

# The effect of the peer support intervention on internalized stigma among Thai patients with tuberculosis: A repeated measures design

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## Abstract

**Background:** Internalized stigma among patients with tuberculosis (TB) significantly affects delayed diagnosis, increased disease transmission, and poor treatment outcomes. However, conclusive empirical evidence on psychosocial interventions to reduce internalized stigma among patients with TB in Thailand remains scarce.

**Objective:** This study aimed to examine the impact of a peer support intervention on reducing internalized stigma among patients with TB in Thailand.

**Methods:** A one-group within-subjects repeated-measure design was conducted in the Muang Maha Sarakham district, Thailand, from February 2023 to July 2023. The study included 26 participants who met specified criteria. Measurements were taken at baseline, three months, and six months following TB diagnosis and medication treatment. The peer support intervention comprised TB health education, psycho-educational sessions, self-management support, and home visits. The Internalized Stigma of Tuberculosis Scale Thai Version was used to measure internalized stigma. Statistical analyses included descriptive statistics and repeated measures ANOVA.

**Results:** Mean scores of total internalized stigma and its sub-dimensions (alienation, stereotype endorsement, discrimination experience, social withdrawal, and stigma resistance) differed significantly across the three-time points ( $p < 0.001$ ,  $p < 0.001$ ,  $p < 0.001$ ,  $p < 0.001$ ,  $p < 0.001$ ,  $p = 0.002$ , respectively). Furthermore, stigma resistance scores significantly increased from pre-intervention to three months ( $p = 0.005$ ) and from pre-intervention to six months ( $p = 0.007$ ). However, no significant increase was observed from three to six months ( $p = 0.079$ ).

**Conclusions:** The study underlines the positive impact of peer support intervention in reducing internalized stigma among patients with TB in Thailand over time. The findings suggest that interventions focusing on peer support can potentially address internalized stigma, highlighting the importance of integrating these strategies into healthcare practices to enhance patient care and improve TB management outcomes.

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## Keywords

Thailand; tuberculosis; internalized stigma; psychosocial intervention; peer support group; analysis of variance; self-management; patient care; health education

## Background

Tuberculosis (TB) has been a significant global health issue and the primary cause of mortality attributed to a single infectious agent. According to a global tuberculosis report by the World Health Organization (2022), approximately 10.6 million individuals worldwide were afflicted with TB, resulting in 1.3 million deaths. In Thailand, TB was reported at approximately 111,000 cases, with an estimated mortality rate of 14,100 individuals. Additionally, the treatment success rate in Thailand ranged from 81.5% to 86.3% between 2014 and 2021, indicating that the national treatment outcomes have not met the targeted success rate of 90% (Division of

Tuberculosis, Department of Disease Control, Ministry of Public Health, 2023).

Currently, patients with TB face challenges beyond the physical aspects of treatment (Yang et al., 2017). Psychosocial effects, such as internalized stigma, also require consideration (Chen et al., 2021; Megerso et al., 2020; Pradhan et al., 2022; Teo et al., 2020). Addressing internalized stigma in TB management is crucial, as it can lead to the acceptance of negative stereotypes by patients, resulting in decreased self-efficacy and self-esteem (Corrigan & Rao, 2012; Corrigan & Watson, 2002). This internalized stigma, which can manifest as shame, guilt, and inadequacy (Goffman, 2009), may contribute to delayed diagnosis,

increased disease transmission, deferred healthcare seeking, suboptimal treatment adherence, and adverse outcomes among individuals affected by TB (Chen et al., 2021; Courtwright & Turner, 2010; Craig et al., 2017).

Considering the impacts of internalized stigma, it is crucial to address psychosocial intervention through peer support strategies, which rely on positive emotional and social support, sharing information and perspectives from living through a particular experience, learning from role models, or practical help to each other (Mead et al., 2001). This approach leads to effective self-management and the implementation of necessary actions (Kolb, 1984). Peer support intervention is approved as an effective method and has a positive impact on reducing internalized stigma and improving health outcomes such as health recovery, empowerment, self-efficacy, and readiness to access professional assistance among patients with TB, as shown by empirical studies (Burke et al., 2019; Foster et al., 2022; Sun et al., 2022).

