

THE PHYSICAL SELF-CARE AMONG TUBERCULOSIS PATIENTS IN CENTRAL JAVA, INDONESIA

Commented [A1]: It's better if you put factors related to the physical self care

ABSTRACT

Background: Factors related to the success of physical self-care among patient tuberculosis under treatment was very rarely considered. Whereas, physical self-care is necessary to gain patient involvement in health care in order to improve health outcome among tuberculosis patients. This study aimed to identify the coping strategy, self-care management process and family well-being as factors associated with physical self-care.

Method: The design of this study was descriptive analytic with forty-four sample size of tuberculosis patients. The data were taken by using purposive technique within follow up session after implementing self-management support intervention with physical self-care, coping strategy, self-care management process and family well-being questionnaire. Then, Spearman rho statistic test was used to analyze the data collected.

Result: Statistically significant variables such as self-care management process ($p=0.009$), and family well-being (children) ($p=0.026$), associate with physical self-care. While family well-being (parent) ($p=0.170$) and coping strategy ($p=0.204$) had no relation with physical self-care among tuberculosis patient. **Conclusion:** Understanding factors of physical self-care holds paramount role to prevent further complication from non-compliance and MDR incidence. The results of this study suggest the further study to conduct study related to factors associated with another self-care component.

Keyword: Coping Strategy, Family Well-being, Physical Self-care, Self-care management process.

ABSTRAK

Latarbelakang: Faktor-faktor terkait dengan keberhasilan pelaksanaan *physical self-care* pada pasien tuberculosis yang menjalani pengobatan sangatlah jarang diperhatikan. Padahal, *physical self-care* diperlukan untuk meningkatkan keterlibatan pasien dalam layanan kesehatan dengan tujuan untuk memperbaiki luaran kesehatan pasien tuberculosis. Penelitian ini bertujuan untuk mengidentifikasi strategi coping, proses manajemen *self-care* dan kesejahteraan keluarga sebagai faktor-faktor yang berhubungan dengan *physical self-care*. **Metode:** Desain penelitian ini adalah analisis deskriptif dengan jumlah sampel 44 pasien tuberculosis. Data diambil menggunakan teknik *purposive* selama sesi *follow-up* setelah pelaksanaan intervensi dukungan manajemen diri dengan kuesioner *physical self-care*, strategi coping dan proses manajemen *self-care*. Selanjutnya, uji statistik *Spearman Rho* digunakan menganalisa data yang dikumpulkan. **Hasil:** Secara statistic, variabel yang signifikan seperti proses manajemen *self-care* ($p=0.009$) dan kesejahteraan keluarga (anak) ($p=0.026$) berhubungan dengan *physical self-care*. Sementara, kesejahteraan keluarga (orang tua) ($p=0.170$) dan strategi coping ($p=0.204$) tidak memiliki hubungan dengan *physical self-care* pada pasien tuberculosis. **Kesimpulan:** Memahami faktor-faktor dalam *physical self-care* memegang peranan penting untuk mencegah komplikasi lanjut dari ketidakpatuhan berobat dan kejadian MDR. Hasil penelitian ini menyarankan untuk penelitian lebih lanjut terkait faktor-faktor yang berkaitan dengan komponen *self-care* yang lain.

Kata Kunci: Strategi coping, kesejahteraan keluarga, *physical self-care*, proses manajemen *self-care*

BACKGROUND

Tuberculosis is one of most infectious agent causes increased mortality rate in worldwide range.

Globally, in 2017, 10.0 million people had tuberculosis disease; 5.8 million men, 3.2 million women and 1.0 million children. Indonesia became

top 3 countries after India and China in WHO's list of 30 high TB burden country with 8% population suffered from tuberculosis disease (World Health Organization [WHO], 2018). Moreover, approximately 558,000 people had a drug resistant (rifampicin- the most effective first line drug) and 82% of them had multidrug-resistant. In 2017, the incidence of drug resistance was announced as a burden in Indonesia where it was estimated about 32,000 people or 12/100,000 population (WHO, 2018).

Several studies revealed that patient characteristics such as previously treated with anti-TB, living in rural setting, smoker, alcoholic, tobacco chewing, body mass index below normal range, and low socioeconomic status are most commonly affected MDR-TB (Shah, Shag, & Dave, 2018; Desissa, Workineh, & Beyene, 2018). The previous study by Stosic, et al. (2018) showed that the developing MDR-TB were also influenced by monthly income of the family, poor confidence, defaulting from treatment, stigma associated with TB, subjective feeling sadness, use of sedatives, chronic obstructive pulmonary disease.

