTB* Preventive Program was developed to strengthen self-care management and promote adherence to treatment of the PTB patients. It is recommended that such program be tested for its effectivity in reducing the incidence of PTB.

Keywords: *self-care management, pulmonary tuberculosis, perceived, social support*

INTRODUCTION

Self-care management plays an important role in maintaining the health condition of pulmonary tuberculosis patients (Togatorop & Siregar, 2024). PTB as oftentimes is neglected or not given much importance (Kumar, 2015). The low self-care performance often leads to unplanned hospital visits, low performance of an activity in daily living, and non-adherence to medication. It also causes severe consequences and more difficult health problems (Glanz et al., 2015). The importance of this study is that the researcher may elaborate barriers to the severity of PTB problem and desire that this study may give insight to the PTB care and prevention program.

LITERATURE REVIEW

PTB is a deadly global health emergency (Chaisson et al., 2022). In 2016 an estimation of 10.4 million new cases (Querri et al., 2017). Report shows 6.3% came from among were HIV infected (WHO, 2023). Philippines is one with the highest tuberculosis burdened (Brigaste, 2018). Approximately there were 1 million Filipinos recorded with active tuberculosis and 70 cases dying everyday (Flores, et al, 2022). The cognitive factor helps people understood the risk of the disease, its seriousness and severity which often resulted from unhealthy behavior (Hales, 2018). Zhiping (2016) associates PTB with inadequate knowledge that leads to health-seeking delay, treatment default and discrimination. The health care delivery system is facing challenges such as inadequate funds, inadequate human resources, and discriminations (Endo et al, 2022). Patient- and Health-System-Related Barriers to Treatment Adherence for Patients with Drug-Resistant Tuberculosis in the Philippines: A Mixed-Methods Study Yutaka Endo ,1 Jahn Jaramillo , 2 and Rajendra Prasad Hubraj Yadav 31 Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA 2 Department of Public Health Sciences, University of Miami, Miami, Florida, USA 3 World Health Organization, Philippines Country Office, Santa Cruz, Manila, Philippines Correspondence should be addressed to Yutaka Endo; yuta.0908@gmail.co Patient- and Health-System-Related Barriers to Treatment Adherence for Patients with Drug-Resistant Tuberculosis in the Philippines: A Mixed-Methods Study Yutaka Endo , 1 Jahn Jaramillo , 2 and Rajendra Prasad Hubraj Yadav 3 1 Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA 2 Department of Public Health Sciences, University of Miami, Miami, Florida, USA 3 World Health Organization, Philippines Country Office, Santa Cruz, Manila, Philippines Correspondence should be addressed to Yutaka Endo; yuta.0908@gmail.co Patient- and Health-System-Related Barriers to Treatment Adherence for Patients with Drug-Resistant Tuberculosis in the Philippines: A Mixed-Methods Study Yutaka Endo, 1 Jahn Jaramillo , 2 and Rajendra Prasad Hubraj Yadav 3 1 Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA 2 Department of Public Health Sciences, University of Miami, Miami, Florida, USA 3 World Health Organization, Philippines Country Office, Santa Cruz, Manila, Philippines Correspondence should be addressed to Yutaka Endo; yuta.0908@gmail.co

WHO in general requires accessibility to the quality care without any reservations (Delost, 2015). A delay in the referral system prevents early detection, treatment, and continuity of care (Glanz et al., 2015). The importance of health education in promoting adherence to treatment and change in the lifestyle was emphasized (Miller & Stockel, 2019; Tola et al., 2016). Support and coach from famiy and friends also plays important role in the recovery of PTB patients (Nadon, Dmello & Shetty, 2023). When there is no one to boost morale, the progression of complications is quick, leading to depression and ending to premature death (Glanz, Rimer &Vizwanath, 2015). In the Philippines, the DOH ensures the services are available at the public health facilities in the health centers, RHU, TB treatment centers, satellite treatment, and treatment hubs and TB- DOTS (Flores, et al, 2022). Thus, the researcher is interested to know the different predictors of self-care management among PTB patients as a basis towards PTB Prevention Program.