By addressing TB-related internalized stigma through patient-centered care and tailored interventions, nurses can significantly contribute to mitigating the psychosocial impact of TB on patients, facilitating their access to treatment and care (Dilas et al., 2023). Focusing on peer support intervention in nursing roles that target enhancing support for the patient's families and community members, as well as improving patients' knowledge and skills in self-management about TB, is essential in reducing internalized stigma in patients with TB (Baluku et al., 2023; Nuttall et al., 2022), ultimately improving treatment outcomes and reducing the burden of TB stigma in communities.

Implementing nursing care interventions is crucial to addressing internalized stigma in Thai patients with TB. Based on evidence-based global analysis, a research gap related to peer support intervention for Thai patients with TB in addressing internalized stigma was identified. Empirical studies in this area are relatively limited, primarily focusing on social stigma in the context of drug addiction (Sareelae et al., 2018; Srithanom et al., 2021). However, there is a notable gap in knowledge regarding the effectiveness of strategies aimed at reducing internalized stigma among Thai patients with TB, particularly in the context of peer support intervention. Therefore, our study aimed to examine the effect of peer support intervention on internalized stigma in patients with TB living within the community during the TB treatment regimen. It was hypothesized that after completing the peer support intervention, participants would experience reduced internalized stigma compared to before participating in the program.

## Methods

### Study Design

This study employed a one-group, within-subjects, repeated-measures design to examine the effect of peer support intervention on internalized stigma in patients with TB.

### Samples/Participants

The participants consisted of 26 Thai patients with TB who were selected using consecutive sampling from the Tuberculosis Clinic of Maha Sarakham Hospital in Thailand. The inclusion criteria were: 1) aged 18 years and older, 2)

diagnosed with pulmonary TB, 3) undergoing a TB medication regimen for a minimum of two weeks, 4) in stable health condition, and 5) providing signed informed consent. Exclusion criteria included: 1) presence of symptoms and signs indicative of active TB recurrence, 2) experiencing grade 3 or 4 adverse reactions, 3) diagnosed with psychiatric disorders, 4) lack of availability of a family member, and 5) hospital admission during the program implementation. According to the quasi-experimental design rule of thumb, as advocated by Hair et al. (2010), a minimum sample size of 20 participants is necessary to ensure statistical power. In this study, 26 participants met the specified criteria, and measurements were taken at the initial assessment as well as at three-month and six-month intervals following the diagnosis of TB and medication treatment.

### Instruments

The instruments used in this study were the Demographic Form and Internalized Stigma of Tuberculosis Scale Thai Version (IS-T-Thai). The Demographic Form included personal information of patients with TB, their medical history, specifics regarding their TB disease and treatment, and details concerning their family members.

The Internalized Stigma of Tuberculosis Scale Thai Version (IS-T-Thai) was utilized to measure internalized stigma in this study. The IS-T-Thai was derived from the Internalized Stigma of Mental Illness Scale Thai version (ISMI-Thai), which underwent translation using the back-translation method by Wong-Anuchit et al. (2016). Permission was obtained to use and adapt the ISMI-Thai. The scale was modified to improve clarity and relevance to patients with TB, substituting "individual with mental illness" with "patients with TB" where required. Additionally, sentence structure and vocabulary were adjusted to align with the specific context of TB and the experiences of patients. The IS-T-Thai consists of 29 items and utilizes a 5-point scale for rating, with scores ranging from 29 to 145. The psychometric properties of the IS-T-Thai were evaluated by a panel of seven experts, who assessed the scale's content validity. The content validity index was found to be 0.90, indicating a high level of agreement among the experts. With minor modification, this study tested the IS-T-Thai among 30 patients with TB in a community setting, yielding a Cronbach's alpha coefficient of 0.81, indicating good internal consistency.