Furthermore, the emergence of multidrug resistance might be as one of a result of non-adherence to anti tuberculosis treatment (Charles, 2005; Tola, Tol, Shojaeizadeh & Garmaroudi, 2015; Wurie, Cooper, Horne, & Havyward, 2018). A study explained that the treatment adherence of tuberculosis patients itself related to [patients' knowledge](#), attitude, health education and medication time (Ningsih, 2016). The success rate of TB treatment in Indonesia was approximately 52% in 2017 (WHO, 2018). Thus rate indicated that the clinical and treatment of tuberculosis program were considered poor and it leads to treatment failure (Wurie, Cooper, Horne, & Havyward, 2018). A failure treatment contributed to a higher morbidity and mortality rate on tuberculosis patients compared to the patients who achieved full cure (Namukwaya, Nakwagala, Mulekya, Mayanja-Kizza, & Mugerwa, 2011; Sadacharam, et al., 2007).

The inadequate treatment outcome among tuberculosis was affected by health systems, socio cultural and patients-related barriers (Oladimeji, Tsoka-Gwegweni, & Udoh, 2017). Patients mostly

dealt with complex issues such as difficult and equitable access to health services, getting interaction to the health worker (WHO, 2007; Oladimeji, Tsoka-Gwegweni, & Udoh, 2017). In 1990s, the hindrances might be caused because the health reform tended to give less attention to community involvement in the development of health system, focusing more on technical, managerial and economic sectors (WHO, 2008). Lately, policy-makers, health worker and care providers had increasing interest to patient empowerment and involvement to manage and control their disease (WHO, 2007). Patient participation allowed them to take more responsibility for their health, to comply the treatment, and ensuring patient centered care (WHO, 2007). Effective patient involvement also gained positive results in improving treatment outcomes and developing the awareness of patients about their health (WHO, 2008). This encouraged patients to implement self-care where it was emerging and dominant in the development countries like Indonesia (Bhuyan, 2004).

Self-care as the most dominant and universal form of primary care was prominent process whereby a person manages his behavior or life style, prevention, detection and treatment in health care system (Levin, Katz, & Holst, 1977; Bhuyan, 2004). Studies revealed that individual and family had biggest role on caring the illness (Committee on Family Caregiving for older Adults, et al. 2016). It revealed the patient self-care was highly necessary to invest on better health outcome. Three main components of self-care were known as emotional self-care, spiritual self-care and physical self-care (Utah State University, 2018). In this case, developing adequate treatment among tuberculosis patients should start on physical self-care. Physical [self-care](#) was defined as activities that improve individual physical health, including diet and exercise include taking a medicine (Utah State University, 2018).

Tuberculosis patient in implementing physical self-care was influenced by various factors such as the coping strategy, self-care management process and family well-being among tuberculosis patient which incorporated as self-care agency factors (operational factors) (Souza, 2002). This

study aimed to identify the coping strategy, self-care process and family well-being as factors associated with physical self-care in order to predict adequate patient involvement on improving pulmonary tuberculosis.

METHOD

Research design

This study was designed in descriptive analytic on a cross sectional study.

Sample and setting

Participants were tuberculosis patients, enlisted from medical center located in Magelang, Central Java, Indonesia. Using purposive technique, the recruitment of patients referred to patient's willingness and the availability while patients who had incomplete data in the medical center were excluded. Age, gender, ethnic/race and religion were not a restriction in this study. Forty-four tuberculosis patients were eligible as respondents after procedure applied.

Research instrument and data collection

Data were collected right after informed consent delivered. The questionnaires were distributed directly to the patients with some instructions explained clearly. This study used 4 questionnaires which had been tested the validity and reliability: 1) physical self-care had 9 items question and cronbach alfa= 0.78 using Guttman scale yes and no. The level of variables was defined in independent (0-3), start to be independent (4-6) and dependent (7-9) (Umah, 2017), 2) coping strategy had 42 items, cronbach alfa= 0.888 with likert scale described with never, sometimes, often, always and divided into levels: good (≥ 85), good enough (43-84) and poor (≤ 42) (Folkman & Lazarus, 1988), 3) self-care management process-guarding (SCMP-G) (20 items, cronbach alfa= 0.724). The variable was divided into 3 levels good (≥ 131), good enough (104-130) and poor (≤ 103) (Jones, 2003) and 4) The family well-being assessment tool; parent had 42 items, cronbach alfa= 0.943 with levels: good (≥ 194), good enough (133-193), and poor (≤ 132) and children section had 33 items, cronbach alfa=

0.916 with levels: good (≥ 152), good enough (106-151), and poor (≤ 105) (Caldwell, 1988). Both SCMP-G and family well-being questionnaire used likert scale which sub-scaled into strongly agree, agree, neutral, disagree and strongly disagree.

