Quality of life of pulmonary TB patients after intensive phase treatmentin the health centers of Medan city, Indonesia

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Abstract. Tuberculosis (TB) is one of the chronic diseases that has become a long major health problem in the world, as well as in Indonesia. TB treatment takes a long time (6-9 months) to cover both intensive and advanced phases. TB patients experience significant disruptions in their social life, exposed to stigma and discrimination. The purpose of this study was to determine the quality of life of TB patients after two months of TB intensive treatment phase. We conducted a quantitative study through cross-sectional design. This research recruited 100 TB patients aged > 18 years old and Category I with AFB(+) result. We involved patients from 7 Health Centers in Medan City. We utilised SF 36 instrument to assess the patients quality of lifein the interview. To analyse the collected data, we performed Independent t-analysis. The result of this study was that the quality of life of TB patients who had undergone initial treatment phase wasina low category with a score of 63.9. The two best-measured aspects of quality of life among the eight dimensions assessed in the instrument were pain and physical function.

1. Introduction

Tuberculosis (TB) is one of the chronic diseases that has been a long major health problem in the world, as well as in Indonesia. There are an estimated of 9 million new cases every year and 1.5 million deaths per year. More than half of those cases (56%) are in the Southeast Asia and Western Pacific regions.[1] The report of Riskesdas in 2013 showed that pulmonary TB disease is the second cause of death after cardiovascular disease (stroke) for all age groups and number one among the infectious diseases.[2]

TB treatment takes along duration to complete both intensive phase of 2 months and a further phase of at least four months. The length of TB treatment is suspected to affect the patient's quality of life.[3] An adult TB patient will lose their working hours about 3 to 4 months due to decreased quality of life including physical, psychological, social, or environmental aspects.[4]

Quality of life is one of the fundamental criteria for the awareness of healthcare interventions such as morbidity, mortality, fertility and disability. Patients may live longer although carrying the burden of the disease or disability that the quality of life becomes a concern of health care.[5] Results of Tinarthayu's study showed that the average quality of life after treatment is 76.8 by using SF-36 instrument, or there is an increasein quality of life score around 33.18 points after the treatment.[6]

The SF-36 instrument has been used widely as the instrument to measure the quality of life for a variety of chronic diseases and developed by some researchers.[6] SF-36 provides complete information through an assessment of 8 aspects which includes 1) physical activity limitations due to the existing health problems, 2) social function limitations of due to physical or emotional problems, 3) limitations due to physical problems, 4) bodily pain, 5) emotional well being, 6) limitations due to emotional problems, 7) vitality of life and 8) general health perception (WHO, 1997). The SF-36 questionnaire can be used to measure the quality of life of pulmonary TB patient's with several adjustmentsof the questionnaire contents for the target respondents (age, level of education) and the research area (culture and customs related).[6]

Several studies proved that pulmonary TB has abundantly impacted on the quality of life of individuals which corresponds with diagnosis, treatment, social support, social functions, and health practice. In particular, ramification on the physical and emotional functions.[7] Guo et al. study stated that TB disease can affect the patient's quality of life substantially. Initially, anti-tuberculosis treatment had positive effects on the patients, then impaired physical and mental state of the patient, subsequently.[8] Research conducted by Rajeswari in India mentioned that ex TB patients who were considered cured through microbiology confirmation resulted only 54% of them had well mental status at the end of treatment. The purpose of this study is to measure the quality of life of TB patients after undergoing two months of intensive phase treatment in Health Centers of Medan city and to analyze the quality of life-based on the patient's social demographic.[9]

2. Methods

This research was an explanatory study using a cross-sectional design that was intended to explain the relationship between independent and dependent variables. The population of this study was patients who have undergone pulmonary TB treatment for two months (intensive phase) in Health Centers of Medan city. The respondents were those who meet the inclusion criteria: category I pulmonary TB patients with AFB(+), aged > 18 years old, willing to sign informed consent, while the exclusion criteria include TB patients with chronic co-morbid diseases such as cancer, HIV, Diabetes mellitus (DM), undergoing steroid treatment. Total respondents were 100 TB patients and recruited through consecutive sampling. We conducted interview by utilising SF-36 instrument, the indicators including limitations due to emotional problems, limitations due to physical problems, physical function, pain, mental well-being, social functions, energy/vitality, and health perception in general. We obtained the ethical clearance from Ethics Commission of Medical Faculty, University of Sumatera Utara/RSUP H Adam Malik Medan. We utilised descriptive analysis by performing T-independent and ANOVA test.