### Interventions

The study, conducted over six months, involved interventions administered twice monthly for the initial two months and then once a month for the subsequent four months. Peer support groups were categorized into three groups: family members, health worker volunteers, and nurses in primary care settings acting as case managers to support patients with TB. Before providing support, these peer groups underwent training in four sessions lasting six hours each, covering TB health education, psychoeducational programs, the 5A's self-management support (Assess, Advise, Agree, Assist, Arrange) (Glasgow et al., 2006), and home visits. The peer support groups participated in psychoeducational workshops to gain foundational knowledge about tuberculosis and were encouraged to express their emotional difficulties. Additionally, individuals who had recovered from tuberculosis and their

family members were invited to offer peer support, sharing their insights on problem-solving and enhancing self-care practices with patients and their families.

Following the completion of the training sessions, the peer support intervention was carried out by the three peer supporter groups for patients with TB residing in their communities. The main activities included TB health

education, covering basic knowledge about TB, psychological coping skills, self-management skills for managing treatment side effects, adopting a healthy lifestyle, self-monitoring, and evaluation practice skills. These activities were conducted through home visits, along with an action plan created by the peer group for each individual. Each visit lasted approximately 30 minutes per patient (Figure 1).

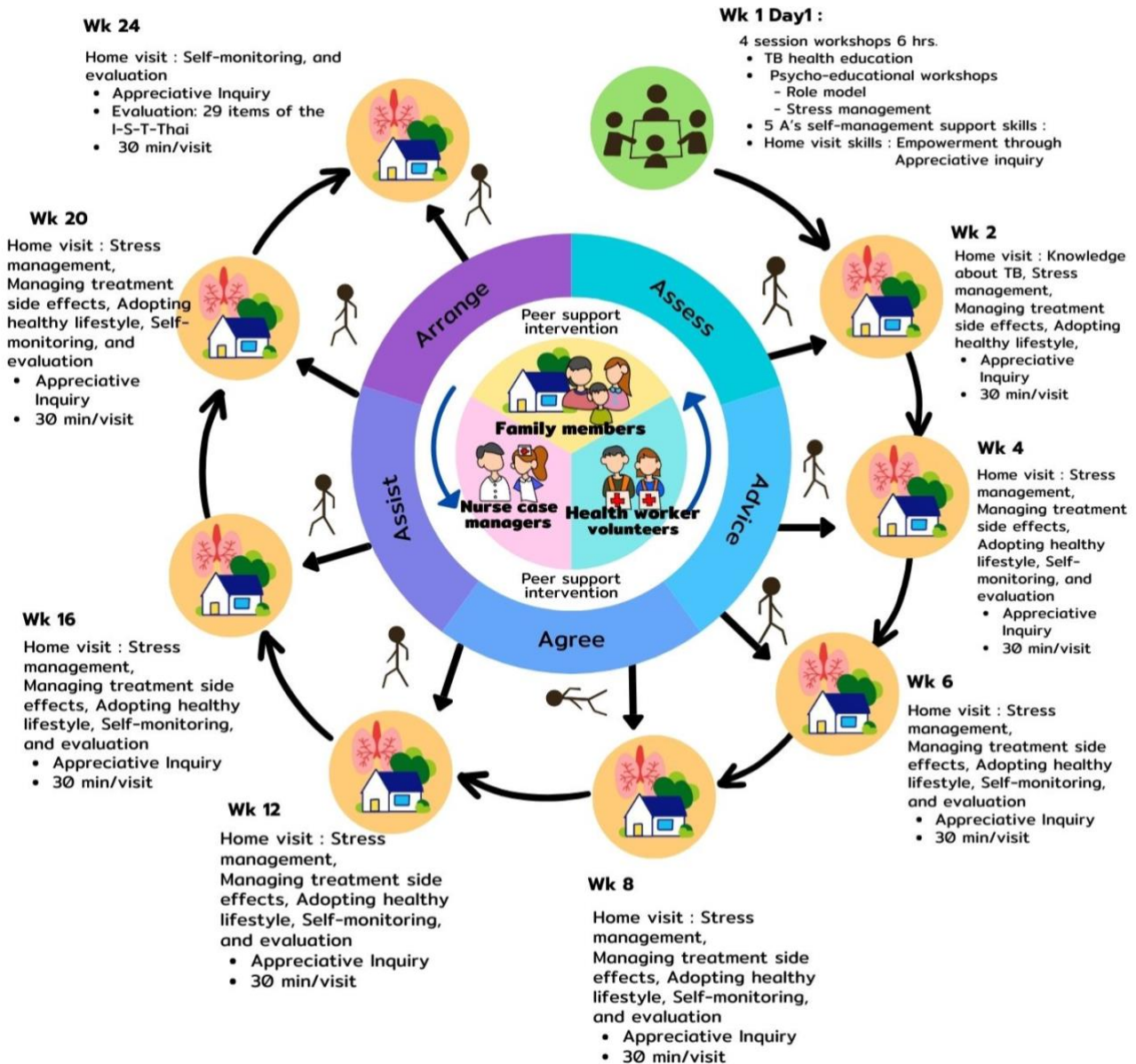


Figure 1 Peer support intervention (developed by the authors)

### Data Collection

The study was conducted from February to July 2023. After receiving approval from the ethics committee, the researchers met with all eligible patients who consented to participate in the study. Informed consent documents were distributed and signed by the participants. Before receiving the peer support intervention, participants completed the IS-T-Thai as part of the pretest assessment. At three months and six months after the start of medication treatment, participants were requested to complete the IS-T-Thai questionnaire again to evaluate their internalized stigma.

### Data Analysis

Data were analyzed using SPSS Statistics for Windows, Version 24.0. Internalized stigma was measured at three different stages within the six-month peer support intervention: 1) pre-intervention, 2) midway through the intervention at three months, and 3) immediately post-intervention at six months. The mean scores of internalized stigma among the three groups were analyzed using repeated measures ANOVA on the same subjects.