Data Analysis

Analyzing process was taken after the data collection complete. It, then, was analyzed utilizing Microsoft Excel 2007 and Statistic Package for Social Sciences (SPSS) 16. Demographic data were measured for the frequencies while correlation of the physical self-care, and coping strategy, self-care management process and family well-being tested using Spearman Rho.

Ethical consideration

The study had been ethically approved by the research ethical commission with ethical clearance number 601/EC/FK-RSDK/2016. As a guarantee, researcher delivered information related to the study to the respondent, explained about the confidentiality, anonymity and ask them to sign the research informed consent.

RESULT

Demographic characteristics

Table 1 presented the detail of demographic characteristic of participants. More than a half (55%) respondents identified male while the female respondents reached near a half (45%). Marriage status among patients was almost two-fourths (70%) married, 16% divorce and 14% single. On the average, participants only have 2 children ($SD \pm 1.5$). The mean age about 44,9 years ($SD \pm 12.8$) was discovered among respondents.

Table 1. Demographic characteristic of tuberculosis patients (n=44)

Demographic characteristics	<i>n</i> (%)
Gender	
Male	24 (55)
Female	20 (45)
Marriage Status	
Single	6 (14)
Married	31 (70)
Divorce	7 (16)

Children, mean (SD)	2,27 (1,5)
Age (year), mean (SD)	44,9 (12,8)

Physical self-care

Physical self-care among tuberculosis was found majority in independent level (48%) as summarized in Table 2. Almost thirty (27%) participants started to be independent, whereas a quarter (25%) respondents experienced interrupted independence.

Table 2. Physical self-care among tuberculosis patients (n=44)

Physical self-care level	n (%)
Independent	21 (48)
Start to be independent	12 (27)
Dependent	11 (25)

Self-care agency of physical self-care

The findings on self-care agency of physical care detailed in table 3 displayed that overall participants had good enough level on self-care agency. Specifically, almost two-fourths (75%) participants had good enough coping strategy ($M=119.5$ $SD\pm 14.6$). Self-care management process, among two-quarter participants, was found good enough ($M=117.1$ $SD\pm 13.9$). Family well-being was in good enough level both among parents (66%) and children (61%). Poor level in family being well-being was only 4% on parents and 7% in children. The mean family well-being of parent and children were 174.3 ($SD\pm 31.3$) and 135.5 ($SD\pm 23.1$).

Table 3. Self-care agency among tuberculosis patients (n=44)

Variable	n (%)	Mean (SD)
Coping strategy		
Good	4 (9)	119.5 (14.6)
Good enough	33 (75)	Lower 115
Poor	7 (16)	Upper 123.9

Table 4. Relationship between self-care agency and physical self-care among tuberculosis patients (n=44)

Variable	Level			Physical self-care p-value	Coefficient Correlation (r)
	Good (%)	Enough (%)	Poor (%)		
Coping strategy	9	75	16	0.204	0.195
Self-care management process	30	52	18	0.009	0.390

Self-care		
management process	13 (30)	117.1 (13.9)
Good	23 (52)	Lower 112.9
Good enough	8 (18)	Upper 121.3
Poor		
Family well-being (parent)	13 (30)	174.3 (31.3)
Good	29 (66)	Lower 164.7
Good enough	2 (4)	Upper 183.8
Poor		
Family well-being (children)	14 (32)	135.3 (23.1)
Good	27 (61)	Lower 128.3
Good enough	3 (7)	Upper 142.3
Poor		

The relationship between self-care agency and physical self-care among tuberculosis patients

The correlation between self-care agency and physical self-care among tuberculosis patients was summarized in Table 4. Self-care management process ($p=0.009$) and family well-being (children) ($p=0.026$) significantly correlated with physical self-care with $p\text{-value}<0.05$. Meanwhile, coping strategy did not correlate with physical self-care with $p\text{-value} 0.204$ ($p>0.05$). Furthermore, table 4 also displayed that there was no correlation between family well-being (parent) and physical self-care ($p=0.170$).

DISCUSSION

Similar to the findings, WHO (2017) revealed that the majority of tuberculosis cases were found in male (65%) population. Furthermore, study conducted by Wahyuni, Soeroso, Harahap, Amelia, & Alona (2018) showed 69% male tuberculosis patients enrolled the study. Marital status of tuberculosis patients was mostly married (57,1%) similar to this study where 70% respondents were married (Ali, Karanja, & Karama, 2017). The age distribution in this study was

Family well-being (parent)	30	66	4	0.170	0.210
Family well-being (children)	32	61	7	0.026	0.336

approximately 44,9 years old. WHO reported that in 2017 90% tuberculosis patients were adults.

