Evaluation of impact self-management counseling on health-seeking behavior's self-efficacy pulmonary tuberculosis outpatients[☆]

Muhamad Jauhar, Astuti Yuni Nursasi*, Wiwin Wiarsih

Faculty of Nursing, Universitas Indonesia, Depok, West Java, Indonesia

Abstract
Objective: The study was to determine the influence of self-management counseling on self-efficacy in relation to the health-seeking behavior of patients with pulmonary TB at top referral hospital in West Java.
Method: A quasi-experimental design, involving a pre- and post-assessment, was applied. Purposive sampling was used to select an intervention ($n = 30$) and control group ($n = 30$).
Results: Self-management counseling was associated with an improvement in self-efficacy in relation to the health-seeking behavior and treatment adherence of patients with pulmonary TB (a mean increase in self-efficacy of 6.60 point) (*p*-value = 0.001).
Conclusion: Self-management counseling significantly increased self-efficacy in relation to the health-seeking behavior and treatment adherence of pulmonary TB patients. Self-management counseling is recommended as a nursing intervention for pulmonary TB patients, especially in the early phase of treatment (i.e., the first 1−2 months) during the administration of medication at primary and secondary healthcare facilities.
© 2019 Elsevier España, S.L.U. All rights reserved.

Introduction

Pulmonary tuberculosis (TB) remains a national and global health challenge despite the widespread dissemination of anti-TB drugs and the Bacillus Calmette−Guérin vaccine. Consequently, global and national commitments to decreasing pulmonary TB-related morbidity and mortality are being realized through the Sustainable Development Goals 2015−2030, in support of the declaration by the World Health Organization (WHO) that pulmonary TB constitutes a global emergency and a public health priority that needs addressing.[1]

Pulmonary TB is an infectious disease that is caused by *Mycobacterium tuberculosis* that attacks the pulmonary system and is transmitted through sputum that is disseminated by sneezing. Disease symptoms include chest and muscle pain; weight and appetite loss; shortness of breath;

---

coughing lasting ≥2 weeks; a fever lasting ≥1 week; and night sweats in the absence of activity.[2]

Approximately 10 million global cases of pulmonary TB were reported by the WHO in 2015.[1] The number of cases continues to increase annually. Indonesia had the second highest number of cases in 2015 ($n = 330,910$, i.e., 10% of all cases worldwide). Since then, the number of TB cases has risen by 1.96%.[3] Most cases ($n = 59,446$, i.e., 38% of all cases in Indonesia) were found in West Java.[4] The highest number ($n = 8271$) was recorded in Bogor Regency. The majority of patients ($n = 2107$) were treated at Dr. M. Goenawan Partowidigdo Hospital, a pulmonary TB facility in Cisarua, Bogor Regency.[5]

A high prevalence of pulmonary TB is characterized by unemployment; malnutrition; low education; high population density; poor sanitation; low socioeconomic and income levels; smoking; and other associated diseases, such as diabetes mellitus and human immunodeficiency virus/acquired immune deficiency syndrome. Accordingly, pulmonary TB patients are considered to be a vulnerable group.[6] As many as 75% of TB patients are of working age (15–50 years), are likely to be absent from work for 3–4 months during treatment, and to lose 20–30% of their income.[7] Other challenges include impacted physical function and stigma which can lead to emotional issues.[8,9] The self-efficacy of patients in relation to health-seeking behavior and treatment adherence has been demonstrated to be affected by physical and emotional changes.[10] Poor self-efficacy was observed in 43.4% of patients with pulmonary TB in Yogyakarta, Indonesia.[11]

Self-efficacy has been defined as a belief by an individual that he or she can benefit from perseverance in the face of adversity by maintaining life tasks.[12] Based on this, the expectation is that pulmonary TB patients with good self-efficacy during treatment are ideally positioned to achieve treatment success through treatment adherence, accompanied by a minimal treatment dropout rate. The Indonesian government recently launched a Directly Observed Treatment, Short Course (DOTS) program that is run by public health centres and hospitals in an effort to achieve completeness of treatment and successfully attain targets. However, some facilities are difficult to access, do not meet health standards, are characterized by a poor health infrastructure, and do not prioritize pulmonary TB.[7] The public health centres and hospitals participating in the DOTS program are required to provide comprehensive TB services, including the provision of adequate information about TB to patients and families through discharge planning.

