

Effects of Depression, Social Support of Tuberculosis Patients on Self-care

Lee, Go Un¹ · Lee, Hye Kyung²

¹Graduate Student, Department of Nursing, Kongju National University, Gongju, Korea

²Associate Professor, Department of Nursing, Kongju National University, Gongju, Korea

Purpose: The purpose of this study was by understanding the correlation between the depression, social support and self-care of tuberculosis patients and by identifying the factors that influence the self-care. **Methods:** The study subjects were 119 outpatients who were diagnosed with pulmonary and respiratory tuberculosis at a university hospital in D city. The survey questions measured depression, social support, self-care. Using the SPSS/WIN 23.0 program, the collected data were analyzed using descriptive statistics, t-test, ANOVA, Pearson's correlations and multiple regression analysis. **Results:** As a result of correlation analysis, there was a statistically significant negative correlation between self-care and depression ($r=-.53, p<.001$), and there was a significant positive correlation between self-care and social support ($r=.68, p<.001$). Factors affecting self-care of the subjects were social support ($\beta=.51, p<.001$), depression ($\beta=-.32, p<.001$), drug discontinuation experience ($\beta=-.30, p<.001$) and drug resistance ($\beta=-.14, p<.001$). These factors explained 62% of the variance. **Conclusion:** In order to improve the self-care ability of tuberculosis patients, it is necessary to develop education and nursing intervention programs that can lower patients' depression and strengthen social support.

Key Words: Depression; Self care; Social support; Tuberculosis

INTRODUCTION

1. Background

Tuberculosis (TB) still remains one of the most dangerous infectious diseases worldwide, although the World Health Organization (WHO) has strengthened the management of this disease since 1993 [1]. Most countries have been managing TB patients by establishing a national-level TB control plan, and Korea has also been implementing a national TB control plan with the goal of reducing the TB incidence rate to less than 10 persons per 100,000 population by 2030 [2]. However, in Korea, the number of new cases of TB reported in 2020 is 49.4 per 100,000 population, and TB is the disease with the highest incidence rate among legal infectious diseases. In addition, both the incidence rate of TB and the incidence rate of multidrug-resistant TB (MDR-TB) are highest in Korea among OECD

member countries [1,2]. Therefore, there is an urgent need for the active management of TB in Korea.

With respect to TB treatment, most TB patients can be cured if a proper combination of first-line drugs is prescribed and the patient takes the drugs consistently for at least 6 months [3]. However, because most TB patients are no longer contagious and have an improvement in their symptoms to some extent only after two weeks of anti-TB drug treatment, some patients do not take medications regularly or discontinue drug treatment too soon [2]. In these cases, Mycobacterium tuberculosis proliferates again, leading to treatment failure, and the disease is likely to progress to drug-resistant TB [3]. If TB becomes drug-resistant, the cure rate becomes significantly lower than that of normal tuberculosis, the treatment discontinuation rate is increased due to the extension of the treatment duration, and the burden of social and economic costs is also increased due to the use of expensive second-line anti-TB

Corresponding author: Lee, Hye Kyung

Department of Nursing, Kongju National University, 56 Gongjudaehak-ro, Gongju 32588, Korea.

Tel: +82-41-850-0313, Fax: +82-41-850-0315, E-mail: hkleee@kongju.ac.kr

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drugs [2]. Therefore, it is important for TB patients to take anti-TB drugs steadily for a set period of time [3], and TB patients need to have the self-care ability to manage their disease for themselves for the treatment period.

Self-care is individuals' act of performing their daily activities for themselves to maintain and promote their life, health, and well-being [4]. If patients' needs of self-care are greater than their self-care ability, this leads to a lack of self-care, and the role of nursing is important in such cases [5]. According to previous studies, in patients with chronic diseases, self-care is an important factor in the disease treatment process [6,7], and TB patients with a higher self-care ability are more likely to have an improvement in their symptoms and maintain a healthy life [8]. In view of these findings of previous studies, TB patients need to be equipped with the self-care ability because they need to receive drug treatment continuously until they are cured completely.