The study established that physical self-care was important in investing adequate treatment to the patients. The patients necessarily involve on every treatment program independently. The successfulness of physical self-care certainly entangled several factors. Orem in her theory divided four component of self-care which directly influencing self-care, self-care agency, self-care demand, nursing agency and self-care deficit (Alligood, 2014). Self-care agency was defined as a skill had by individual to care themselves. A previous study explained that self-care agency directly related to self-care where physical self-care was one of several components in self-care (Suhardingsih, Mahfoed, Hargono, & Nursalam, 2012).

Souza (2002) explained that self-care agency had 3 ~~component~~ components; 1) foundational 2) enabling and 3) operational. Operational factor are related to an individual's ability to perform self-care actions (Carter, 1998). Self-care operation are the following a personal skill to recognize condition and environment (family well-being) and significant factors in healthcare; making judgments and decisions (coping strategy); nursing care implementation (self-care management process) (Gast, et al., 1989; Souzan, 2002). This study focus on exploring operational factors; coping strategy, self-care management process and family well-being as factors affecting the physical self-care accomplishment (Figure 1).

The findings revealed that coping strategy did not correlate to physical self-care. There is limited research on how coping affect physical self-care significantly. Suhardingsih, Mahfoed, Hargono, & Nursalam (2012) showed that coping did not directly correlate to physical self-care. Coping may distribute to an integration of physical self-care through professional encouragement and personal growth (Zaccari, 2017). However this coping was affected by confounding factors of self-care such as

age, gender, marital status, and support (Alligood, 2014).

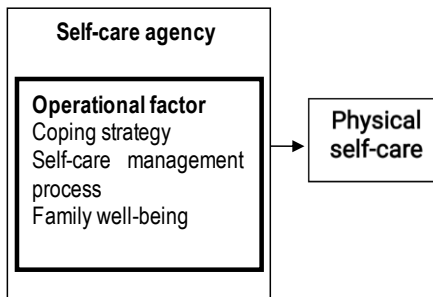


Figure 1. Factors related to physical self-care

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The effectiveness of the treatment depends on how a patient is able to engage in their process of treatment well (Harrison & Westwood, 2009). It is essential for the tuberculosis patient to develop better self-care management to gain better physical self-care. Thus indicate that there is correlation between self-care management process and physical self-care. Meanwhile, this study found that self-care management process significantly associated to physical self-care among tuberculosis patients. A study by Kapun, Sustersic, & Rajkovic (2016) explained that self-care process has a positive impact on the functionality and satisfaction of patients. Self-care process helps tuberculosis patients to aware with physical self-care where individual takes action in disease detection, prevention and treatment on their own behalf (Levin, 1976). Process of self-care develops patient self-love, compassion, the willingness to create healing environment, to learn creating constructive behaviors and attitude (American Holistic Nurses Association [AHNA], 2019).

Family well-being become as one of factors related to physical self-care. This study found that family well-being (parent) did not correlate to physical self-care. This can be affected by several factors such as parent existence, age, and marital

status (Alligood, 2014). The parent of patients who had died might not affected the physical self-care of patients. The age of patients of 44.9 years showed that most of them had been married where they have spouses supporting them to do physical self-care. Married patients were considered more likely to have successful the tuberculosis treatment due the fact that patients has spouse as supporters (Ali, Karanja, & Karama, 2017; Sengul, et al., 2015).

In the other hand, family well-being (children) were found associated with physical self-care. Most of the tuberculosis patients had 2 children. WHO (2017) explained that tuberculosis patients with children under 5 years old had high risk to be transmitted tuberculosis virus/bacteria. This will affect patient move toward physical self-care due to fear of transmitting the disease. A study conducted by revealed that 74% (53/72) of children in contact with their parents with smear positive TB (Nakaoka, et al., 2006). This could make the patients worry about their family well-being (children).

The result of this study found that coping strategies did not correlate to the physical self-care. Some limitations in this research were acknowledged. This study was conducted only in one setting at medical center Magelang, Central Java, Indonesia. The variable in self-care agency only focused on limited foundational and operational factors. Further research may broaden the research setting and explore another factor of physical self-care.

CONCLUSION

Physical self-care was important for patients within treatment program in order to improve better health outcome among tuberculosis patients. Therefore, health worker or professional health care should pay attention on factors influencing the physical self-care of the patients by helping and encouraging patients to improve, strengthen, and develop better self-care agency. Self-care demand also should be assessed so that all component of self-care can be balanced. Adequate treatment program with some innovations is important to be

continuously delivered to patients in order to reach adherence tuberculosis treatment.

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CONFLICT OF INTEREST

None

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Keyword: Coping Strategy, Family Well-being, Physical Self-care, Self-care management process.