Discharge planning is administered to patients, and is based on primary healthcare concepts.[1] The objective is to prevent complications; contain costs; and enhance patient satisfaction, health status, quality of life, and quality of healthcare.[13] Self-management counseling, a nursing intervention that is based on the Health Belief Model (HBM), is a form of discharge planning on offer to patients. Currently, discharge planning takes approximately 5–10 min to administer, and is used to briefly provide information about the disease, and its diagnosis and treatment.

The effectiveness of this intervention has been investigated in studies on patients with coronary artery disease (CAD),[14] chronic mental illness,[15] chronic disease,[16] diabetic

nephropathy,[17] end-stage renal disease,[18] and asthma.[19] It was shown that self-management program can improve patients' self-efficacy.

Self-management interventions are usually offered to patients with chronic disease, based on previous study outcomes. To the best of our knowledge, they have not yet been offered to patients with pulmonary TB in Indonesia. Based on previous studies, self-management counseling is a form of nursing intervetion to improve self-efficacy. The nurse acts as a counselor at the intervention.

This paper deliberates a self-management intervention that was conducted at Dr. M. Goenawan Partowidigdo Hospital. The study objective was to evaluate the impact of self-management counseling on self-efficacy in relation to the health-seeking behavior of pulmonary TB patients at this hospital, with a view to providing recommendations to healthcare providers on effective self-management interventions that can be offered to patients with pulmonary TB, especially in the early stages of their treatment.

Method

Design

A quasi-experimental design, involving a pre- and post-assessment, was applied to an intervention and a control group.[20]

Population and sample

The Dr. M. Goenawan Partowidigdo Hospital is a pulmonary TB referral health facility that provides supportive, preventive, curative, rehabilitative, and palliative services to patients with pulmonary diseases. The study participants were pulmonary TB patients at this hospital, selected for its ability to detect and diagnose pulmonary TB early.

The distinction between the intervention and control groups was based on the different dates on which the medication was taken. Purposive sampling was used.[21] Participants who lived near to the hospital were included in the intervention group, and those who lived further afield were placed in the control group to minimize group interactions.

The inclusion criteria were pulmonary TB outpatients who had receiving treatment in early phase (1–2 months); had been clinically diagnosed with TB or had tested positive through sputum smear microscopy; had no complications; were aged 18–60 years; had attained a primary school education; and were able to read, write, and speak Bahasa Indonesia for communication purposes. As many as 28 respondents for each group must be enrolled in this study.[22,23] The fact, as many as 30 respondents for each group (intervention and control) had enrolled in this study.

Data collection

The control group patients received regular health education which was explained for 5–10 min from nurses at the hospital. The nurses' explanation consisted of an introduction to the disease, as well as its diagnosis and treatment.

In addition, the patients were given a workbook containing materials and daily activity records.

Four sessions (60–90 min per session) of self-management counseling were provided over a two-week period weeks to the intervention group in hospital or at home if some of the respondents were unable to present at the hospital. The intervention comprised structured information that included an introduced about pulmonary TB and how to manage, discussions, and simulations. Nurses provided the feedback at the beginning of each session to determine any constraints to the daily activities that the patients were asked to do at home. The nurses also helped each patient to develop a daily activity plan according to his or her abilities at the end of each session. The participants' family, community members, and supervisors also assisted the patients with the daily activities taught by the nurses. The clients' workbooks facilitated the activities, and contained educational materials and daily activity records that could be read and completed depending on the need. The nurses explained the learning material provided in the patients' workbooks.