TB patients frequently experience social isolation for a long period, unemployment, avoidance or shunning by people around them [9], and some TB patients experience physical symptoms due to the side effects of anti-TB drugs, such as gastrointestinal intolerance and skin reactions [3]. Since these negative effects can act as causes of depression [10], a previous study found that TB patients are vulnerable to depression, and the prevalence of depression in TB patients is more than 50% [11]. In addition, a prior study reported that the likelihood of non-compliance with recommended medical treatment was 3.03 times higher in depressed patients than in non-depressed patients [12]. Moreover, depression has been shown to have negative effects on self-care. In particular, depression reduces the patient's interest in the diseases or motivation for treatment and decreases patient compliance with drug treatment [13,14]. Therefore, it is necessary to assess the degree of depression in tuberculosis patients and examine how depression influences self-care.

Since TB patients tend to be neglected by people around them because of long-term drug treatment due to the nature of the disease or tend to be avoided by those around them due to the infectiousness of TB, it is important to provide them with social support through interactions with their families or people around them and medical staff's provision of information on treatment [15]. The social support for TB patients can be largely divided into medical staff support and family support. In this case, medical staff support refers to the positive support that physicians and nurses provide for the patient, and family support refers to the family members' supportive behaviors for the patient by which family members that are meaningful to the pa-

tient takes care of the patient and instills the patient with a sense of self-worth during the treatment process [16]. Social support has been found to positive influence self-care [16-18], and higher levels of social support have been shown to be associated with higher levels of self-care performance [17]. Therefore, since social support is an important influencing factor for self-care, it is important to investigate the level of social support among TB patients.

In recent previous studies on the self-care of TB patients, age [18], smoking [18,19], religion [17], income [19], the experience of anti-tuberculosis drug discontinuation [18], knowledge [20,21], health information literacy [21], stigma [18], stress [20], support system [17,18], health belief [17], illness perception [19], self-efficacy [19,22], and quality of life [22] have been reported as factors affecting self-care in previous researches. However, there have been few studies to investigate whether depression and social support are influencing factors for self-care among TB patients.

Therefore, this study attempted to investigate the relationship between depression, social support, and self-care and identify the factors influencing self-care in tuberculosis outpatients using a medical institution in order to present the basic data required for the development of intervention programs to improve the self-care ability of TB patients.

2. Purpose

This study aimed to investigate the levels of depression, social support, and self-care in TB patients, and determine whether depression and social support significantly influence self-care in TB patients. The specific objectives of this study are as follows:

- To investigate the levels of depression, social support, and self-care among the participants;
- To examine differences in self-care according to the general characteristics of the participants;
- To explore the correlations among depression, social support and self-care among the participants;
- To identify factors affecting self-care among the participants.

METHODS

1. Study Design

This study is a descriptive survey study to investigate the correlations among depression, social support and self-care among the tuberculosis outpatients of a medical

institution, and identify factors affecting self-care among the participants.

2. Participants

The participants of this study were selected by convenient sampling among the patients aged 19 or older who were diagnosed with pulmonary and respiratory tuberculosis and were receiving anti-tuberculosis drug therapy in a tertiary hospital located in D city, and who were able to communicate in Korean and understand and respond to the items of the questionnaire. The sample size for this study was calculated using G*power 3.1.9 software. The minimum sample size for this study was determined to be 116 persons by positing a significance level of (α)=.05, a power of .90, and a medium effect size of .15 based on a previous study [19] as well as 5 independent variables. In consideration of the drop-out rate, questionnaires were distributed to 130 people. However, data from a total of 119 participants was finally used in the analysis, excluding 11 copies of questionnaires with incomplete or insufficient responses, so the sample size was satisfied.

3. Measures

1) Depression

Depression was measured by a Korean version of the Patient Health Questionnaire 9 (PHQ-9) developed by Spitzer et al. [23]. This scale is composed of a total of 9 items. Each item is measured on a 4-point Likert scale ranging from 0 points='Never disturbed' to 3 points='Disturbed almost every day.' Total scores range from 0 to 27 points, and higher scores indicate higher levels of depression. In this study, participants were divided into three groups according to three levels of severity of depression based on PHQ-9 scores: normal (0~4 points), mild depression (5~9 points), and moderate to severe depression (≥ 10 points) [24]. The Cronbach's α value of the original instrument was .86 [23], and the Cronbach's α value was .92 in this study.

