

THE PROCEDURE OF EMPOWERING FORMER TBC PATIENTS TO IMPROVE DETECTION OF PRESUMPTIVE TBC CASES: CASE STUDY IN KUBU RAYA DISTRICT, WEST KALIMANTAN

**Agus Fitriangga¹, Muhammad Nasip², Siswani³, Andre Nugroho³, Surjana⁴,
Novayanti Tangirerung⁴, Sumanto Simon⁵, Pandu Riono⁵**

Abstract: *Background:* Former TB patients had not been involved in the identification of presumptive TB cases. This study aimed to assess the effect of empowerment of former TB patient in detecting and referring presumptive TB cases to health services.

Methods: This was a quasi-experimental study with quantitative and qualitative approach. The study was conducted in November 2013 to June 2014 at Sungai Kakap and Rasau Jaya Primary Healthcare in Kubu Raya District. Linear regression analyses were used to measure the effect of empowerment of former TB patients. The qualitative data gathered via FGD and in-depth interviews, then analyzed by content analysis.

Results: The results of linear regression of the difference of presumptive TB cases before intervention in the intervention group was 25 (CI 95% 2.16-47.8), and after intervention was 31 (CI 95% 8.15-53.84). The qualitative data indicated that stakeholders in Kubu Raya District support the empowerment of former TB patients.

Conclusion: The study found that procedure of empowering former TB patient such as TB knowledge, motivation and communication skills can be used to improve presumptive TB case detection. Our findings could support policy makers and public health researchers to develop interventions to improve TB program-based on former TB patients

Keywords: Former TB patient, empowerment, presumptive TB case, Kubu Raya District

INTRODUCTION

Tuberculosis (TBC) remains a global health problem. Globally in 2017, there were an estimated 10.0 million incident cases of TBC (range, 9.0–11.1 million), equivalent to 133 cases (range, 120–148) per 100 000 population¹. In 2017, 87% of new TBC cases occurred in the 30 high TBC burden countries. Eight countries accounted for two-thirds of the new TBC cases: India, China, Indonesia, the Philippines, Pakistan, Nigeria, Bangladesh, and South Africa. Indonesia's TBC incidence rate in 2017 reached 319/100,000 population. The incidence of TBC in Indonesia declines gradually from 366 cases per 100,000 people in 2003 to 319 cases per 100,000 people in 2017. Meanwhile, the number of TBC prevalence was 272/100,000 population, and mortality TBC was 25/100,000 population².

National TBC Program has arranged the strategy in order to increase TBC case finding through community empowerment. The new paradigm of empowering society has given broad understanding, where society has the inclination and ability to participate and support government programs, especially in the health sector³.

¹Faculty of Medicine Tanjungpura University,

²Health Polytechnic of Pontianak

³Public Health Office, Kubu Raya District, West Kalimantan

⁴Directorat General of Disease Control and Environmental Sanitation, MOH RI

⁵Tuberculosis Operational Research Group

Community empowerment is a process involves continual shifts in power relations between different individuals and social groups in society³. It is also an outcome, and in this form, it can vary, for example as an outcome of the resources redistribution and decision-making authority or achievement of an increasing sense of self-determination and self-esteem (inner power)³.

Several studies indicate the positive effects of empowerment and engagement among TBC patients^{4,5,6,7,8,9}. In some countries, community empowerment in health program has been initiated. For example, involving TBC patients who had recovered (former TBC patients) in TBC control programs had positive impacts on people who were infected by TBC. For instance, in Bangladesh, interventions had been given in 283 sub-districts covering 82.106 inhabitants. Female community health volunteers played a pivotal role in educating the community and ensuring DOTS. DOTS committees were functioning at various levels in TBC patients' participation. TBC clubs were organized to increase the involvement of TBC patients in identifying and referring cases^{7,8}. In Chifeng, Mongolia, in the context of TBC stigmatization and low case detection, clubs were organized for TBC patients under treatment or cured involving local officers, celebrities and leaders of health organizations. TBC patients share their experience with other patients, where community leaders give speeches; cured TBC patients; identify suspected cases and observes treatment adherence. TBC stigmatization proved to be greatly reduced⁷ Former patients act as 'brokers' in Quang Ninh Province in Vietnam where there was a relatively high rate of HIV infection. They played an advisory role in the community based on their experiences. No structured network, but people in the community know where they were^{9,10}.