3. Result

Table 1. Distribution of pulmonary TB patient's characteristics in health centers of medan city.

Characteristic	Number	Percentage
Gender		
Men	69	69
Women	31	31
Age		
< 40 years old	45	45
40-59 years old	42	42
$\geq$ 60 years old	13	13
Education		
Low (SD, SMP)	47	47
High (SMA, D-III, S1)	53	53
Income		
Less (< 2 million)	83	83
Enough ($\geq$ 2 million)	17	17

Occupation		
Non employed	36	36
Employed	64	64
Race		
Batak	57	57
Jawa	29	29
Etc	14	14
Marital Status		
Married	68	68
Not Married	32	32

The results showed that the percentage of the respondents' gender were 69% for male and 31% for female. The age distribution TB patients under 40 years old, 40-59 years old and above 60 years old are 45%,42% and 13% respectively. The majority of pulmonary TB patients in this study graduated from high education level (53%). Based on occupation,most of the TB patients in this study are employed (64%). This study also showed that marital status of pulmonary TB patients are mostly married (68%). Mainly, the TB patients in this study were having low income (83%).

Table 2. Mean distribution of TB patient's quality of life after completed intensive phase.

No	Scale/ Dominican	Mean	SD	Min	Max
1	Physical function	73.9	25.1	.00	100.00
2	Limitations due to physical problems	61.8	43.9	.00	100.00
3	Limitations due to emotional problems	58.0	47.0	.00	100.00
4	Energy / vitality	65.1	17.8	20.00	100.00
5	Mental Welfare	68.9	19.5	12.00	100.00
6	Social function	67.4	18.9	15.50	100.00
7	Pain	79.2	20.3	22.50	100.00
8	Perception of general health	48.6	15.3	20.00	90.00
	Quality of life in general	**63.9**	**16.4**		

The results of this study is that the quality of life of the patients with pulmonary TB in general after receiving intensive therapy for two months is 63.9. The best quality of life's indicator after initial treatment phase is pain relieved (79.2) and physical function (73.9). While the lowest quality of life among the pulmonary TB patients is the perception of general health (48.6%) and limitations due to emotional problems (58.0).

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Table 3. Mean distribution of TB patient's quality of life after intensive phase based on gender.

Quality of life	Mean	SD	P
Gender			
Male	65.7	16.1	0.895
Female	65.2	17.8	
Age			
< 40 years old	66.1	18.8	0.759
40-59 years old	66.0	13.0	
≥ 60 years old	62.4	19.0	
Education			
Low (SD-SMP)	69.1	14.4	0.045
High (SMA-PT)	62.5	17.8	

Based on table 3, the mean of TB patients quality of life after receiving intensive treatment phase for themale group was 65.7 (SD 16.1) and the female group was 65.2 (SD 17.8). After performing

independent t-test, the result is no difference of quality of life between male and female (0.895). Based on age group, the quality of life of those who were at aged of <60 years old was higher than those who were ≥60 years old. However, we found that there is no difference in the quality of life (0.759) based on age group in ANOVA test results. Based on education level, we found that there is a difference in the quality of life (0.045). Low education level group significantly has a better quality of life (69.1), then those from high education group levels (62.5).

4. Discussion
Our study showed that the number of male TB patients are more than the number of female TB patients. In this study, the majority of the respondents were male (69%). These results also showed similarities with the results of Hendrik et al. study that found there was more male pulmonary TB patients (60.4%) than the female.[10] Tinarthayu also found TB patients in their study were more male than female (53.7%).