METHODS

Stratified, random and purposive sampling technique were employed to survey 282 participants newly diagnosed PTB patients, 40 years and above (33.50%), majority were male (61.7%), elementary graduates (53%), from low to middle income (85.40%), representing Luzon (34.04%), Visayas (33.33%), and Mindanao (32.62%). A descriptive – correlation design was utilized to analyze and interpret the results. This research utilized multi-stage sampling techniques. First, stratified sampling was done by creating a stratum that will represent the whole geographical location assuring the region was well represented. The proportionate sampling stratification was employed wherein the size of each stratum is proportionate to the population size of the stratum. Each stratum has the same sample size of 100 respondents. Second, to set the direction in choosing the setting for the study, the researcher together with the research adviser, conducted a random sampling approach. Third, purposive sampling was done, where the researcher set some inclusion and exclusion criteria to serve as a guide in choosing the respondents. During the actual data gathering, those who were available and passed the set inclusion criteria were utilized as respondents of the study.

RESULTS AND DISCUSSION

The following presents the results, data analyses, interpretations, and discussions of the outcome and implications of the study.

Extent of Perceived Threat

Table 1 reflects the result of perceived threat. The result showed a mean of 2.61 with a verbal interpretation of *high*.

Table 1
Extent of Perceived Threat

	N	Mean	SD	Scaled Response
I believe that…..				
5. *having PTB will disturb my family relations.	282	2.33	1.02	Disagree
6. *having PTB will seriously prevent me from working efficiently.	282	2.43	1.02	Disagree
Perceived Threat	**282**	**2.61**	.403	**Agree (High)**

*Legend for Perceived Threat: 1- 1.50 (Very Low); 1.6 – 2.5 (Low); 2.6 – 3.5 (High); 3.6 – 4 (Very high); Has original twelve (12) items. Note: * negative statement, recoded.*

Tuberculosis is an increasing contagious infection and a global emergency causing more death than other infectious diseases (Kee et al., 2015). The findings imply that the respondents have a high perceived threat on PTB and that they were at risk to the seriousness and severity of the disease which may cause their lives.

Extent of Cognitive Factor

Table 2 reflects the result of the descriptive data cognitive factor. The result showed an overall mean of 16.53 with a verbal interpretation of *average*. The total mean of the cognitive was computed by adding the entire 29 items with its corresponding mean.

Among all the items, the highest mean was the signs and symptoms of PTB which was coughing. Coughing is the most common manifestation of PTB and other symptoms include chest pain, and coughing out of fresh bold (Xi, Li, & Jinyu, 2017). The lack of knowledge was commonly associated with poor health outcomes (Giddens, 2017). This implies that respondents cognitive factor is average about midway or middle and needs to be develop more for better self-care management.

Table 2
Extent of Cognitive Factor

	N	Mean	SD	VI
9. The following are sign and symptoms of PTB: a. cough of more than two weeks	282	.97	.16	
Cognitive Factor	282	16.53	2.59	Average

*Legend for Cognitive factor: 25 - 29 (Very Good); 19 - 24 (Good); 13 - 18 (Average); 7 – 12 (Poor); 0 - 6 (Very Poor). With twelve original items. Items with * have false as the correct answer.*

Extent of Health Care Delivery System in terms of Medical Utilities and Diagnostics
Table 3 reflects the results of medical utilities and diagnostics. Results showed a mean of 3.44 with a verbal interpretation of *good.*

Table 3
Extent of Medical Utilities and Diagnostics

Medical utilities and diagnostics *The health center I visit……*	N	Mean	SD	Scaled Response (VI)
3. has adequate medical utilities.	282	3.37	.77	Agree
7. *does not have sufficient PTB drugs.	282	1.96	1.08	Disagree
Medical Utilities and Diagnostics	282	3.44	.42	Agree (Good)

*Legend for Medical Utilities and Diagnostics: 1 - 1.50 (Very Poor); 1.6 – 2.5 (Poor); 2.6 – 3.5 (Good); 3.6 – 4 (Very Good). Note: * negative statement, recoded.*

The health center provides on time services that will help in identifying infected people on earlier time (Beale, 2017; McEwen & Wills, 2019). The on-time services were important for preventing the spread of infection (Riegelman, 2015). This implies that provision of good medical utilities and diagnostic services will help in the treatment and recovery of PTB.