However, to our best knowledge, such publication on the effect of former TBC patient empowerment to support the TBC program in Indonesia, especially in West Kalimantan, is limited. Therefore, based on this fact, the study aims to assess the effect of former TBC patient empowerment in detecting presumptive TBC cases and referring them to primary health care in a Kubu Raya district in West Kalimantan¹¹.

METHODS

A quasi-experimental study in combination with the qualitative embedded study was employed in this study. The intervention group was former TBC patients in Sungai Kakap Primary Health Care, Sungai Kakap sub-district, where control groups were former TBC patients obtained in Rasau Jaya Primary Health Care and Rasau Jaya sub-district. Sungai Kakap sub-district has area covering 261.3 km², consists of 7 villages with a population of 53.349. Whilst the Rasau Jaya sub-district has 111.07 km² area and 6 villages with a 25.887 population.

Quantitative Approach

Variables

The dependent variable was a number of presumptive TBC cases that had been found and referred by former TBC patients and the independent variables were former TB patient's characteristics including socio-demographic (age, sex, level of education) and level of knowledge concerning TBC.

Sample Size and Sampling

The sample in the quasi-experimental study was determined using a two-sample comparison of means. Determination of the minimum sample size was done by referring to the ratio of the average expected increase of suspect invention for the treatment group was 0.8 and the control group was 0, an 80% power, assuming a significance level of 5%. The number of samples in the intervention and control group were 56 each.

A theoretical sampling approach was used to select and recruit participants. This approach was based on the assumption that 'intense cases,' i.e. patients who participated in this study had a piece of good information about presumptive TBC in their neighborhood. We randomly selected 56 of former TBC patients in the two sub-district, represented from all villages from two sub-district. We then contacted the TBC officers in Sungai Kakap Primary Health Centre and Rasau Jaya Primary Health Centre to ask whether patient members in their area would agree to participate in our study. All 112 patients who were contacted by the TBC officers agreed to meet and participate in the study.

Instrument and Measurement

A pre and post-test consisting ten-questions regarding TBC disease were given to former TBC patients in intervention and control groups, contain the knowledge of TBC transmission, main and additional symptoms, treatments, side effects of medication, the risk of incomplete treatment, prevention, and identification of people with a higher risk of TBC. Material about TBC was given through counseling and dissemination of leaflets by the TBC officers from the two primary health centers and also by the officers from the Department of Health, Kubu Raya District. The intervention group also received additional pieces of training regarding motivation and communication. Motivational and communications training were delivered in a form of group training consists of 56 former TBC patients who have been invited by the Sungai Kakap health center. The group was divided into 10,

and they were given a motivational and communication training by a team from the Health Office of Kubu Raya District. It took place in the Sungai Kakap Health Centre’s Hall and were arranged two times. Motivational materials covered actions in raising awareness to other people who suffer from TBC to recover. Communication materials comprehended skills on how to communicate and encourage TBC suspects to be willingly referred to the health center.

Then after the pieces of training, participants in the intervention and control group were given the assignment to find the presumptive TBC cases in their neighborhood. Every month during the study period, the TB officers in Sungai Kakap and Rasau Jaya Health Centres followed up participants’ progress in finding presumptive TBC cases. If there were findings, the TBC officers reminded them to meet and refer the TBC suspects to the primary health center for further examination.

Quantitative data was collected using questionnaires and a TBC referral card. The questionnaire measured knowledge of TBC. We analyzed the number of presumptive TBC cases that found and referred by former TBC patients used findings and referral cards as a piece of evidence on evaluation and monitoring, to prove that former TBC patients had come across and referred suspected TBC to the health centre. The card consisted of information on name, age, address of suspected TBC, the main symptom and additional symptoms, the village code, the unique code of former TBC patients, and the serial number of suspected TBC.