2) Social support

Social support was measured using the social support scale developed by Tae [16] after receiving permission for the use of the tool from the developer. This tool consists of two subdomains and a total of 16 items: 8 items on family support and 8 items on medical staff support. Each item is measured on a 5-point Likert scale ranging from 1 point='Never did it for me' to 5 points='Always did it for me.' Total scores range from 16-80 scores, and higher scores in-

dicate higher levels of social support. Regarding the reliability of the assessment tool, the Cronbach's α value was reported as .83 in Tae [16], and the Cronbach's α value was .95 in this study.

3) Self-care

This scale is composed of four subdomains and 20 items in total, and the items consist of 5 items on 'outpatient visits', 5 items on 'check-up and drug treatment', 3 items on 'resting sleep and activity', and 7 items on 'nutrition and health habits.' Each item is assessed on a 4-point Likert scale ranging from 1 point='Not at all' to 4 points='Very much.' The total scores range from 20 to 80 points, and higher scores indicate higher levels of self-care. Regarding the reliability of the assessment tool, the Cronbach's α value was .92 in Kim [20], and .95 in this study.

4. Data Collection

The data of this study was collected from July 1 to October 21, 2018 after obtaining approval from the IRB of the relevant institution (IRB No: 2018-05-053). The researcher visited the outpatient department of a university hospital in D Metropolitan City, and explained the purpose and procedure of this study and the contents of the questionnaire to medical staff (physicians and nurses) to obtain the permission for conducting this study from medical staff and request for their cooperation. Thereafter, the researcher visited the outpatient clinic of the department of respiratory medicine of the hospital to recruit participants. A questionnaire survey was conducted with the participants who satisfied the inclusion criteria, fully understood the purpose and contents of this study, and voluntarily signed a written informed consent form. The time taken to complete the questionnaire was about 15 minutes. In addition, prior to the survey, the researcher explained to the participants that they could withdraw from the study at any time without any disadvantages, the collected data would be used only for the purpose of research, and the confidentiality of collected data would be maintained.

5. Statistical Analysis

The statistical analysis of the collected data was conducted using the SPSS/WIN 23.0 program. The specific methods of data analysis are as follows.

- The general characteristics of the participants were analyzed by calculating the frequency, percentage, mean and standard deviation

- The levels of depression, social support, and self-care of the participants were analyzed by calculating the mean and standard deviation.
- The t-test and ANOVA were performed to examine differences in self-care according to the general characteristics of the participants, and a post-hoc analysis was conducted using the Scheffé test.
- The Pearson's correlation coefficient was used to examine the correlations among depression, social support, and self-care among participants.
- A multiple regression analysis was conducted to identify factors affecting self-care among the participants.

RESULTS

1. General Characteristics of Participants

Out of the participants, males accounted for 57%. The mean age of the participants was 57.82 ± 17.18 years, and people aged 70 years and older accounted for the largest proportion (31.9%). Regarding educational level, the proportion of high-school graduates was 39.5%, and for marital status, 66.4% were married. As to the presence of cohabiting family members, 73% of the participants had one or more cohabitants. As for smoking status, the proportion of nonsmokers was 63%, and in terms of subjective socioeconomic status, people with middle subjective socioeconomic status took up the largest proportion (67.2%). Regarding the presence of other disease (s), 54.6% did not have other diseases. For treatment history of tuberculosis, 72.3% did not have previous treatment history of tuberculosis. The mean period of anti-tuberculosis drug therapy was 4.11 ± 3.51 months, and the percentage of patients receiving anti-tuberculosis drug therapy for less than 3 months was 37.8%, accounting for the largest proportion. 54.6% of the participants had the experience of the side effects of anti-TB drugs, and 80.7% did not have the experience of drug discontinuation. Also, 94.1% did not have drug-resistant tuberculosis (Table 1).