In contrast to other studies[18] where the interventions were conducted over six sessions in a six-week period, the current self-management counseling program was delivered over four sessions within a two-week period. The difference can be explained by the differing availability of the respective researchers and study participants. Distances and travel times also played a role. Regardless, a statistically significant difference in the self-efficacy of the current study participants was not found when compared with that of the study subjects in previous studies.

Prior to the start and on completion of the intervention program, the study participants were asked to complete a self-efficacy questionnaire entitled Health-seeking behavior and treatment adherence among tuberculosis patients.[11] The result of validity and realibility test for this questionnaire was 0.734, respectively.

Data analysis

Univariate data was performed. The categorical data were presented as frequency and percentages, and numerical data were presented using the mean ± standard deviation. Three tests were conducted; the Kolmogorov–Smirnov test (normality of the data), the paired t-test and independent t-test (2 mean difference test), and the chi-square test (homogeneity).[21]

Results

The sociodemographic characteristics of patients with pulmonary tuberculosis

The sociodemographic characteristics of the pulmonary TB patients in the intervention and control groups are presented in Table 1. Most of the study subjects were young adults aged 18–40 years. They accounted for 73.3% of the subjects in the intervention group and 70.0% of those in the control group. More than half of the participants in the intervention group were women (63.3%), and half of the participants in the control group were men (50%). A large proportion of subjects in both groups (63.3%) were married.

Table 1 The characteristics of patients with pulmonary tuberculosis ($n = 60$).

Characteristics	Intervention		Control	
	Frequency	%	Frequency	%
Age (years)				
Young adults (18–40)	22	73.3	21	70
Middle-aged adults (41–60)	8	26.7	9	30
Gender				
Men	11	36.7	15	50
Women	19	63.3	15	50
Marital status				
Single	9	30	6	20
Married	19	63.3	19	63.3
Widow/widower	2	6.7	5	16.7
Education level				
Elementary	14	46.7	11	36.7
High school	15	50	18	60
College	1	3.3	1	3.3
Occupation				
Unemployed	22	73.3	16	53.3
Employed	8	26.7	14	46.7
Income				
No income	21	70	14	46.7
<MRW	6	20	14	46.7
≥MRW	3	10	2	6.7

Half of the subjects in the intervention group (50%) and just over half of the subjects in the control group (60%) had graduated from junior/senior high school. Most of the TB patients in the intervention group (73.3%) and half of those in the control group (53.3%) were unemployed. Almost three quarters of the study subjects in the intervention group (70%) and less than half in the control group (46.7%) had no income.

Descriptions of self-efficacy

The mean self-efficacy values pre and post the intervention for each group (intervention and control) are provided in Table 2. Both groups had a similar mean score before the intervention. However, the mean self-efficacy value for the intervention group increased sharply to 88.50 following the intervention (standard deviation of 9.09).

Differences in self-efficacy

A comparison of the self-efficacy mean values determined for the control and intervention groups before and after the intervention is provided in Table 3. A significant difference in the mean self-efficacy value was not found for the control group before and after the intervention. By contrast, it shown to significantly increase in the intervention group (mean differential of 6.6, p-value = 0.001). This suggests that the self-management counseling intervention

Table 2 The description of self-efficacy mean values for the intervention and control groups ($n = 60$).

Self-efficacy	Intervention			Control		
	Mean	SD	95% CI	Mean	SD	95% CI
Pre-test	81.90	8.99	78.54–85.26	81.17	9.75	77.53–84.81
Post-test	88.50	9.09	85.10–91.90	81.37	7.50	78.56–84.17

Table 3 A comparison of the self-efficacy mean values for the control and intervention groups before and after the intervention ($n = 60$).