Data Collection Procedures

This study was conducted from November 28, 2013, to June 30, 2014. Quantitative data were collected through pre and post-test concerning TBC knowledge to 56 samples in the intervention group and 56 samples in the control group. Each sample was given a unique code so that one could determine the completeness of the questionnaires. The completeness of the questionnaires was examined directly on site. TBC officer examined the findings and referral card of TBC suspects, which was filled by former TBC patients, through cross-checking with TBC 06 Form in Sungai Kakap and Rasau Jaya Primary Health Care.

Processes and Data Analyses

Quantitative data was entered using the EPI DATA 3.1 version and were analyzed in STATA 12. Descriptive statistics summarised socio-demographic variables. Factor analysis was used to obtain a score summarising all variables related to each knowledge construct and to evaluate changes in intervention and control groups. Answers were summed to generate individual propensity scores for each construct (i.e. between 0-5 for lowest knowledge, 6 -7 moderate, and 8-10 for highest). With 10 items scaled, the reliability coefficient was 0.607. T-test analysis was conducted to compare pre- and post-test differences of knowledge between intervention and control group. P-values were considered significant at 0.05 or less. Linear regression was used to analyze the effect of the empowerment of former TBC patients toward the detection of suspected TBC.

Qualitative Approach

We developed FGD and In-depth interviews’ guidelines to collect qualitative data. In the FGD, issues related to the availability of supports to empower former TBC patients and stigma experienced by former TBC patients were discussed. In in-depth interviews, we asked respondents about the sub-district government’s commitments in supporting the empowerment of former TBC patients.

Sample

Table 1 shows the number of interviews undertaken in each village according to respondents’ characteristics.

Type of Interview	Participant category	Number of respondents/focus groups discussion participants
Sungai Kakap Sub-District		
Individual Interviews	Head Villages	7 males
	Head of Sungai Kakap Healthcentre	1 female
	TB officer in Sungai Kakap Health Centre	1 male
	Former TBC patients	2 males, 2 females
FGDs	Head Villages	7 males
	Head of Sungai Kakap Health Centre	1 female
	TB officer in Sungai Kakap Healthcentre	1 male
	Health Officer of Kubu Raya District Health Office	3 males, 3 females
	Former TBC patients	5 groups (average 10 size, mixed gender)

Rasau Jaya Sub-District		
Individual Interviews	Head Villages	6 males
	Head of Rasau Jaya Healthcentre	1 male
	TB officer in Rasau Jaya Health Centre	1 female
	Former TBC patients	2 males, 2 females
FGDs	Head Villages	6 males
	Head of Rasau Jaya Health Centre	1 male
	TB officer in Rasau Jaya Health Centre	1 female
	Health Officer of Kubu Raya District	3 males, 2 females
	Former TBC patients	5 groups (average 10 size, mixed gender)

Table 1: Summary of Participants

Data Collection

Qualitative data were gathered through rapid appraisal¹² during village fieldwork and through a desk review to relevant documents (i.e. annual health reports from Health Department of Kubu Raya District and annual health report from Sungai Kakap and Rasau Jaya Health Centre). Field visits of approximately 2 days per village by a mixed skill team of 3–4 researchers, took place from February to March 2014. Potential organizations and individuals as a key informant for interviews and FGDs were identified through a desk review and were shared and amended in collaboration with the Kubu Raya District Health office.

Data collection were conducted in Sungai Kakap's sub-districts on 3-12 February 2014, participants were came from Sungai Kakap, Sungai Itik, Tanjung Saleh, Pal IX, Sungai Belidak, Kalimas, and Sepok Laut villages. Data collection in Rasau Jaya were gathered on 5-12 March 2014, consists of 6 villages namely Rasau Jaya 1, Rasau Jaya 2, Rasau Jaya 3, Rasau Jaya Umum, Bintang Mas, and Pematang 7.

The interview lists focused on gathering a wide range of opinions to ensure fair representation of how former TBC patient involvement strategies were implemented. Semi-structured interview guidelines were developed for each category of the respondent (Kubu Raya District Health Office, Head Villages, Head of Sungai Kakap and Rasau Jaya Health Centre, and former TBC patients). These guidelines were reviewed by facilitators from the Tuberculosis Operational Research Group (TORG) to ensure that those sufficiently captured the critical themes of the measurement. Former TB empowerment was explored through an open question: 'TBC is a disease that exists in the region, according to your opinion, what causes this to happen?'. Then it was followed by probing questions based on findings from interviews or prior desk reviews.