Before the statistical test, the researchers confirmed that the following assumptions were satisfied: 1) Independence: Each of the three observations was conducted independently; 2) Normality: The normality of the internalized

stigma variable was assessed using a histogram, Q-Q plot, and a Shapiro-Wilk Test, all of which confirmed adherence to normal distribution; 3) Sphericity: The equality of variances among the differences across all combinations of related groups was confirmed.

Descriptive statistics for the participants were provided as numerical values and percentage distributions. To investigate the relationships between dependent and independent variables, the researchers applied the Bonferroni correction and performed a one-way repeated measures ANOVA. Furthermore, they calculated the effect size using Eta squared ( $\eta^2$ ) values, following the guidelines by Cohen (1988). Specifically,  $\eta^2 = 0.01$  was interpreted as a small effect,  $\eta^2 = 0.06$  as a medium effect, and  $\eta^2 = 0.14$  as a large effect.

### Ethical Consideration

This study is part of the research project entitled "Development of the Peer Support Group Care Model for Persons with Tuberculosis in the Community," which received approval from the Research Ethics Committee of Maha Sarakham Hospital, Thailand (MSKH\_REC 65-02-020). Before participating in the study, participants were given detailed information about the study's aims, methodologies, and entitlements. To ensure

confidentiality and anonymity, each participant was allocated a unique code number and signed a consent form after agreeing to participate.

## Results

Twenty-six participants completed the study. Most participants (76.9%) were over 60, with an average age of 65.3 years (SD = 2.76). All participants (100%) practiced Buddhism, and 84.62% had completed primary education. More than half of the participants were married (61.54%) and employed as laborers (61.54%), while 30.77% of the previously employed participants were not working. About 53.85% of the participants lived with families of more than five members. More than half were cared for by their spouses (61.54%), and all participants were covered by the Universal Coverage Scheme (100%). Regarding health status, most participants were old cases (76.92%) with non-HIV comorbidities (96.15%). More than half had chronic illness comorbidities (61.54%) and average weight (53.85%). Among the participants, 61.54% had quit smoking, 15.38% were current smokers, and 53.85% consumed alcohol (Table 1).