Group	Mean	SD	MD	p-value
Control				
Pre-test	81.17	9.75	0.20	0.898
Post-test	81.37	7.50		
Intervention				
Pre-test	81.90	8.99	6.60	0.001[*]
Post-test	88.50	9.09		

[*] $\alpha = 0.050$.

Table 4 The influence of self-management counseling to self-efficacy ($n = 60$).

Group	Mean	SD	MD	p-value
Control				
Pre-test	81.17	9.75	0.20	
Post-test	81.37	7.50		0.002[*]
Intervention				
Pre-test	81.90	8.99	6.60	
Post-test	88.50	9.09		

[*] $\alpha = 0.050$.

had a considerable and positive impact on self-efficacy in relation to the health-seeking behavior of pulmonary TB patients.

A significant difference in the self-efficacy mean values for the intervention and control groups was observed after the intervention (*p*-value = 0.002) (Table 4). This suggests that although the standard health education (5–10 min) given to the control group by nurses at the hospital, which covered an introduction to pulmonary TB, and its diagnosis and treatment, was seen to improve self-efficacy, a more significant improvement was observed in the intervention group following the provision of self-management counseling.

Discussion

Age

Most of the study subjects were aged 18–40 years (i.e., young, productive adults). This is in accordance with the national data that reported that most pulmonary TB patients in Indonesia are aged 25–44 years in the last year.[3] Early adulthood populations are at high risk of exposure to pulmonary TB disease transmission owing to exposure to previous primary infections; limited knowledge about disease transmission; increased interactions and socialization with others, especially those who have been infected with TB; and high smoking levels (i.e., increased exposure to the negative effects of tar and nicotine content on pulmonary function).[24,25] Previous studies have indicated that the majority of pulmonary TB patients are early adults.[24–28]

Gender

A large proportion of the pulmonary TB study subjects were women, as is the case in previous research.[26,28] This can be elucidated by the fact that the immunity of women is considered to be lower than that of men, women are frequently subjected to passive smoking in the family and elsewhere, and are more likely to follow-up on a health complaint than their male counterparts.[28] In addition, pulmonary TB is known to be a leading global cause of mortality in women aged 20–59 years.[28,29]

Marital status

A large proportion of the study subjects were married in the current study, in accordance with the findings of previous research.[26,27] However, pulmonary TB is not generally associated with marital status. Rather, most of the pulmonary TB patients in the current study were married because most of them were adults aged. In Indonesia, people who was adult aged have been married. It has been found that married and unmarried patients have the same risk of contracting TB.

Education level

Half of the study subjects had completed their education up to junior or senior high school level. These results are supported by the Ministry of Health Republic of Indonesia report in 2013 that states that the prevalence of pulmonary TB tends to increase at primary and secondary education level. It has been reported in previous research that many pulmonary TB patients are educated to junior or senior high school level.[4,27,28,30] There is also a trend in Bogor Recency for most members of the population to attain formal education to elementary, junior, and senior school levels.[3] People with lower education levels often lack knowledge about the transmission of pulmonary TB, the importance of a healthy home environment, and healthy behaviors, thus that are at risk of pulmonary TB infection.[28]

Socioeconomic status

Most of the study participants in the current study were unemployed and without an income, in accordance with the 2013 Ministry of Health Republic of Indonesia's report stated that the prevalence of pulmonary TB is increased in unemployed populations.[31] It is also may influenced by the inclusion criteria for the participants in the current study, i.e., commencing TB treatment 1–2 months prior to the start of the research. Generally, patients undergoing treatment in the early stages of TB cease working. This places a burden on their families as they have to assume the responsibility of caring for the patients. Elsewhere, it was also reported that the majority of pulmonary TB patients are unemployed and without an income.[23,26,27,32] In addition, populations in the Bogor Regency tend to have a low socioeconomic status. Nine per cent of the total population is poor, 13.28% of the women are unemployed, and 49.35% of the female population are housewives.[31]