Each semi-structured interview was conducted by one or more researchers at the respondents' workplaces and lasted between 30 minutes to 1 hour. Where necessary, especially with the respondents speaking in local languages, a translator was used to explain the research aims and the consent process. Interviews were audio-recorded where permission was granted, and researchers took notes. Respondents were given a detailed explanation regarding the purpose of the interview and their rights, including the right not to participate. Literate participants gave signed informed consent and non-literate participants gave verbal consent recorded by interviewers. None of the individuals found refused to participate.

During each visit, there were 3–4 days of meetings with Kubu Raya District Health Office and then followed by travel to villages and visits to Sungai Kakap and Rasau Jaya Health Centre.

Processing and Data Analyzing

Qualitative data consist of audio-recorded interviews and were transcribed or translated, field notes were also added and summarized. We conducted a simple manifest analysis of the qualitative material¹³, and we were simply interested in documenting what was happening to participants' experiences. The analysis was based on the typed in-depth interviews and focus group discussion notes as well as reflections from what observed in the field. Data were then electronically (i.e. using a word processor) grouped into categories, the results of which are reported in narrative form.

Meaning Unit	Condensed Meaning Unit	Category	Theme
We found where someone did not want to go to the health centre to check their sputum by our referral, I thought if they were told to do so by the person that they respect, such as village head, I thought they would have visited the health centre.	Former TBC patient needs community leader participation to refer to the presumptive TB cases to the health centre. The community leader has enormous influence in encouraging the community member	Meeting the needs of the community leader's role	stake holder's role in community empowerment
I am sure, the empowerment of former TBC patient could be implemented. But there is one problem that sometimes we do not understand. The former TBC patients had said that he had suffered from TBC, but not all people believe it. So I thought it must be convinced to former TB patients who had recovered, there could be evidence from the health centre stated that he was TBC patients but now he or she has been declared cured. So when he suggests suspect to take medication, the public can trust.	Former TB patient could be involved in TB case finding. Adapting referral skills and dealing with limitations of the subject.	Lack of community involvement in TB case finding Learning new skills for referral	Role of former TB patient

Table 2. An Example of Analys

RESULTS AND DISCUSSION

Table 3 shows the baseline characteristics for 112 participants, 56 in the intervention group and 56 in the control group. Thirty-five per cent of intervention and twenty-six per cent of control participants were aged 36-45 years, whereas 48,2% of intervention and 55,4 of control participants education level were elementary.

Variables	Intervention Group(%) N=56	Control Group (%) N=56	Chi-square (p-value)
Gender			
Male	35 (62.5)	25 (44.6)	0.06
Female	21 (37.5)	31 (55.4)	
Age			
≤25	8 (14.3)	2 (3.6)	0.04
26-35	11 (19.6)	13 (23.2)	
36-45	20 (35.7)	14 (25.)	
46-55	14 (25)	15 (26.8)	
>55	3 (5.4)	12 (21.4)	
Education Level			
Elementary	27 (48.2)	31 (55.4)	0.82
Junior High	12 (21.4)	12 (21.4)	
High School	14 (25)	10 (17.9)	
University	3 (5.4)	3 (5.4)	

Table 3. The Characteristics of Respondent in Intervention and Control Groups

Knowledge Level of Former TBC Patients

In the intervention group, there is one question that only one respondent could answer correctly, that was the question of side effects of anti-tuberculosis drugs. Meanwhile, in the control group, only five respondents could answer the question for TBC treatment correctly.

The results of the knowledge level of former TBC patients, from pre and post-test both for the intervention and control group, were given in Table 4 and 5.