ABSTRAK

Latarbelakang: Faktor-faktor terkait dengan keberhasilan pelaksanaan *physical self-care* pada pasien tuberculosis yang menjalani pengobatan sangatlah jarang diperhatikan. Padahal, *physical self-care* diperlukan untuk meningkatkan keterlibatan pasien dalam layanan kesehatan dengan tujuan untuk memperbaiki luaran kesehatan pasien tuberculosis. Penelitian ini bertujuan untuk mengidentifikasi strategi koping, proses manajemen *self-care* dan kesejahteraan keluarga sebagai faktor-faktor yang berhubungan dengan *physical self-care*. **Metode:** Desain penelitian ini adalah analisis deskriptif dengan jumlah sampel 44 pasien tuberculosis. Data diambil menggunakan teknik *purposive* selama sesi *follow-up* setelah pelaksanaan intervensi dukungan manajemen diri dengan kuesioner *physical self-care*, strategi koping dan proses manajemen *self-care*. Selanjutnya, uji statistik *Spearman Rho* digunakan menganalisa data yang dikumpulkan. **Hasil:** Secara statistik, variabel yang signifikan seperti proses manajemen *self-care* ($p=0.009$) dan kesejahteraan keluarga (anak) ($p=0.026$) berhubungan dengan *physical self-care*. Sementara, kesejahteraan keluarga (orang tua) ($p=0.170$) dan strategi koping ($p=0.204$) tidak memiliki hubungan dengan *physical self-care* pada pasien tuberculosis. **Kesimpulan:** Memahami faktor-faktor dalam *physical self-care* memegang peranan penting untuk mencegah komplikasi lanjut dari ketidakpatuhan berobat dan kejadian MDR. Hasil penelitian ini menyarankan untuk penelitian lebih lanjut terkait faktor-faktor yang berkaitan dengan komponen *self-care* yang lain.

Kata Kunci: Strategi koping, kesejahteraan keluarga, *physical self-care*, proses manajemen *self-care*

BACKGROUND

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Please re-write your background of study. Please make a clearly to mention your research problem, solution, and outcomes.

Your problem is physical self-care, although we never found the authors to describe this variable in background.

Your solution is factors related to physical self-care. However, your aimed this study already answered by Sauza (2002) in the last of paragraph. Therefore, what is the different your current research and the previous study?

Your outcome is improved self-care TB patients. However, the authors again never described this variable.

The authors just mentioned prevalence and treatment based on epidemiological study. Therefore, the authors failed to describe their main research problem.

Tuberculosis is one of most infectious agent causes increased mortality rate in worldwide range. Globally, in 2017, 10.0 million people had tuberculosis disease; 5.8 million men, 3.2 million women and 1.0 million children. Indonesia became top 3 countries after India and China in WHO's list of 30 high TB burden country with 8% population suffered from tuberculosis disease (World Health Organization [WHO], 2018). Moreover, approximately 558.000 people had a drug resistant (rifampicin- the most effective first line drug) and 82% of them had multidrug-resistant. In 2017, the incidence of drug resistance was announced as a burden in Indonesia where it was estimated about 32.000 people or 12/100.000 population (WHO, 2018).

Several studies revealed that patient characteristics such as previously treated with anti-TB, living in rural setting, smoker, alcoholic, tobacco chewing, body mass index below normal range, and low socioeconomic status are most commonly affected MDR-TB (Shah, Shag, & Dave, 2018; Desissa, Workineh, & Beyene, 2018). The previous study by Stosic, et al. (2018) showed that the developing MDR-TB were also influenced by monthly income of the family, poor confidence, defaulting from treatment, stigma associated with TB, subjective feeling sadness, use of sedatives, chronic obstructive pulmonary disease.

Furthermore, the emergence of multidrug resistance might be as one of a result of non-adherence to anti tuberculosis treatment (Charles, 2005; Tola, Tol, Shojaeizadeh & Garmaroudi, 2015; Wurie, Cooper, Home, & Havyward, 2018). A study explained that the treatment adherence of tuberculosis patients itself related to patients knowledge, attitude, health education and medication time (Ningsih, 2016). The success rate of TB treatment in Indonesia was approximately 52% in 2017 (WHO, 2018). Thus rate indicated that the clinical and treatment of tuberculosis program were considered poor and it leads to treatment failure (Wurie, Cooper, Home, & Havyward, 2018). A failure treatment contributed to a higher morbidity and mortality rate on tuberculosis patients compared to the patients who achieved full cure (Namukwaya,

Nakwagala, Mulekya, Mayanja-Kizza, & Mugerwa, 2011; Sadacharam, et al., 2007).