The age distribution of TB patients involved in this study was 45% respondents from <40 years old, 42% repondents from 40-59 years old, and 13% respondents from > 60 years old. This finding is almost similar to Hendrik et al. study which identified the age distribution of the TB patients of the age 18-36 years old was 43 people (47.3%), 37-56 years old was 36 people (39.6%) and 57-76 years old was 12 people (13.1%).[10] In addition, the study of Tinarthayu has a majority respondent at the age of <40 years old (72.1%).

Among the pulmonary TB patients educational level in this study, the were more patients from high educational background (53%). Contradictively, according to the studyof Tinartayu and Riyanto, the majority of pulmonary TB patients has a lower secondary education (53.7%).[6] Kisaka et al. found that pulmonary TB patients mostly had no formal education or only graduated from primary school (52.9).[11] WHO annual report identified that TB patients were 70% higher in males, have lower secondary education, from low economic level and at productive age (75%).[11]

Our study also identified that TB patients were predominantly employed (64%). Similarly, studies conducted by Atif et al. (2014) found that the majority of pulmonary TB patients were employed (80.6%). However, unlike study conducted by Tinartayu and Riyanto (2015) showed that the majority of pulmonary TB patients had no occupation (72.2%). The results of this study also identified that marital status of pulmonary TB patients was mostly married (68%). Similar finding was resulted by Atif et al. (2014) showed that the majority of pulmonary TB patients were married (62%). Additionally, a similar finding also resulted by Kakhki & Masjedi (2015) which found that the pulmonary TB patients were married (68%) and not married (32%).[11]

The TB patients in this study have low income (83%). This finding is also similar with a Canadian study conducted by Marra et al.thatidentified the majority of pulmonary TB patients were having low income (89%).[7] On the other hand, Atif et al. showed that the majority of patients with pulmonary TB in their study have sufficient income (64.8%).[12]

The quality of life of pulmonary TB patients in this study after receiving intensive therapy for two months is 63.9. The best quality of life's indicator after the two-month treatment phase is pain relieved (79.2) and physical function (73.9). Whereas the two lowest quality of life aspects among the pulmonary TB patients are the perception of their general health (48.6%) and the limitations due to emotional problems (58.0). A study conducted by Tinartayu & Riyanto showed that the quality of life of pulmonary TB patients in general after receiving intensive phase treatment for two months was 76.76. Where the baseline values of quality of life in their study before treatment were 43.58, increasing up 33.18 points. In another study conducted by Tinartayu & Riyanto, it was found that the highest quality of life indicator after receiving two months treatment is a social function with 86.43, followed by physical function with 84.91. The results' analysis of the highest increase after this phase is the dimension of the physical role that elevated around 67.59 points as mentioned as the answer to the question about physical health experience can affect on work and daily activities.[6] Another study by Balgude in 2013 in India showed that out of a total of 30 respondents the quality of life of pulmonary TB patients before TB treatment phase was lower compared with controls and then after

two months treatment, the respondents quality of life are improved.[14] Likewise a study conducted by Agnesti which analysed the quality of life utilising SGRQ instrument found that there is a quality of life improvement of TB patients after going through the first three-monthtreatment. This study included intensive and advanced therapy of pulmonary TB patients from several hospitals and Health Centers in Yogyakarta.[15]

In our study, the mean of TB patients quality of life after receiving intensive treatment phase for the male group was 65.7 (SD 16.1), and the female group was 65.2 (SD 17.8). The independent t-test resulted that there is no difference in male and female's quality of life (0.895). Based on age group, those who were at aged of <60 years old have a better quality of life that is 66.0 (SD 13.0), while the quality of life for the age group > 60 years old is 62.4 (SD 19.0). There is no difference in the quality of life, based on age group (0.759) in ANOVA test results. A study conducted at Jember Lung Hospital among polyclinic patients resulted that education level was also significantly related to TB patients' quality of life (p=0.042).[16] Interestingly, in our study we found that the low education level group was significantly have a better quality of life (69.1) then those who had high education levels (62.5).