Questions	Intervention Group (%) N=56)	Control Group (%) N=56)	Chi-square (p-value)
TB definition	22 (39.3)	13 (23.2)	0.473
The main symptoms of TB	23 (41.1)	14 (25)	0.158
The additional symptoms of TB	19 (33.9)	24 (42.9)	0.629
TB transmission	20 (35.7)	28 (50)	0.577
People with a high risk of contracting TB	7 (12.5)	6 (10.7)	0.744
Diagnosing TB	7 (12.5)	23 (41.1)	0.001
TB treatment	3 (5.4)	5 (8.9)	0.577
Side effects of OAT	1 (1.8)	20 (35.7)	0.176
The risk of incomplete treatment	18 (32.1)	25 (44.6)	p<0.001
The prevention of transmission	13 (23.2)	24 (42.9)	p<0.001

Table 4. Distribution of Correct Answer from Pre Test in Intervention and Control Group

Meanwhile, among ten questions, there were some questions that the number of participants who could correctly answer those was decreased from pre to post-test. In the intervention group, only the questions about TBC's treatment that did not change between pre and post, only three people who were able to answer those correctly. Whereas in the control group, there were three questions that the number of participants who could correctly answer those was decreased from pre to post-test. Those questions were about TBC's diagnosis, TBC's treatment, and side effects of Anti-Tuberculosis Drugs. A misunderstanding of the question could lead respondents to choose any answer choice related to anti-TBC drugs side effects. For example, there were multiple choice questions where respondents had to choose which one that does not include the side effects of anti-TBC drugs. Respondents were answering joint pain, reddish urine, nausea, abdominal pain, which actually were side effects of anti-TBC drugs. There was a possibility that respondents did not understand that they have to choose an answer that was not a side effect of anti-TBC drugs.

Questions	Intervention group (n=56)			Control group (n=56)		
	Pre-test	Post-test	Chi-square (p-value)	Pre-test	Post-test	Chi-square (p-value)
TB definition	22	23	0.006	13	38	0.904
The main symptoms of TB	23	28	0.010	14	43	0.018
The additional symptoms of TB	19	25	0.014	24	34	0.752
TB transmission	20	23	p<0.001	28	42	p<0.001
People with a high risk of contracting TB	7	12	p<0.001	6	7	0.744
Diagnosing TB	7	16	p<0.001	23	17	p<0.001
TB treatment	3	3	p<0.001	5	4	0.516
Side effects of anti-TBC Drugs	1	6	0.727	20	6	0.001
The risk of incomplete treatment	18	21	p<0.001	25	37	p<0.001
The prevention of transmission	13	16	p<0.001	24	28	p<0.001

Table 5. Distribution of Number of Participants who Correctly Answer Questions for Pre and Post Test in Intervention and Control Group

The result of the t-test score for pre and post-test in intervention and control group stated that the mean of TBC knowledge in the control group from the pre-test was 3.25 and the intervention group was 2.38, the difference between the two groups was 0.875 and p-value = 0.112 (p-value > 0.05). Therefore, there was no significant difference between the scores of TBC knowledge in the control group and the intervention before treatment is given. The mean of TBC knowledge before the intervention was 2.38 and after intervention increased to 3.09, with the score difference of 0.715 and p-value = 0.005 (p-value < 0.05), which means there was a significant difference to the level of knowledge about TBC in the intervention group before and after TBC knowledge were given.

The number of Presumptive TBC

The presumptive TBC cases were found before the intervention from May to October 2013 and after the intervention, from December 2013 to May 2014 by participants both in control and intervention groups (Table 6)

and those found by the health center. There was no significant difference in the number of presumptive TBC found in the control group before and after the intervention, it was 259 and 253 respectively. Meanwhile, in the intervention group, there was an increase of 47 number of presumptive TBC cases found before and after the intervention, it was 175 before and 222 after the intervention given. The difference in numbers between control and intervention groups was 41 (10.6%).

The difference of mean before and after the intervention in the control group was 1 and the intervention group was 6. The results of the linear regression of the difference of presumptive TBC cases before and after the intervention in the intervention and control group were shown in Table 6. It showed that the intervention group had a steeper slope compared to that in the group control (Figure 1).