The inadequate treatment outcome among tuberculosis was affected by health systems, socio cultural and patients-related barriers (Oladimeji, Tsoka-Gwegweni, & Udoh, 2017). Patients mostly dealt with complex issues such as difficult and equitable access to health services, getting interaction to the health worker (WHO, 2007; Oladimeji, Tsoka-Gwegweni, & Udoh, 2017). In 1990s, the hindrances might be caused because the health reform tended to give less attention to community involvement in the development of health system, focusing more on technical, managerial and economic sectors (WHO, 2008). Lately, policy-makers, health worker and care providers had increasing interest to patient empowerment and involvement to manage and control their disease (WHO, 2007). Patient participation allowed them to take more responsibility for their health, to comply the treatment, and ensuring patient centered care (WHO, 2007). Effective patient involvement also gained positive results in improving treatment outcomes and developing the awareness of patients about their health (WHO, 2008). This encouraged patients to implement self-care where it was emerging and dominant in the development countries like Indonesia (Bhuyan, 2004).

Self-care as the most dominant and universal form of primary care was prominent process whereby a person manages his behavior or life style, prevention, detection and treatment in health care system (Levin, Katz, & Holst, 1977; Bhuyan, 2004). Studies revealed that individual and family had biggest role on caring the illness (Committee on Family Caregiving for Older Adults, et al. 2016). It revealed the patient self-care was highly necessary to invest on better health outcome. Three main components of self-care were known as emotional self-care, spiritual self-care and physical self-care (Utah State University, 2018). In this case, developing adequate treatment among tuberculosis patients should start on physical self-care. Physical self care was defined as activities that improve individual physical health, including diet and exercise include taking a medicine (Utah State University, 2018).

Tuberculosis patient in implementing physical self-care was influenced by various factors such as the coping strategy, self-care management process and family well-being among tuberculosis patient which incorporated as self-care agency factors (operational factors) (Souza, 2002). This study aimed to identify the coping strategy, self-care process and family well-being as factors associated with physical self-care in order to predict adequate patient involvement on improving pulmonary tuberculosis.

METHOD

Research design

This study was designed a descriptive analytic with a cross-sectional approach.

Sample and setting

Participants were tuberculosis patients, enlisted from medical center located in Magelang, Central Java, Indonesia. Using purposive technique, the recruitment of patients referred to patient's willingness and the availability, while patients who had incomplete data in the medical center were excluded. Age, gender, ethnic/race and religion were not a restriction in this study. Forty-four tuberculosis patients were eligible as respondents after procedure applied.

Research instrument and data collection

Data were collected right after informed consent delivered. The questionnaires were distributed directly to the patients with some instructions explained clearly.

A self-administered questionnaire was used to measure the data. Sociodemographic of participants was collected, including To measure physical self-care, we used questionnaire from (Umah, 2017) with cronbach alfa= 0.78. This questionnaire consisted 9 items question with dichotomous answered (yes=1; no= 0). Then, the level of physical self-care was categorized into three levels, as follow independent (scores 0-3), start to be independent (scores 4-6), and dependent (scores 7-9).

2) coping strategy had 42 items, cronbach alfa=

2) coping strategy had 42 items, cronbach alfa= 2) coping strategy had 42 items, cronbach alfa= 2) coping strategy had 42 items, cronbach alfa= 2) coping strategy had 42 items, cronbach alfa= 0.888 with likert scale described with never, sometimes, often, always and divided into levels: good (≥ 85), good enough (43-84) and poor (≤ 42) (Folkman & Lazarus, 1988), 3) self-care management process-guarding (SCMP-G) (20 items, cronbach alfa= 0.724). The variable was divided into 3 levels good (≥ 131), good enough (104-130) and poor (≤ 103) (Jones, 2003) and 4) The family well-being assessment tool; parent had 42 items, cronbach alfa= 0.943 with levels: good (≥ 194), good enough (133-193), and poor (≤ 132) and children section had 33 items, cronbach alfa= 0.916 with levels: good (≥ 152), good enough (106-151), and poor (≤ 105) (Caldwell, 1988). Both SCMP-G and family well-being questionnaire used likert scale which sub-scaled into strongly agree, agree, neutral, disagree and strongly disagree.)

Data Analysis

Analyzing process was taken after the data collection complete. It, then, was analyzed utilizing Microsoft Excel 2007 and Statistic Package for Social Sciences (SPSS) version 16. Demographic data were measured for the frequencies while correlation of the physical self-care, and coping strategy, self-care management process and family well-being tested using Spearman Rho.

Ethical consideration

The study had been ethically approved by the research ethical commission with ethical clearance number 601/EC/FK-RSDK/2016. As a guarantee, researcher delivered information related to the study to the respondent, explained about the confidentiality, anonymity and ask them to sign the research informed consent.