2. The Levels of Depression, Social Support, and Self-care among Participants

The mean score for depression among the participants was 7.30 ± 6.39 out of 27 points. The mean score for social support was 3.86 ± 0.87 out of 5 points, and regarding the subdomains of social support, the mean score for family support was 3.83 ± 1.19 out of 5 points, and the mean score for medical staff support was 3.89 ± 0.78 out of 5 points. The mean score for self-care was 3.46 ± 0.53 out of 4 points.

As to the subdomains of self-care, the scores for 'check-up and drug treatment', 'nutrition and health habits', 'outpatient visits', and 'resting sleep and activity' were 3.61 ± 0.55 points, 3.45 ± 0.55 points, 3.41 ± 0.67 points, and 3.32 ± 0.71 points, respectively (Table 2).

3. The Level of Self-care according to the General Characteristics of Participants

With respect to the level of self-care according to the general characteristics of the participants, there was a statistically significant difference in the level of self-care according to subjective socioeconomic status ($F=7.38$, $p=.001$), drug discontinuation experience ($t=-4.65$, $p<.001$), and drug resistance ($t=-2.09$, $p=.039$). Regarding the level of self-care according to subjective socioeconomic status, a post-hoc analysis showed that the level of self-care was higher in the high subjective socioeconomic status group (3.61 ± 0.41) and the middle subjective socioeconomic status group (3.55 ± 0.50) than in the low subjective socioeconomic status group (3.15 ± 0.55) (Table 1).

4. The Correlation between Depression, Social Support, and Self-care among Participants

As a result of the analysis of the correlation between depression, social support, and self-care among the participants, self-care was found to have a significant negative correlation with depression ($r=-.53$, $p<.001$), while it was shown to have a significant positive correlation with social support ($r=.68$, $p<.001$) (Table 3).

5. Factors affecting Self-care among Participants

To identify factors affecting self-care among the participants, multiple regression analysis was conducted by entering variables found to be significantly related to self-care (subjective socioeconomic status, drug discontinuation experience, and drug resistance) among general characteristics as well as depression and social support as independent variables. Among these variables, subjective socioeconomic status, the experience of drug discontinuation, and drug resistance were treated as dummy variables in the analysis. In the multiple regression analysis, tolerance values were higher than 0.1, ranging from .87 to .97, and the variance inflation factor (VIF) was 1.20~1.33, not exceeding 10, the reference value. Thus, the problem of multicollinearity among independent variables was ruled out. Before analyzing the results of the multiple regression analysis, the Durbin-Watson test was conducted to detect

Table 1. Difference of Self-care according to General Characteristics

(N=119)

Characteristics	Categories	n (%) or M±SD	Self-care			Scheffé
			M±SD	t or F	p	
Gender	Male	68 (57.1)	3.43±0.58	-0.77	.441	
	Female	51 (42.9)	3.50±0.46			
Age (year)	≤ 29	10 (8.4)	3.74±0.41	0.98	.431	
	30~39	12 (10.1)	3.45±0.73			
	40~49	10 (8.4)	3.51±0.68			
	50~59	27 (22.7)	3.45±0.54			
	60~69	22 (18.5)	3.52±0.58			
	≥ 70	38 (31.9)	3.35±0.40			
		57.82±17.18				
Education	≤ Elementary school	27 (22.7)	3.34±0.40	1.55	.204	
	Middle school	21 (17.6)	3.45±0.56			
	High school	47 (39.5)	3.43±0.60			
	≥ University graduate	24 (20.2)	3.65±0.49			
Marital status	Married	79 (66.4)	3.50±0.48	2.31	.104	
	Single	30 (25.2)	3.47±0.63			
	Etc	10 (8.4)	3.12±0.59			
Cohabiting family	Yes	87 (73.1)	3.51±0.51	1.80	.074	
	No	32 (26.9)	3.32±0.58			
Smoking	Current smoking	13 (10.9)	3.21±0.76	1.65	.196	
	Past smoking	31 (26.1)	3.48±0.56			
	No smoking	75 (63.0)	3.49±0.47			
Subjective socioeconomic status	High ^a	10 (8.4)	3.61±0.41	7.38	.001	a, b > c
	Middle ^b	80 (67.2)	3.55±0.50			
	Low ^c	29 (24.4)	3.15±0.55			
Other disease	Yes	54 (45.4)	3.37±0.51	-1.63	.107	
	No	65 (54.6)	3.53±0.54			
Treatment history of tuberculosis	Yes	33 (27.7)	3.35±0.57	1.36	.178	
	No	86 (72.3)	3.50±0.52			
Drug treatment period (month)	< 3	45 (37.8)	3.58±0.47	2.25	.110	
	3~6	44 (37.0)	3.43±0.49			
	≥ 6	30 (25.2)	3.32±0.65			
		4.11±3.51				
Drug side effects experience	Yes	65 (54.6)	3.38±0.51	-1.91	.058	
	No	54 (45.4)	3.56±0.54			
Drug discontinuation experience	Yes	23 (19.3)	2.95±0.62	-4.65	< .001	
	No	96 (80.7)	3.58±0.43			
Drug resistance	Yes	7 (5.9)	3.06±0.65	-2.09	.039	
	No	112 (94.1)	3.48±0.52			