Group	Time	Mean of Presumptive TB	SE	95% CI
Control	Before	43.16	12.58	18.49-67.83
	After	42.16	12.58	17.49-66.83
	Difference	1		
Intervention	Before	25	11.65	2.15-47.84
	After	31	11.65	8.15-53.84
	Difference	6		
Delta Difference		5		

Table 6. The Mean Difference of Presumptive TBC Before and After Intervention

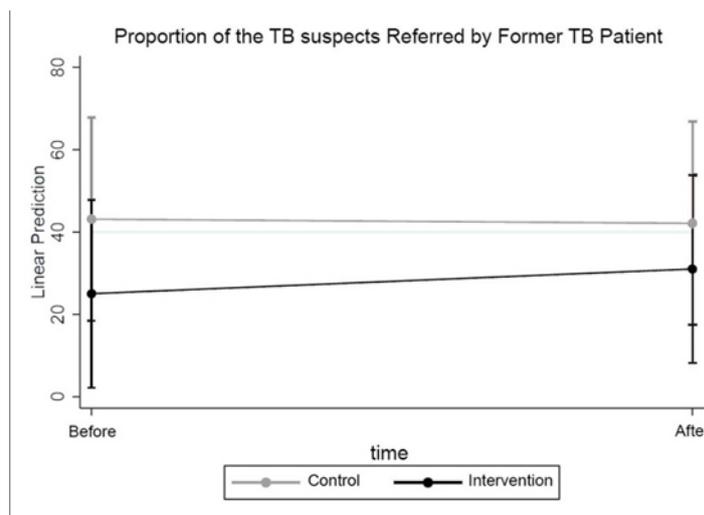


Figure 1. Proportion of TBC Suspect Referred by Former TBC Patient

The Number of Referral, sputum examination, and smear-positive by Former TBC Patient

From a total of 222 people with presumptive TBC recorded on Form TB06 from November 2013 to June 2014 at Sungai Kakap Primary Health Center, there were 42 presumptive TBC cases that have been found and referred by former TBC patients. Of 42 people, 37 of them came to the health center to conduct a sputum examination and 8 people were confirmed smear-positive.

Meanwhile, in the control group, of 253 presumptive TBC recorded in Form TB06 from November 2013 to June 2014 in Rasau Jaya Primary Health Centre, there were 25 people with presumptive TBC have been found and referred to by former TB patients. All of them came to the primary health center for sputum examination and four were having smear-positive.

Level of Knowledge about TBC

Score of TBC knowledge before intervention was 2.375 and after intervention increased to 3.09, the score difference was 0.715 and p-value = 0.005 (p-value <0.05). The increase of knowledge in both groups has given assurance to former TBC patients to discover and encourage TBC suspects to seek health at the primary health center.

This knowledge is essential to increase participants' self-assurance, we have suffered and recovered from TBC, therefore knowledge and experiences combined with good communication skills make us more motivated to help people recover from TBC (female, 38 years old, from intervention groups)

Stakeholder's Role in Empowering Former TBC Patients

Through FGDs and in-depth interviews, it found that there was a major role of stakeholders in the sustainability of the development program of former TB patients. Four former TBC patients in both groups agreed that the village head had an important role to persuade people with presumptive TBC to examined their health in the primary health center.

"We found that there was someone who did not want to go to the health center to check their sputum by our referral, I thought if they were told to do so by the person they respect, for example, a village head, I thought they would have visited a health center" (male age 36, and female age 57 in intervention group)

Ten out of thirteen of the head villages felt that the empowerment of former TBC patients in their area could assist the government's programs to control TBC. As the following statement:

"We are heads of the villages, as our responsibility, we will always ready, if needed, to help and accompany former TBC patients who will refer suspected TBC to the health center, usually people still have respect to the head of the village". (male, age 48 and male age 55 in control group)

In addition, the head of the village also provided advice to ensure the continuity of the discovery of suspected TB by former TB patients. All of the village head in the intervention and control group gives the following opinion :

"Technically, the first we might gather neighborhoods at the village level, and from the health centers who are aware of these issues. In addition, we will invite our former TB patients, then they will be introduced to all RTs, and we can agree that the actions will be started anytime. In a meeting with former TB patients, I expect to emphasize the introduction of the symptoms of TB. And If I know more about the TB, I can facilitate them to find the TB suspect in my village" (male, age 50 and 57 in intervention area).