RESULT

Demographic characteristics

Table 1 presented the detail of demographic characteristic of participants. More than a half (55%) respondents identified male while the female

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For categorical data (percentage), for numerical data (mean and standard deviation). Then Spearman rho test was used to with significant level $p < 0.05$.

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respondents reached near a half (45%). Marriage status among patients was almost two-fourths (70%) married, 16% divorce and 14% single. On the average, participants only have 2 children ($SD\pm 1.5$). The mean age about 44,9 years ($SD\pm 12.8$) was discovered among respondents.

Table 1. Demographic characteristic of tuberculosis patients (n=44)

Demographic characteristics	n (%)
Gender	
Male	24 (55)
Female	20 (45)
Marriage Status	
Single	6 (14)
Married	31 (70)
Divorce	7 (16)
Children, mean (SD)	2,27 (1,5)
Age (year), mean (SD)	44,9 (12,8)

Physical self-care

Physical self-care among tuberculosis was found majority in independent level (48%) as summarized in table 2. Almost thirty (27%) participants started to be independent, whereas a quarter (25%) respondents experienced interrupted independence.

Table 2. Physical self-care among tuberculosis patients (n=44)

Physical self-care level	n (%)
Independent	21 (48)
Start to be independent	12 (27)
Dependent	11 (25)

Self-care agency of physical self-care

The findings on self-care agency of physical care detailed in table 3 displayed that overall participants had good enough level on self-care agency. Specifically, almost two-fourths (75%) participants had good enough coping strategy ($M=119.5$ $SD\pm 14.6$). Self-care management process, among two-quarter participants, was found good enough ($M=117.1$ $SD\pm 13.9$). Family well-being was in good enough level both among parents (66%) and children (61%). Poor level in family being well-being was only 4% on parents and 7% in children.

The mean family well-being of parent and children were 174.3 ($SD\pm 31.3$) and 135.5 ($SD\pm 23.1$).

Table 3. Self-care agency among tuberculosis patients (n=44)

Variable	n (%)	Mean (SD)
Coping strategy		
Good	4 (9)	119.5 (14.6)
Good enough	33 (75)	Lower 115
Poor	7 (16)	Upper 123.9
Self-care management process		
Good	23 (52)	Lower 112.9
Good enough	8 (18)	Upper 121.3
Poor		
Family well-being (parent)		
Good	13 (30)	174.3 (31.3)
Good enough	29 (66)	Lower 164.7
Good enough	2 (4)	Upper 183.8
Poor		
Family well-being (children)		
Good	14 (32)	135.3 (23.1)
Good enough	27 (61)	Lower 128.3
Good enough	3 (7)	Upper 142.3
Poor		

The relationship between self-care agency and physical self-care among tuberculosis patients

The correlation between self-care agency and physical self-care among tuberculosis patients was summarized in Table 4. Self-care management process ($p=0.009$) and family well-being (children) ($p=0.026$) significantly correlated with physical self-care with p -value < 0.05 . Meanwhile, coping strategy did not correlate with physical self-care with p -value 0.204 ($p > 0.05$). Furthermore, table 4 also displayed that there was no correlation between family well-being (parent) and physical self-care ($p=0.170$).

DISCUSSION

Similar to the findings, WHO (2017) revealed that the majority of tuberculosis cases were found in male (65%) population. Furthermore, study conducted by Wahyuni, Soeroso, Harahap, Amelia, & Alona (2018) showed 69% male tuberculosis patients enrolled the study. Marital status of tuberculosis patients was mostly married (57,1%)

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similar to this study where 70% respondents were married (Ali, Karanja, & Karama, 2017). The age distribution in this study was

Table 4. Relationship between self-care agency and physical self-care among tuberculosis patients (n=44)

Variable	Level			Physical self-care p-value	Coefficient Correlation (r)
	Good (%)	Enough (%)	Poor (%)		
Coping strategy	9	75	16	0.204	0.195
Self-care management process	30	52	18	0.009	0.390
Family well-being (parent)	30	66	4	0.170	0.210
Family well-being (children)	32	61	7	0.026	0.336

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approximately 44.9 years old. WHO reported that in 2017 90% tuberculosis patients were adults.

The study established that physical self-care was important in investing adequate treatment to the patients. The patients necessarily involve on every treatment program independently. The successfulness of physical self-care certainly entangled several factors. Orem in her theory divided four component of self-care which directly influencing self-care, self-care agency, self-care demand, nursing agency and self-care deficit (Alligood, 2014). Self-care agency was defined as a skill had by individual to care themselves. A previous study explained that self-care agency directly related to self-care where physical self-care was one of several components in self-care (Suhardingsih, Mahfoed, Hargono, & Nursalam, 2012).