autocorrelation in the residuals. As a result, the Durbin-Watson statistic was determined to be 1.94, a value close to the reference value of 2, indicating that there was no problem of autocorrelation, and the regression model was significant ($F=49.06, p < .001$).

In this study, factors influencing self-care of the participants were social support ($\beta=.51, p < .001$), depression ($\beta=$

$-.32, p < .001$), the experience of drug discontinuation ($\beta=-.30, p < .001$), and drug resistance ($\beta=-.14, p=.040$) in descending order of the magnitude of their influence. Among the independent variables, social support ($\beta=.51, p < .001$) was found to be the strongest predictor for self-care in TB patients, and the explanatory power of the variables was 62% (Table 4).

DISCUSSION

In this study, significant influencing factors for self-care in TB patients were social support, depression, and the experience of drug discontinuation, and drug resistance in descending order of the magnitude of influence.

In terms of the level of self-care among participants, the score for self-care in TB patients was 3.46 out of 4 points, a level higher than the medium level. This result is similar to 3.21 points reported in a previous study that examined the level of self-care in TB patients [20]. In this study, regarding the level of each subdomain of self-care among the par-

ticipants, the level of 'check-up and drug treatment' was highest, followed by 'nutrition and health habits', 'outpatient visits', and 'resting sleep and activity' in descending order. The results of this study are similar to the finding of a previous study of TB patients which also reported that the level of 'resting sleep and activity' among the subdomains of self-care was lowest in TB patients [20]. TB patients commonly suffer from gastrointestinal disturbances such as nausea, vomiting, and heartburn and skin reactions such as itchiness and skin rashes due to the side effects of anti-TB drugs [3], and the side effects such as gastrointestinal symptoms and skin reactions deteriorate the quality of sleep [26]. In addition, tuberculosis is a contagious diseases, so if a person is diagnosed with tuberculosis, the patient's daily activities are restricted due to quarantine during the contagious period of about 2 weeks [2]. Taken together, the study findings described above indicate that TB patients have some difficulty in taking a rest, sleeping, and performing daily activities. Therefore, as adequate amounts of rest and sleep are very important factors for the recovery of health [27], it is necessary to investigate the level of adequate rest, sleep, and physical activity among TB patients, and provide self-care nursing interventions including counseling and education to ensure that TB patients can continuously maintain the adequate amounts of rest, sleep, and physical activity until they are completely cured of the disease.