**Table 1** Demographic characteristics of the participants ( $N = 26$ )

Characteristics	<i>n</i>	%
<b>Gender</b>		
Male	20	76.92
Female	6	23.08
<b>Age</b>		
31-40	1	3.85
41-50	4	15.38
51-60	5	19.23
>60	16	61.54
Mean = 65.3, SD = 2.76, Min = 26, Max = 79		
<b>Religion</b>		
Buddhism	26	100
<b>Education level</b>		
Primary school	22	84.62
Lower-upper high school	4	15.38
<b>Marital status</b>		
Married	16	61.54
Unmarried	2	7.69
Divorced/Widowed	8	30.77
<b>Occupation</b>		
Commercial staffs	2	7.69
Laborers (e.g., builders, factory workers, sanitation workers, drivers, farmers)	16	61.54
Suspended work	8	30.77
<b>Number of family members</b>		
≤5	12	46.15
>5	14	53.85
<b>Main caregiver</b>		
Spouse	16	61.54
Child	5	19.23
Parent(s)	3	11.54
Other relative(s)	2	7.69
<b>Healthcare payment scheme</b>		
Universal Coverage Scheme (paid by the government)	26	100
<b>New/old case</b>		
New case	6	23.08
Old case	20	76.92
<b>HIV</b>		
Yes	1	3.85
No	25	96.15

Table 1 (Cont.)

<b>Co-morbidities</b>		
Yes	16	61.54
None	10	38.46
<b>BMI (Thai standard)</b>		
Underweight	12	46.15
Normal weight	14	53.85
<b>Smoking status</b>		
Currently smoking	4	15.38
Quit smoking	16	61.54
Never smoked	6	23.08
<b>Alcohol consumption (average per day)</b>		
No alcohol use	6	23.08
<150ml	9	34.61
150-300ml	4	15.38
>300ml	1	3.85
Quit drinking alcohol	6	23.08

The total score of internalized stigma and its sub-dimensions were obtained before the peer support intervention and three and six months following the intervention, as shown in Table 2. The data illustrate that the total scale score was 2.74 ± 0.41 before the intervention, decreased to 2.24 ± 0.16 in the third month, and improved to 2.01 ± 0.11 in the sixth month after the intervention. Examining each sub-dimension of stigma revealed that following participation in the peer support intervention, participants had reduced scores in alienation, stereotype endorsement, discrimination experience, and social withdrawal compared to their scores before participation. Conversely, the stigma

resistance score increased after participating in the intervention.

The Greenhouse-Geisser correction was used in repeated measures ANOVA to identify significant differences in the total score of internalized stigma and all five sub-dimension scores across different time points. Regarding the impact of the peer support intervention on the internalized stigma total score and sub-dimension scores, the findings demonstrated effect sizes of 0.52, 0.62, 0.47, 0.70, and 0.30 for the alienation, stereotype endorsement, discrimination experience, social withdrawal, and stigma resistance sub-dimensions, respectively, and 0.79 for the total score.

Table 2 Tests of within-subject effects on the internalized stigma before, three, and six months after the peer support intervention

Internalized Stigma	Before the Intervention	3 Months After the Intervention	6 Months after the Intervention	Mean Square	F	p	Eta Squared
	Mean ± SD	Mean ± SD	Mean ± SD				
Alienation	2.73 ± 0.65	2.41 ± 0.21	2.09 ± 0.19	5.26	26.96	<0.001	0.52
Stereotype endorsement	2.75 ± 0.82	1.97 ± 0.21	1.80 ± 0.20	13.12	39.90	<0.001	0.62
Discrimination experience	2.51 ± 0.54	2.14 ± 0.20	1.87 ± 0.16	4.93	22.50	<0.001	0.47
Social withdrawal	2.99 ± 0.61	2.35 ± 0.34	2.12 ± 0.35	8.26	58.96	<0.001	0.70
Stigma resistance	2.33 ± 0.82	2.65 ± 0.48	2.81 ± 0.22	2.61	10.81	0.002	0.30
Total	2.74 ± 0.41	2.24 ± 0.16	2.01 ± 0.11	6.84	96.34	<0.001	0.79

Table 3 Comparison of the effect of the peer support intervention on the internalized stigma total score and sub-dimension scores