Extent of Health Care Delivery in terms of Referral System
Table 4 reflects the result of referral system. The result showed a mean of 3.11 with a verbal interpretation of *good.*

Table 4
Extent of Referral System

	N	Mean	SD	Scaled Response (VI)
10. endorses my condition to other medical practitioner.	282	2.10	.92	Disagree
12. *has no ambulance to bring me to another facility.	282	2.93	.85	Agree
	282	2.13	1.00	Disagree
Referral System	282	3.11	.40	Agree (Good)

*Legend for Referral System: 1- 1.50 (Very Poor); 1.6 – 2.5 (Poor); 2.6 – 3.5 (Good); 3.6 – 4 (Very Good). Note: * negative statement, recoded.*

When treatment is delayed (Glanz et al., 2015), any problem regarding the referral system, and inappropriate care services will lead to unfavorable consequences (Bouraima et al., 2024). This implies the provision of appropriate care needed will prevent complications and promote cure and treatment.

Extent of Health Care Delivery System in terms of Health Education Strategies
Table 5 reflects the result of health education strategies. Results showed a mean of 3.37 with a verbal interpretation of *good.*

Good method of health instruction is important in providing the general knowledge on PTB (Gilbert et al., 2015 & Miller, 2019). This implies that respondents receiving good health education will improve awareness on the general knowledge of PTB management and control.

Table 5
Extent of Health Education

Health education strategies in the health center	N	Mean	SD	Scaled Response (VI)
The health center….				
13. *gives unclear health instruction.	282	2.01	1.02	Disagree
18. *fails to provide an environment that encourages participation.	282	2.40	.97	Disagree
Health Education Strategies	282	3.41	.41	Agree (Good)

*Legend for health Education Strategies: 1-1.50 (Very Poor); 1.6-2.5 (Poor); 2.6-3.5 (Good) 3.6-4 (Very Good). Note: * negative statement, recoded.*

Extent of Personal Factors in terms of Social Support
Table 6 reflects the results of social support. The result showed a mean of 3.36 with a verbal interpretation of *high.*

Table 6
Extent of Social Support

	N	Mean	SD	Scaled Response (VI)
During the past three months, my family …				
My friends….				
6. *have no time to accompany me for my regular checkups.	282	2.24	.98	Rarely
7. help in monitoring my tuberculosis drug intake regularly.	282	3.31	.87	Often
Social Support	282	3.36	.414	Often (High)

Legend for Social Support: 1- 1.50 (Very Low); 1.6 – 2.5 (Low); 2.6 – 3.5 (High); 3.6 – 4 (Very High).
*Note: Items with * negatively stated, recoded.*

Family support plays an important role in times of sickness; giving pieces of advice and providing emotional support and tangible aid (Eldredge et al., 2016). The result implies that high social support is important in assisting, encouraging, and motivating treatment and recovery.

Extent of Self-Care Management in terms of Lifestyle

Table 7 reflects the result of lifestyle. The result showed a mean of 3.15 with a verbal interpretation of *good.*

Table 7
Extent of Self – Care Management Terms of Lifestyle

	N	Mean	SD	Scaled Response (VI)
3. I eat processed foods.*	282	2.44	.95	Rarely
5. I take 10-15 minutes nap everyday.	282	2.78	1.00	Often
10. I avoid alcoholic drinks.	282	3.34	1.04	Often
11. *do take heavy work everyday.	282	2.05	.95	Rarely
Lifestyle	282	3.15	.41	Often (Good)

Legend for Lifestyle: 1- 1.50 (Very Poor); 1.6 – 2.5 (Poor); 2.6 – 3.5 (Good); 3.6 – 4 (Very Good).
*Note: * negative statement, recoded.*

Part of the respondents' self-care management includes learning health-related behaviors and adapting these behaviors in everyday living (Green et al., 2015; Jones, Standing, & Roberts, 2015). Hippocrates stated "let your food be your medicine", meaning people can be healed by eating the right kind of food (Aguila, 2018). The adequate ventilation lowers the spread of infection (Beale, 2017). It is necessary to inhale the fresh air Hoeger et al. (2018) and proper ventilation (Chavez, 2010). The water intake is vital to life for it improves the body resistance by hydrating the body cells (Gandy, 2015). Avoiding smoking which causes respiratory diseases will threaten the quality life (Riegelman, 2015). The importance of taking a rest to regain strength and increase body resistance is the counsel, advice, and motivation for the recovery (Samal, 2016). This implies that healthy lifestyle will improve the cellular level which is important in healing and recovery from tuberculosis.