In this study, social support was found to be the strongest predictor for self-care. The level of social support among the participants was 3.86 out of 5 points, and regarding the subdomains of social support, the score for family support was 3.83 out of 5 points and the score for medical staff support was 3.89 out of 5 points. It is difficult to directly compare the results of this study with the findings of previous studies because there have been no previous studies to investigate social support among TB patients by using the same scale. However, a previous study

Table 2. Scores for Depression, Social Support, and Self-care (N=119)

Variables	M±SD or n (%)
Depression	7.30±6.39
Normal (0~4)	48 (40.3)
Mild depression (5~9)	35 (29.4)
Moderate to severe depression (≥10)	36 (30.3)
Social support	3.86±0.87
Family support	3.83±1.19
Medical staff support	3.89±0.78
Self-care	3.46±0.53
Check-up and drug treatment	3.61±0.55
Nutrition and health habits	3.45±0.55
Outpatient visits	3.41±0.67
Resting sleep and activity	3.32±0.71

Table 3. Correlations among Depression, Social Support, and Self-care (N=119)

Variables	Depression	Social support
	r (p)	r (p)
Social support	-.36 (<.001)	
Self-care	-.53 (<.001)	.68 (<.001)

Table 4. Factors Affecting Self-care of Tuberculosis Patients

(N=119)

Variables	B	S.E	β	t	p
(Constant)	2.10	0.17		12.38	<.001
Social support	0.31	0.04	.51	8.19	<.001
Depression	-0.24	0.05	-.32	-4.88	<.001
Drug discontinuation experience [†]	0.41	0.09	-.30	4.70	<.001
Drug resistance [†]	0.31	0.15	-.14	2.08	.040
R ² =.63, Adjusted R ² =.62, F=49.06, p<.001 Tolerance=.87~.97, VIF=1.20~1.33, Durbin-Watson=1.94					

[†]Dummy variables: (Drug discontinuation experience: Yes=0, No=1), (Drug resistance: Yes=0, No=1)

of cancer patients reported that the mean scores of social support, family support, and medical staff support in cancer patients were 3.76 points, 4.09 points, and 3.32 points, respectively [16]. Compared to the results of this prior study, the level of social support was similar but the level of family support was lower in this study. However, since the mean score for medical staff support was 3.89 points in this study, the level of medical staff support among TB patients in this study was higher, compared to the level of medical staff support among cancer patients in a previous study. This difference in the level of medical staff support between TB patients and cancer patients is thought to be related to the Public-Private Mix (PPM) Project for TB control [3], which has been implemented in each medical institution since 2011. This project is intended to place a nurse in charge of TB patients at each medical institution to offer counseling to TB patients and manage them by checking medication compliance, providing counseling on the side effects of anti-TB drugs, and managing outpatient visits [3], and a higher level of medical staff support in TB patients is presumed to be due to the impact of this project. Therefore, to promote the level of social support in patients, it is necessary to implement interventions that can increase both family support and medical staff support. First, to increase family support, it is necessary to provide educational programs for the family members of patients so as to help them to properly provide family support for patients by providing them with information on tuberculosis treatment and the side effects of tuberculosis treatment. In addition, it is also necessary to develop interventions that can substitute for family support for patients living alone. Then, to increase the level of medical staff support, it is required to develop educational programs tailored to specific age groups in order to help patients to understand the contents of education more easily. Additionally, if a separate support system linked to the community is established for older adults and patients living alone who do not have sufficient social support, it will help to enhance the level of social support of patients.

In this study, depression was found to be the second strongest influencing factor for self-care, following social support. In this study, the prevalence rate of depression among the total participants was 59.7%. Although it is difficult to compare the prevalence rate of this study with the results of previous studies due to the lack of studies that examined the prevalence of depression in TB patients by the same assessment tool, a previous study reported that the rate of depression in TB patients was 56.1%, which is a similar level to the result of this study. Also, the rate of depression in dialysis patients was found to be 40.1% in an-

other previous study [29], which is higher than the prevalence of depression in this study. Patients with chronic diseases are susceptible to depression, and a depressed mood reduces patients' interest in their diseases and their motivation for treatment, and thus influences drug compliance, which eventually leads to the decrease of treatment effects in patients [30]. Therefore, there is a need for nursing interventions to continuously assess the level of depression in TB patients and prevent the progression of temporary depressed moods to persistent depressive symptoms. In addition, to implement these interventions, it is necessary to conduct follow-up research on influencing factors for depression in TB patients because they have not been sufficiently studied so far.