The effect of self-management counseling

The self-efficacy of pulmonary TB patients in the intervention and control groups was similarly scored prior to the study, but increased significantly in the intervention group compared to the control group after the intervention. This result was similar to that reported in previous research.[13,15] This might be elucidated by the fact that the pulmonary TB patients in the intervention and control groups had similar sociodemographic characteristics. Self-efficacy increased among the pulmonary TB patients in the intervention group after they received self-management counseling and were given patient workbooks. The study subjects in the intervention group were provided with information about the management of TB, and were consulted in groups, accompanied by members of their family, healthcare volunteers, and social workers. It was proposed that differing interventions administered to two groups with similar characteristics would impact on their levels of self-efficacy in relation to their health-seeking behavior.

There was a difference in the mean self-efficacy values between the intervention and control groups before and after the administration of self-management counseling. This finding was in line with that of previous studies.[13,15,33] The intervention engaged the services of family or community members so that they could monitor the patients' daily activities; a deviation from previous interventions that have been performed on patients with chronic diseases. The intention was to ensure that patients with pulmonary TB would feel appreciated and recognized by family and community members.

There was also a difference of the effect on self-efficacy enhancement between self-management counseling for clients in intervention group and regular health education for clients in control group. The efficiency of self-management interventions in improving self-efficacy in CAD,[14] chronic disease,[16] type 2 diabetes mellitus,[33] end-stage renal disease,[18] and asthma patients[19] has been described in previous studies.

The self-management counseling is form of nursing intervention to improve self-efficacy. The previous studies explained that self-management program can improve self-esteem especially among clients with chronic disease about the ability to do healthy behavior. The nurse explore perceptions of abilities, advantages, obstacles in carrying out healthy behavior, provide positive reinforcement of commitment and confidence; provide a supportive environment, provide an opportunity to practice health behavior; trigger interaction with other clients who succeed in changing behavior; and prepare clients in the face of changes in physical and emotional conditions that may be experienced during healthy behavior.[34] The nurse acts as a counselor at the intervention.

The self-management counseling on the component of the HBM theory was included in the current study. It is believed that a cue to action component can modify an individual's self-belief perceptions about his or her ability to adhere to healthy behavior and ensure treatment adherence. The outcome is to achieve optimal physical health. Self-efficacy among pulmonary TB patients is anticipated to increase if they have a sound understanding of pulmonary TB and disease management through health education. These patients need the support of their family and community during TB treatment. They must be empowered to manage their psychological condition in order to enhance their coping mechanisms and minimize their stress or depression during treatment. A supportive environment enables TB patients to comply with and successfully complete their TB treatment. This can be achieved by ensuring that they have a sound understanding of the management of their disease, receive support from others, and control their illness.

Most of the pulmonary TB patients in the current study were aged 18–40 years, were women, married, had graduated from either junior or senior high school level, were unemployed, and without an income. The self-efficacy mean values increased significantly in the intervention group after the intervention. A significant difference in self-efficacy was observed in the intervention group before and after the provision of self-management counseling. This was not the case for the control group. Thus, self-management counseling can be used to improve self-efficacy in relation to the health-seeking behavior of pulmonary TB patients in the early stages of treatment.

It can also be integrated with the DOTS program on offer at healthcare facilities, thereby securing the support of families and communities. A patient workbook can be provided to guide the self-management counseling process. Self-management counseling is one of nursing specialist competency. Development of nursing interventions innovation and interactive media (i.e., modules, workbooks, flipcharts, posters, banners, presentation slides, and other media) is needed based on patient's demands. Alternative and innovative nursing interventions, with the potential to improve self-efficacy in TB patients, should be assessed in future research. Similar studies to the current one should be performed, and should include a larger sample size. This would best be achieved through the use of a randomized controlled trial. Once again, a self-efficacy questionnaire could be used.

Conflict of interests

The authors declare no conflict of interest.