Souza (2002) explained that self-care agency had 3 component; 1) foundational 2) enabling and 3) operational. Operational factor are related to an individual's ability to perform self-care actions (Carter, 1998). Self-care operation are the following a personal skill to recognize condition and environment (family well-being) and significant factors in healthcare; making judgments and decisions (coping strategy); nursing care implementation (self-care management process) (Gast, et al., 1989; Souzan, 2002). This study focus on exploring operational factors; coping strategy, self-care management process and family well-being

as factors affecting the physical self-care accomplishment (Figure 1).

The findings revealed that coping strategy did not correlate to physical self-care. There is limited research on how coping affect physical self-care significantly. Suhardingsih, Mahfoed, Hargono, & Nursalam (2012) showed that coping did not directly correlate to physical self-care. Coping may distribute to an integration of physical self-care through professional encouragement and personal growth (Zaccari, 2017). However this coping was affected by confounding factors of self-care such as age, gender, marital status, and support (Alligood, 2014).

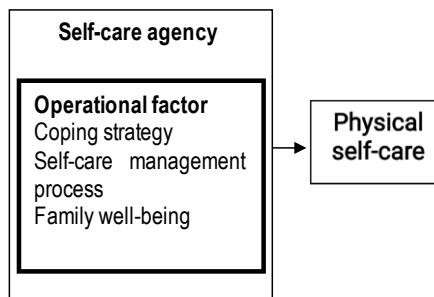


Figure 1. Factors related to physical self-care

The effectiveness of the treatment depends on how a patient is able to engage in their process of

treatment well (Harrison & Westwood, 2009). It is essential for the tuberculosis patient to develop better self-care management to gain better physical self-care. Thus indicate that there is correlation between self-care management process and physical self-care. Meanwhile, this study found that self-care management process significantly associated to physical self-care among tuberculosis patients. A study by Kapun, Sustersic, & Rajkovic (2016) explained that self-care process has a positive impact on the functionality and satisfaction of patients. Self-care process helps tuberculosis patients to aware with physical self-care where individual takes action in disease detection, prevention and treatment on their own behalf (Levin, 1976). Process of self-care develops patient self-love, compassion, the willingness to create healing environment, to learn creating constructive behaviors and attitude (American Holistic Nurses Association [AHNA], 2019).

Family well-being become as one of factors related to physical self-care. This study found that family well-being (parent) did not correlate to physical self-care. This can be affected by several factors such as parent existence, age, and marital status (Alligood, 2014). The parent of patients who had died might not affected the physical self-care of patients. The age of patients of 44.9 years showed that most of them had been married where they have spouses supporting them to do physical self-care. Married patients were considered more likely to have successful the tuberculosis treatment due the fact that patients has spouse as supporters (Ali, Karanja, & Karama, 2017; Sengul, et al., 2015).

In the other hand, family well-being (children) were found associated with physical self-care. Most of the tuberculosis patients had 2 children. WHO (2017) explained that tuberculosis patients with children under 5 years old had high risk to be transmitted tuberculosis virus/bacteria. This will affect patient move toward physical self-care due to fear of transmitting the disease. A study conducted by revealed that 74% (53/72) of children in contact with their parents with smear positive TB (Nakaoka, et al., 2006). This could make the patients worry about their family well-being (children).

The result of this study found that coping strategies did not correlate to the physical self-care. Some limitations in this research were acknowledged. This study was conducted only in one setting at medical center Magelang, Central Java, Indonesia. The variable in self-care agency only focused on limited foundational and operational factors. Further research may broaden the research setting and explore another factor of physical self-care.

CONCLUSION

Physical self-care was important for patients within treatment program in order to improve better health outcome among tuberculosis patients. Therefore, health worker or professional health care should pay attention on factors influencing the physical self-care of the patients by helping and encouraging patients to improve, strengthen, and develop better self-care agency. Self-care demand also should be assessed so that all component of self-care can be balanced. Adequate treatment program with some innovations is important to be continuously delivered to patients in order to reach adherence tuberculosis treatment.

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CONFLICT OF INTEREST

None

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1. Corresponding author : Dr. Meidiana Dwidiyanti S.Kp., M.Sc.
2. Manuscript title : Factors Affecting Physical Self-Care Among Patients With Tuberculosis
3. Affiliation : Balai Pelayanan Kesehatan Masyarakat Magelang
Laboratory/department/institution
4. Correspondence address
(any change in correspondence address, please inform us)
Mail Address : Jl Jatisari no 22 Perum Jati Raya Indah, Banyumanik, Semarang
Phone/ Mobile Phone Number, : 08164891140
Email Address : mdwidiyanti@gmail.com

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Semarang, 1 Agustus 2019
Corresponding author



(Dr. Meidiana Dwidiyanti S.Kp., M.Sc.)

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