5. Conclusion
Our study resulted that genders and age are not significantly related with pulmonary TB patients' quality of life. The quality of life of TB patients after undergoing the initial treatment phase is in a low category. The highest quality of life from 8 aspects is the assessment of pain and physical function. Whereas, the least quality of life is the perception of general health and emotional mentality.

References
[1]   World Health Organization 2015 *Global tuberculosis report 2015 20th edition* (Geneva, Switzerland: World Health Organization)

[2]   Kementrian Kesehatan R I 2013 Riset kesehatan dasar (Riskesdas) Available from: http://www.depkes.go.id

[3]   Ratnasari N Y 2012 Relationship between social support and quality of life of pulmonary tuberculosis patients in association of lung disease treatment (BP4) marginalize unit of Yogyakarta *Jurnal Tuberkulosis Indonesia* **8** 7-11

[4]   Arifah T N 2015 Description of pulmonary TB patients' quality of life in padasuka health center Cibeanying Kidul district Bandung city

[5]   Hastuti I D, Setiawan R and Fikri J 2014 Relationship between social support and quality of life of pulmonary tuberculosis patients in community health centers of West Java province in the year 2014 *Bhakti Kencana Medika* **4(1)** 1-74

[6]   Tinartayu S and Riyanto B U D 2015 SF-36 instrument as an evaluate of pulmonary tuberculosis (TB) patients' quality of life (Yogyakarta: Mutiara Medika) **15 (1)** 7-14

[7]   Marra C A, Marra F, Cox V C, Palepu A and Fitzgerald J M 2004 Factor influencing quality of life in patients with active tuberculosis *Health Quality Life Outcomes* **2** 58 Available from: http://www.hqlo.com/content/2/1/58

[8]   Na G, Marra F and Marra C A Measuring health-related quality of life in tuberculosis: a systematic review *Biomed. Central* 1-10

[9]   Rajeswari R, Muniyandi M, Balasubramanian R and Narayanan P R 2005 Perceptions of tuberculosis patients about their physical, mental and social well-being: A field report from South India *Soc. Sci. Med.* **60** 1845-53

[10]   Hendrik, Perwitasari D A, Mulyani U A and Thobari J 2015 Measuring quality of tuberculosis patient using st george respiratory questionnasire (SGRQ) instrument in Yogyakarta ISBN: 978-602-19556-2-8

[11]   Kisaka S, Rutebemberwa E, Kasasa S, Ocen, F and Mutyoba J 2016 Does health related quality of life among adults with pulmonary tuberculosis improve across the treatment period? A

hospital-based cross-sectional study in Mbale Region, Eastern Uganda *BMC Res. Notes* **9** 467

[12]   Atif M, *et al*. 2014 Impact of tuberculosis treatment on health-related quality of life of pulmonary tuberculosis patients: a follow-up study *Health Quality Life Outcomes* **12** 19

[13]   Kakhki A and Masjedi M 2015 Factors associated with health-related quality of life in tuberculosis patients referred to the national research institute of tuberculosis and lung fiseases in Tehran *Tuberc. Respir. Dis.* **78** 309-14

[14]   Abhishek B and Smita S 2013 Study of impact of antitubercular therapy on quality of life *Indian J. Med. Sci.* **66(3-4)**

[15]   Agnesti D, Perwitasari D A and Mulyani U A 2013 Measuring quality of tuberculosis patient in intensive phase treatment and followed by using st. george respiratory questionnaire (SGRQ) in Yogyakarta district [Thesis] (Program Pasca Sarjana Farmasi Universitas Ahmad Dahlan Yogyakarta) pp 27-8

[16]   Adnan A, Perwitasari D Aand Mulyani U A 2014 Validation of st. george respiratory questionnaire (SGRQ) into Indonesian version for tuberculosis patients in Indonesia *Int. J. Pub. Health Sci. (IJPHS)* **3(3)** 179-84