Acknowledgement

References

1. WHO. The world health report 2008: primary health care now more than ever; 2008. Available from: http://www.who.int/whr/2008/whr08_en.pdf [Internet].
2. Vijayan VK, De Salja. Pulmonary tuberculosis TBC. 2nd ed. New Delhi: Ajanta Offset & Packagings Ltd; 2009.
3. Ministry of Health RI. Indonesia health profile 2015; 2016. Available from: http://www.depkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/data-dan-informasi-2015.pdf [Internet; accessed 28.02.17].
4. Statistic Central Bureau West Java. West Java Province in Figure 2016; 2016. Available from: http://jabar.bps.go.id/new/website/pdf_publikasi/Jawa-Barat-Dalam-Angka-2014.pdf [Internet; accessed 28.02.17].
5. Bogor Health Office. Bogor regency health profile in 2015. Bogor: Bogor Health Office; 2016.
6. Stanhope M, Lancaster J. Foundations of nursing in the community-oriented practice. 4th ed. Missouri: Elsevier; 2014.
7. Ministry of Health RI. Controlling tuberculosis national guideline. Available from: http://www.depkes.go.id/download.php?file=download/pusdatin/infodatin/infodatin%20-tuberkulosis%202018.pdf [Internet].
8. Jong K. Psychosocial and mental health interventions in areas of massive violence. Medecins san frontier. 2nd ed. Amsterdam: Rozenberg Publishing Services; 2011.
9. Aye R, Wyss K, Abdualimova H, Saidaliev S. Factor determining household expenditure for TBC and coping strategies in Tajikistan. Trop Med Int Health. 2011;16:307–13, http://dx.doi.org/10.1111/j.1365-3156.2010.02710.x.
10. Hafidz A, Azza A, Komarudin. Family support relationship with self-esteem of inpatients with pulmonary tuberculosis in Jember Hospital Jember Regency; 2015. Available from: http://digilib.unmuhjember.ac.id [Internet; accessed 12.01.17].
11. Mason PH, Sing P, Nhung D, Ho J, Nguyen T, Fox G, et al. Coping self efficacy for tuberculosis treatment in Ca Mau, Vietnam. In: Conference: 5th conference of the Union Asia Pacific Region. 2019. p. 75. Sydney. Available from https://www.researchgate.net/publication/277075227_Coping_Selfefficacy_for_Tuberculosis_Treatment_in_Ca_Mau_Vietnam [Internet; accessed 25.02.17].
12. Bandura A. Self-efficacy: the exercise of control. New York: W.H. Freeman and Company; 1997.
13. Health Quality Ontario. Continuity of care to optimize chronic disease management in the community setting: an evidence-based analysis. Ont Health Technol Assess Ser. 2013;13:1–41. Available from: http://www.hqontario.ca/en/documents/eds/2013/full-report-OCDMcontinuity-of-care.pdf [Internet].
14. Rondonuwu, Rolly Harvie Stevan [unpublished thesis] Pengaruh intervensi pendidikan kesehatan pada manajemen diri dari latihan fisik pada self-efficacy pada pasien dengan penyakit arteri koroner di Rumah Sakit Manado Sulawesi Utara. Depok: Universitas Indonesia; 2012.
15. Lorig K, Ritter PL, Pifer C, Werner P. Effectiveness of the chronic disease self-management program for persons with a serious mental illness: a translation study. Community Ment Health J. 2014;50:96–103, http://dx.doi.org/10.1007/s10597-013-9615-5.
16. Kim SH, Youn CH. Efficacy of chronic disease self-management program in older Korean adults with low and high health literacy. Asian Nurs Res. 2015;9:42–6, http://dx.doi.org/10.1016/j.anr.2014.10.008.