Extent of Self-Care Management in terms of Adherence to Treatment

Table 8 reflects the result of adherence to treatment. The result showed a mean of 3.38 with a verbal interpretation of *good.*

Table 8
Extent of Self-Care Management in Terms of Adherence to Treatment

	N	Mean	SD	Scaled Response (VI)
13. I submit myself for chest x-ray regularly as advised.	282	2.84	1.03	Often
14. I don't like to go for checkup because I have to wait too long at the center.*	282	1.72	.99	Rarely
16. I skip taking medications.*	282	1.67	1.07	Rarely
Adherence to Treatment	282	3.38	.47	Often (Good)

Legend for Adherence to Treatment: 1 - 1.50 (Very Poor); 1.6 – 2.5 (Poor); 2.6 – 3.5 (Good); 3.6 – 4
*(Very Good). Note: * negative statement, recoded.*

Following the treatment instruction is a very important key in the recovery from the PTB infection (Colbert & Gonzales, 2016). If the respondents will not follow the treatment as instructed, it may result in the treatment failure, a prolonged transmission of disease and emergence of drug resistance (Tola et al., 2016). The result implies with good adherence to treatment will prevent development of drug resistance tuberculosis and will prevent the spread of infection.

Predictors between Variables and Self-Care Management

Table 9 shows the predictors between variables and the self-care management.

Table 9
Predictors of Self – Care Management

Independent variables	Unstandardized Beta Coefficients	Std. Error	t	Sig.	VI
(Constant)	2.685	.295	9.105	.000	
Cognitive factor	-.021	.007	-2.916	.004	Significant
Health education strategies	.263	.075	3.525	.001	Significant

a. Dependent Variable: Self Care Management, R2 = .144, F = 4.725, Sig = .000

Table 9 shows for every unit increase of -.021 in the cognitive factor lowers the self -care management. Similarly, the higher the cognitive factor, the lower the self-care management. While for every unit increase of .263 units, health education strategy increases the self-care management which implies the better the health education strategies, the better the self-care management of PTB. Knowledge may come through associations of the important information an individual has heard from others (Namdev & Dhamdhere, 2015). The spread of pleasant words encourages a person and it is a source of growth and usefulness, and changes the behavior, practices, and transformation (Eldrege et al., 2016). This implies that respondents learn and take advices they have heard from their peers.

Predictors Between the Variables and Lifestyle

Table 10 shows the predictors between the independent variables and the lifestyle. There are several reasons that health education strategies are significant to lifestyle change. The result of this study is consistent with the statement of Miller et al. (2019) stating that health education promotes changes in the lifestyle, motivates to live healthy; and help to recover from illness. Green et al. (2015) stated the key factor to improve lifestyle in through the health education. This implies that health education guides to a healthy lifestyle which is necessary to cure and treat PTB.

Table 10
Predictors Between the Variables and Lifestyle

Independent variables	Unstandardized Beta Coefficients	Std. Error	t	Sig.	VI

(Constant)	2.760	.346	7.972	.000	
Health education strategies	.196	.088	2.235	.026	Significant

a. Dependent Variable: Lifestyle, R2 = .077, F= 2.350, Sig = .015

Predictors between the Variables and Adherence to Treatment

Table 11 shows the predictors to the adherence to treatment. The higher the cognitive factor or knowledge of the respondents, the lower the respondents' adherence to treatment; the better the health education, the better is the adherence to treatment; the higher the economic status, the lower the adherence to treatment. Respondents have the knowledge in the power of antibiotics to wipe out the infection is the key to treat PTB (Colbert & Gonzales, 2016). Their adherence to the treatment will lead to a successful recovery (Liu et al, 2017). However, respondents with low adherence to the treatment may be associated to the unfavorable side effects of the tuberculosis drugs and financial concern. The health education strategies will motivate to promote good health decisions to follow treatment (Miller, 2018). People who are favored with economic conditions may lower adherence to treatment due to other treatment options, the side effects of drugs, and longtime treatment (Colbert & Gonzales, 2016). Findings imply the need to maintain and strengthen the predictors to the adherence to treatment.