The study of the empowerment of former TB patients in finding and referring the presumptive TB cases, to the extent of authors' knowledge, is the first study in Indonesia, especially in West Kalimantan. In this study, we documented a pattern showing gaps in former TB patients' knowledge. We found 33 in 56 of the former TB patients were not knowing that TB is caused by a germ or an agent that is transmissible from an infected person to another. They rather related it, from the point of community beliefs, that the disease was a curse and was because of magic. However, despite there was a lack of knowledge about the aetiologic agent, nearly 50% had knowledge about the transmission of TB, as they were able to relate it to coughing. In a related study carried out in Malang, East Java, Indonesia, TB patients' knowledge about TB showed that nearly half (45%) of the total of 20 respondents had sufficient knowledge about TB¹⁴.

Quantitative findings indicated that trained former TB patient can be empowered to help the TB program in order to improve TB case findings. The proportion of referred presumptive TB cases was 1,9 times larger than before, this had proved that they could cooperate with community and stakeholders to overcome the TB problem. Qualitative findings indicated that enormous commitments from stakeholders had supported the empowerment of former TB patients in helping TB program. Most of the leaders, from the high level in sub-district, such as Camat (head of Sub-district), community leaders (head villages), head of Primary Health Centre in Sungai Kakap and Rasau Jaya, and also leader in Health Office of Kubu Raya District had been giving endorsement in this program and committed to guarantee the program sustainability.

However, in FGDs and in-depth interviews, we found that there were some obstacles to the empowerment of TB patients. They were impeded by a lack of TB services, stigma, and incentives. The lack of access to qualified TB services was a key barrier to the empowerment of TB patients. It can be due to geographic, economic, cultural or organizational factors. Most of former TB patients were from low socioeconomic status. They mainly worked as farmers, housewife and becak drivers. The culture was found also as a barrier in empowering the former TB patients. They just wanted to invite participants only from the same tribes. This finding was supported by previous research^{9,10,11,27}.

We also found that TB stigma was still high in the community. The cadres (former TB patients) often received discrimination when they gave an explanation to suspects. It might be one of a determinant in accessing care and regular treatment^{15,16,20,21}. It may also cause a self-isolation and a decrease in self-esteem as a consequence of health personnel or community prejudices^{17,18,19,24,25}. Low self-esteem, an increase of self-isolation and prolonged suffering may hamper patients' empowerment.

The use of incentives was another crucial element that requires consideration to improve the motivation of former TB patient. In this research, we provided an incentive for anyone who found and referred suspected TB to the health centre, mainly with a confirmed positive smear. Incentives we gave include cloth with TB message and household goods. This had proved to increase the motivation of former TB patient, but this condition was not sustained. The findings supported also by previous research, where it used another incentive, that whoever would come to the health centre as referred by a TB club, would not have to stand in the long queue at the health centre^{9,22}.

CONCLUSION

The findings suggest that former TB patients could be involved in the TB case finding in Kubu Raya District, at least for the short term. If it can be sustain, this program will continually contribute to improve TB Case Finding in West Kalimantan. Overall, the results are positive and are sufficient to advocate TB policymakers to gain strategy for involving the former TB patients in West Kalimantan in their program, which currently not exists. Further research is needed on the long-term effectiveness and sustainability of involvement of former TB patient in improving presumptive TB case finding.

The Public Health Implications

This study attempted to fill the gaps of the evidence by investigating the effects of former TB patient's empowerment in the TB case finding of Kubu Raya District. The literature on patient's empowerment indicates that former patient willing to be involved in TB program such as referring suspected TB cases to primary health centre and helped them adhere their treatment^{10,25,26,27}. Our findings will enable policymakers and public health researchers to develop interventions that targeted society empowerment and improve the program based on former TB patients, in order to improve the detection of TB suspects. As this study findings do not contradict that in other countries, the authors recommend the Kubu Raya Health Department and Sub-Directorate TB of Ministry of Health to involve former TB patients in the TB case finding, to determine the long-term effectiveness and sustainability of former TB patient at primary level. Additionally, economic analysis of participation of former TB patient should be conducted to determine whether they are worthwhile in eradication TB strategy program. Potential national scale-up would depend on further researches, including evaluation of cost-effectiveness, which was not attempted in this study.