17. Kazawa K, Takeshita Y, Yorioka N, Moriyama M. Efficacy of a disease management program focused on acquisition of self-management skills in pre-dialysis with diabetic nephropathy: 24 months follow-up. J Nephrol. 2015;28:329–38, http://dx.doi.org/10.1007/S40620-014-0144-2.
18. Slesnick N. The chronic disease self-management program – a pilot study in patients undergoing hemodialysis. Nephrol News Issues. 2015. Available from: http://www.satellitehealth.com/pdf/20150409-Nephrology-News.pdf [Internet; accessed 30.01.17].
19. Maghfiroh IL. Pengaruh edukasi manajemen diri terhadap self-efficacy, perilaku manajemen diri, dan kualitas hidup pasien asma di rumah sakit paru dr Rotinsulu bandung. J Surya. 2016;8.
20. Dharma KK. Metodologi Penelitian Keperawatan: Panduan Melaksanakan dan Menerapkan Hasil Penelitian. Jakarta: Trans Info Media; 2011.
21. Dahlan MS. Langkah-langkah Membuat Proposal Penelitian Bidang Kedokteran dan Kesehatan. Jakarta: Sagung Seto; 2010.
22. Sastroasmoro S, Ismael S. Dasar-dasar metodelogi penelitian klinis. Jakarta: Sagung Seto; 2014.
23. Louw JS, Mabaso M, Peltzer K. Change in health-related quality of life among pulmonary tuberculosis patients at primary health care settings in South Africa: a prospective cohort study. PLOS ONE. 2016;11:e0151892, http://dx.doi.org/10.13771/journal.pone.0151892.
24. Bauer M, Leavens A, Schwartzman K. A systematic review and meta-analysis of the impact of tuberculosis on health-related quality of life. Qual Life Res. 2013;22:2213–35, http://dx.doi.org/10.1007/s11136-012-0319-x.
25. Statistic Central Bureau Bogor Regency. Statistik Bogor 2016; 2016. Available from: http://bogorkab.bps.go.id/new/website/pdf_publikasi/Kabupaten Bogor-Dalam-Angka-2016.pdf [Internet].
26. Rashmi PS, Chand S. Identify the impact of TBC on health status and coping strategies adopted by TBC patients. Int J Nurs Educ. 2014;6:222–5, http://dx.doi.org/10.5958/j.0974-9357.6.1.045.
27. Noorratri ED, Margawati A, Dwidiyanti M. Factors that affect self-efficacy in pulmonary TBC patients. J Nurs Health. 2016;2:24–8.
28. Panjaitan F. Characteristic of adult hospitalized patients with pulmonary tuberculosis in Dr. Sudarso General Hospital Pontianak period September–November 2010. Pontianak: Universitas Tanjung Pura; 2010. Available from: https://media.neliti.com/media/publications/194040-ID-none.pdf [Internet].
29. WHO. Tuberculosis in women; 2016. Available from: http://www.who.int/TBC/publications/TBC_women_factsheet_251013.pdf [Internet].
30. Masumoto S. Factors associated with health-related quality of life among pulmonary TBC patients in Manila, the Philippines. Qual Life Res. 2014;23:1523–33, http://dx.doi.org/10.1007/s11136-013 0571-x.
31. Ministry of Health RI. Basic health research in 2013; 2013. Available from: http://www.depkes.go.id/resources/download/general/Hasil%20Riskesdas%202013.pdf [Internet].
32. Prasetyo Y, Preechawong S, Yunibhand J. Effect of a tuberculosis health promotion program on medication adherence among tuberculosis patients. J Health Res. 2015;29:47–53.
33. Jalilian F, Motlagh FZ, Solhi M, Gharibnavaz H. Effectiveness of self-management promotion educational program among diabetic patients based on health belief model. J Educ Health Promot. 2014;3:14, http://dx.doi.org/10.4103/2277-9531.127580.
34. Bulechek GM, Butcher HK, Dochterman JM. Nursing intervention classification (NIC). 6th ed. St. Louis, MO: Elsevier Mosby; 2013.