Table 11
Predictors Between the Variables and Adherence to Treatment

Independent variables	Unstandardized Beta Coefficients	Error Std.	t	Sig.	VI
(Constant)	2.537	.362	7.004	.000	
Cognitive factor	-.038	.009	-4.295	.000	Significant
Health education strategies	.397	.092	4.340	.000	Significant
Economic Status	-.159	.077	-2.075	.039	Significant

a. Dependent Variable: Adherence to Treatment, R2 = .210, F=,7.464, Sig = .000

Predictors between the Independent Variables and Social Support

Table 12 shows the predictors between independent variables and social support. Result showed that the better the medical utilities and diagnostics, the better is the social support. It is important that the medical diagnostics and utilities provide the early detection and treatment will lower the spread of infection (McEwen & Wills, 2019). Health care services establish goal for healthcare improvement to include the social support that will encourage adherence to treatment (Samal, 2016). This implies that the medical utilities and diagnostics will be more successful with the social support giving encouragement, motivation and care.

Table 12

Predictors Between Independent Variables and Social Support

Independent variables	Unstandardized Beta Coefficients	Error Std.	t	Sig.	VI
(Constant)	1.451	.270	5.369	.00	
Medical utilities and diagnostics	.334	.067	5.009	.00 0	Significant

Dependent Variable: Social Support, R2 = .235, F = 16.995, Sig = .000

Predictor of Social Support and Self-Care Management

Table 13 shows the regression analysis between the personal factors and self-care management. The social support is an effective intervention to patients and has a great significance for the management and control of PTB (Xuhui et al., 2018). This implies that the better the social – support the better the self-care management in terms of lifestyle and adherence to treatment.

Table 13
Social Support Predictor of Self-Care Management

Independent variables	Unstandardized Beta Coefficients	Error Std.	t	Sig.	VI
Social Support	.186	.051	3.650	.000	Significant

Dependent Variable: Self – Care Management, R2 =.156, F= 25.765, Sig = .000

Differences in Self-Care Management according to Demographic Profile

This section addresses the ninth research question investigating the significant difference in the respondents' self-care management according to demographic profile of the respondents. The study revealed that age, educational attainment and the economic status were not significant while sex shows significant to the self-care management in terms of adherence to treatment.

Gender. Table 14 shows the comparison of self-care management in terms of sex. The findings revealed that gender is significant with the adherence to treatment. Females and males have differences in behavior and practices which directly affect their health. They make their own choices towards health or illness. Their choices may be good or bad for their health (Glanz et al., 2015). Adhering to the treatment is the key for their recovery (Mendez, 2016). The result implies male and female respondents give importance to the adherence to treatment as the way to cure and treat their PTB infection.

Table 14
Comparison of Self-Care Management According to Gender

Dependent Variable	Male 171		Female 106		t-value	Sig	VI
	Mean	SD	Mean	SD			
Self – Care Management	2.8304	.32046	2.8097	.27388	.551	.582	NS

Lifetyle	2.9688	.37235	2.9953	.33151	-.599	.549	NS
Adherence to Treatment	2.5536	.46885	2.4387	.37889	2.237	.026	S

CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

This study shows there is a high level of perceived threat among the adult Filipino tuberculosis respondents, average knowledge regarding PTB, good experiences in the health care delivery system, high social support and considered good to their self-care management. Medical utilities and health education strategies were predictors of self-care management. The development of PTB prevention program will serve as a standard in preventing further consequences and the spread of the infection. "*The healthy self…heal thyself*" will be the proposed PTB prevention program.

It is recommended that the PTB patients to submit themselves to the health center when symptoms of coughing are more than two weeks for early detection and early treatment. For the social support coming from family and friends, they need to continue to provide emotional, informational, instrumental, and financial, companionship support. For the Health Care Organizations, they continue to give good, comprehensive services, which is a very important element in the recovery. The need to strenghten the health care delivery system to provide early diagnosis, and early trearment with no barriers of cost, language, culture, and geographic location. Provision of health education strategies regarding the general knowledge of PTB to prevent the spread of infection is of great importance as well as promoting the healthy lifestyle practices among the youth, and the population susceptible to tuberculosis. Further, there is a need of stronger health promotion of self-care management, to strenghten social support to prevent development of the new strain in tuberculosis.

This study also recommends to the Public Health Researchers, do more research examining the prevention of new strains of PTB the extensively resistant tuberculosis (XDR – TB) and totally drug resistant tuberculosis (TDR – TB).

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