In this study, the experience of drug discontinuation was also identified as the third factor influencing self-care. This result is supported by the finding of a previous study that there was a difference in self-care according to the experience of drug discontinuation [18]. In this study, the proportion of patients with the experience of drug discontinuation was 19.2%. In general, the contagiousness of tuberculosis disappears if patients take medicine for about 2 weeks, and most symptoms of tuberculosis are improved if patients take medicine for about 1 month [2]. Due to these characteristics of tuberculosis, TB patients may arbitrarily stop taking medicine. Therefore, to prevent patients from arbitrarily discontinuing drug treatment, nurses need to check whether the patient is steadily taking medicine through regular counseling, and repeatedly perform education on the need for taking medicine continuously. In addition, there is a need to conduct qualitative research on the experience of discontinuation of anti-TB drugs.

Finally, drug resistance was also found to influence self-care. The proportion of drug-resistant TB patients was 5.8% in this study. Drug-resistant tuberculosis, which is resistant to anti-TB drugs, has a low treatment efficacy, requires a long treatment period, and brings about an increase in the burden of medical costs, and drug-resistant TB patients shows a high rate of treatment discontinuation due to the adverse effects of drugs [2]. Therefore, to prevent the progression to drug-resistant tuberculosis due to medication discontinuation, it is necessary to implement nursing interventions for medication counseling and education that take into account the characteristics of individual patients.

In this study, the analysis of the relationship between depression, social support, and self-care in TB patients revealed that depression was negatively correlated with self-care. In other words, lower levels of depression were associated with higher levels of self-care. There have been

no previous studies to examine the relationship between depression and self-care in TB patients, so it is difficult to make a direct comparison of the research findings. However, the results of this study are consistent with a previous study of liver cirrhosis patients which reported that there was a negative correlation between depression and self-care [31]. This study also found that social support was positively correlated with self-care. In other words, higher levels of social support were associated with higher levels of self-care. In agreement with the results of this study, a previous study of TB patients also reported that social support had a significant positive correlation with self-care [17].

The results of this study can be summarized as follows. In this study, social support, depression, the experience of drug discontinuation, and drug resistance were identified as factors affecting self-care in TB patients, and these variables accounted for 62% of the total variance. The results of this study showed that to improve the self-care ability of TB patients, it is required to improve social support and decrease depression in TB patients and develop and apply integrated self-care intervention programs by taking into account the experience of drug discontinuation and drug resistance.

Regarding the limitations of this study, the participants of this study were selected by convenience sampling among TB outpatients using a university hospital in D Metropolitan City, so there is a limitation in generalizing the study results to all TB outpatients. However, it is a meaningful outcome of this research that this study examined aspects such as TB patients' individual thoughts and feelings about self-care, depression, and social support by conducting a self-reported questionnaire survey among TB outpatients.

CONCLUSION

In this study, social support, depression, drug discontinuation experience, and drug resistance were identified as factors affecting self-care in TB patients, and social support was found to have the strongest influence on self-care in TB patients. Based on the results of this study, to improve the self-care ability of TB patients, it is considered necessary to implement nursing interventions to improve social support and decrease depression in TB patients. In addition, to prevent the drug discontinuation of patients, it is necessary to provide them with periodic education on regularly taking medicine. Additionally, for patients with drug resistance, it is necessary to provide continuous counseling and management considering individual characteristics.

Based on the results of this study, the following suggestions are presented. First, it is necessary to conduct replication studies on factors affecting self-care in TB patients by expanding the scope of participants to include TB patients from a wider range of local communities and medical institutions. Second, since there is a lack of studies on factors affecting depression in TB patients, there is a need to conduct a follow-up study on influencing factors for depression in TB patients. Third, there is a need to conduct a qualitative research on the experience of discontinuation of anti-TB drugs. Fourth, to enhance the self-care ability of TB patients, there is a need to conduct follow-up research to strengthen the social support of patients, reduce the level of depression in patients, and develop and apply an integrated nursing intervention program that takes into account drug discontinuation experience and drug resistance status.

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