Internalized Stigma	Points of Time	Mean Difference	Std. Error	p	95% CI for Difference
Alienation	Pre-intervention to three months	0.321	0.110	0.022	0.039-0.602
	Pre-intervention to six months	0.641	0.103	<0.001	0.376-0.906
	Three months to six months	0.321	0.013	<0.001	0.288-0.353
Stereotype endorsement	Pre-intervention to three months	0.780	0.136	<0.001	0.500-1.061
	Pre-intervention to six months	0.951	0.141	<0.001	0.660-1.241
	Three months to six months	0.170	0.016	<0.001	0.138-0.203
Discrimination experience	Pre-intervention to three months	0.369	0.116	0.012	0.071-0.667
	Pre-intervention to six months	0.638	0.115	<0.001	0.344-0.933
	Three months to six months	0.269	0.027	<0.001	0.200-0.339
Social withdrawal	Pre-intervention to three months	0.635	0.090	<0.001	0.403-0.866
	Pre-intervention to six months	0.865	0.103	<0.001	0.602-1.129
	Three months to six months	0.231	0.042	<0.001	0.122-0.340
Stigma resistance	Pre-intervention to three months	0.315	0.090	0.005	0.084-0.547
	Pre-intervention to six months	0.477	0.141	0.007	0.116-0.838
	Three months to six months	0.162	0.068	0.079	-0.014-0.337
Total	Pre-intervention to three months,	0.503	0.062	<0.001	0.344-0.662
	Pre-intervention to six months	0.733	0.068	<0.001	0.558-0.909
	Three months to six months	0.231	0.015	<0.001	0.191-0.270

Post hoc analysis with a Bonferroni adjustment revealed that the total score of internalized stigma and the scores for four sub-dimensions (alienation, stereotype endorsement, discrimination experience, and social withdrawal) were statistically significantly decreased at all three-time points. Meanwhile, the stigma resistance scores showed statistically significant increases from pre-intervention to three months and from pre-intervention to six months, but not from three to six months ([Table 3](#)).

## Discussion

The study results indicated that peer support intervention can reduce the internalized stigma among patients with TB. Peer support groups in our study were categorized into three distinct categories: family members, health worker volunteers, and case managers, all aimed at supporting patients with TB. The intervention, grounded in peer support principles, utilized mechanisms such as homogeneity, social support, and identification to decrease internalized stigma among participants. This fostered a positive sense of group value and enhanced coping resources, mitigating stigma-related stress ([Lenkens et al., 2019](#); [Lyons et al., 2021](#); [Sun et al., 2022](#); [Watson, 2017](#)).

Following the intervention, patients with TB who initially isolated themselves due to internalized stigma showed gradual improvements in treatment adherence. They sought support from peer groups and became more willing to disclose their disease, leading to increased confidence in participating in social activities within their communities. These positive outcomes can be attributed to the effective support provided by family members and health worker volunteers through peer groups. Family members and health worker volunteers play crucial roles in supporting patients with TB during treatment. They received health education and participated in psycho-educational workshops aimed at reducing internalized stigma and enhancing treatment adherence and outcomes, as evidenced by previous studies ([Barik & Indarwati, 2020](#); [Chen et al., 2021](#); [Faraade et al., 2022](#); [Li et al., 2018](#); [Myburgh et al., 2023](#); [Tola et al., 2016](#)).

In this study, family members and health worker volunteers were prepared from the beginning of the intervention to support patients with TB. They underwent psycho-educational workshops to enhance their understanding of TB, manage psychological stress, improve communication skills, and learn about essential needs, barriers, and problem-solving strategies from recovered patients with TB who served as role models. These workshops aimed to increase their confidence in meeting the needs and treatment regimens of patients with TB. This highlights the importance of involving not only individual care but also engaging family members and community close individuals to provide comprehensive support to patients with TB.

Peer support groups, who maintained close relationships with patients with TB, conducted home visits guided by individualized action plans. This initiative served as a crucial strategy to ensure that patients with TB did not feel isolated. It enabled them to make friends, feel confident in expressing their feelings and needs, discuss their treatment, and seek assistance from peers to aid in their recovery. Several studies have demonstrated the effectiveness of home visits by peer

groups in supporting patients with TB ([Ayakaka et al., 2017](#); [Barik & Indarwati, 2020](#); [Chen et al., 2021](#); [Law et al., 2019](#)). This indicates the practical importance of employing peer group home visits to assist patients with TB in their journey toward recovery.

Involving nurses as case managers within peer support groups is crucial to providing comprehensive support to patients with TB. In studies focusing on self-management support for patients with TB, nurses assumed the role of case managers, collaborating and coordinating care with peer supporters to enhance patient care. This approach aligns with the concept of utilizing peer support to address the diverse needs of individuals facing health challenges. Engaging nurses as case managers not only ensures care coordination but also facilitates the integration of peer support within the healthcare system, as evidenced by various studies ([Alkabab et al., 2017](#); [Aranburu-Imatz et al., 2022](#); [Joo & Liu, 2021](#); [Kufa et al., 2018](#); [Ritchie et al., 2021](#)). This indicates that collaborative efforts with peer supporters, nurses, and other healthcare professionals can enhance the support network available to individuals affected by TB, contributing to improved treatment outcomes and overall well-being.

However, the observation that the stigma resistance score did not significantly increase from three to six months, despite a statistically significant increase from pre-intervention to three months, is a thought-provoking finding. This evidence suggests that the impact of the peer support intervention on stigma resistance may initially increase markedly and then maintain improvement in the later months. This finding is consistent with existing literature on the challenges of sustaining improvements in stigma resistance ([Nuttall et al., 2022](#)). It may implicate the importance of supporting patients with TB throughout their treatment regimens.

According to the [Centers for Disease Control and Prevention \[CDC\] \(2023\)](#), the intensive phase of TB treatment lasts for two months, followed by a continuation phase of either four or seven months, depending on the specific regimen. Effective engagement in self-care practices during the intensive phase could potentially influence patients' ability to maintain positive health behaviors throughout the continuation phase. However, as observed in the context of peer intervention, sustained support and intervention may be crucial to sustaining improvements in stigma resistance throughout the entire treatment period.

### Limitations of the Study and Future Directions

The study's limitations include the potential restriction of generalizability due to specific cultural and environmental factors in Thailand, the use of a scale for assessing internalized stigma that may not be widely used in international studies, a small sample size, a short investigation period, and the absence of a control group. These factors highlight the necessity for future research to incorporate experimental designs with control groups, larger sample sizes, and longer-term studies to enable more robust investigations.

### Implications of this Study to Nursing Practice

The study's results highlight the importance of customized peer support interventions led by nurses in reducing internalized stigma among patients with TB. These interventions may involve psycho-educational sessions, self-

management support, and home visits, requiring comprehensive training before implementation. The IS-T-Thai questionnaire is recognized as a valuable tool for nurses to early identify internalized stigma in patients with TB, particularly those at risk of treatment failure. Furthermore, it is essential to consider the context, norms, and cultural aspects when addressing TB management in communities. Nurses should be mindful of the diverse characteristics of their patients' communities, using this awareness to provide interventions that meet the specific needs of these populations.

## Conclusion

This study offers valuable insights into the effectiveness of peer support interventions in reducing internalized stigma among patients with TB in Thailand. The research highlights the positive impact of peer support interventions, which include psycho-educational programs, self-management support, and home visits, in reducing internalized stigma and improving patient adherence to TB treatment. These findings emphasize the importance of nurses integrating these strategies into their practice to enhance patient care and address internalized stigma in TB management.

## Declaration of Conflicting Interest

The authors declared that they have no conflicts of interest regarding the publication of this manuscript.

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## Authors' Contributions

NV conceived and designed the study, collected and analyzed the data, and wrote the manuscript. KD and MS contributed to the study design, data collection, and analysis and wrote the manuscript. CC provided guidance and expertise throughout the study, reviewed the manuscript, and provided critical revisions. BJ, WS, WTP, and US assisted with intervention implementation, contributed to the interpretation of the results, and provided substantial revisions to the manuscript. All authors approved the article's final version to be published and were accountable for each step of the study.

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## Data Availability

The datasets supporting this study's findings are available upon reasonable request from the corresponding author. Due to privacy and ethical considerations, the data cannot be publicly shared. Requests for data access should be directed to the corresponding author's name and contact information.

## Declaration of Use of AI in Scientific Writing

The authors declared that generative AI and AI-assisted technologies were not utilized in the writing of this manuscript.

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