Strengths and Limitations

The study limitations were potential response bias in interviews, lack of monitoring and followed up the process of TB case finding by former TB patients, and potential contamination related to timeliness. Some responses bias was possible in interviews if participants exaggerating their experience (e.g. ever had bad experiences at the first treatment or had a bad stigma on people with TB). Nevertheless, the important role of TB officers in primary health care to control the progress of former TB patients for finding a new case across the intervention and control group and in the process of gaining qualitative findings had supported the improvement of the study result. Despite potential limitations, this study is among the first to explore the effects of former TB patients in the TB program, providing a useful foundation for further researches.

REFERENCES

1. WHO, 2018, Global Tuberculosis Report.
2. Sub-directorat of TB, Ministry of Health, Prevalence of TB in Indonesia, 2014
3. Longtin, Yves, et al, Patient Participation: Current Knowledge and Applicability to Patient Safety, *Mayo Clin Proc.* • January 2010;85(1):53-62 • doi:10.4065/mcp.2009.0248
4. Laverack G. Health promotion practice: power and empowerment. London: Sage Publications, 2004:47-8.
5. Rafii F, Soleimani M, Seyed-Fatemi N. Concept Analysis of Participation of Patient with Chronic Disease: Use of Hybrid Model. *Iran J Nurs.* 2010;23(67):35-48.
6. Thompson AG. The meaning of patient involvement and participation in health care consultations: a taxonomy. *Soc Sci Med.*2007;64(6):1297-310

7. Salim H et al. *Patients' participation in case finding and case holding: experiences of Damian Foundation Bangladesh*. International Journal of Tuberculosis and Lung Disease. 2003, 7(11S1):S255.
8. Akramul I. *Community participation in TB control as part of social development: the experience of BRAC*. International Journal of Tuberculosis and Lung Disease, 2005, 9(11S1):S37.
9. He, GX, et al. *Implementing DOTS strategy through tuberculosis clubs*. International Journal of Tuberculosis and Lung Disease, 2005, 9(11S1): S135–S136
10. McQuillen K, Davis CL, Ho K, McGowan P, Resin J, McEwan K, Kallstrom L, Rauscher C. Challenges in measuring patient participation: case studies from British Columbia's Patients as Partners initiative. J Participat Med. 2013 Feb 27; 5:e10.
11. Health Office of Kubu Raya Distric Profile, 2013
12. Vondal P. Using rapid appraisal methods. Performance monitoring and evaluation TIPS. Washington, DC: USAID; 2010
13. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today 2004; 24: 105–12
14. Yeti, Anita et al, Patients TB Knowledge implication to Medication adherence, Journal Care Vol. 3, No. 2, 2015.
15. Johansson E, Winkvist A. *Trust and transparenc in human encounters in tuberculosis control: lessons learned from Vietnam*. Qualitative Health Research. 2002. 12:473–491
16. Tolossa, Daniel, et al, Community knowledge, attitude, and practices towards tuberculosis in Shinile town, Somali regional state, eastern Ethiopia: a cross-sectional study ; BMC Public Health, 2014
17. Demissie, M, Getahun, H, *Community tuberculosis care through "TB clubs" in rural North Ethiopia* (; Soc Sci Med, 2003, May 56;(10): 2009-18).
18. Getahun H, Maher D. *Contribution of "TB Club" to Tuberculosis*. Control in Rural District in Ethiopia Int J Tuberc Lung Dis. 2000. 4(2) : 174-8.
19. Laverack G. *Improving Health Outcomes through Community Empowerment: A Review of the Literature* (J Health Popul Nutr : 113-120, 2006).
20. J.Macq, T.Torfoss, and H.Getahun. *Patient empowerment in tuberculosis control: reflecting on past documented experiences* (Tropical Medicine and International Health. 12/7.PP 873–885.(2007).
21. Lawn SD ,2000, Tuberculosis in Ghana: social stigma and compliance with treatment. International Journal of Tuberculosis and Lung Disease 4, 1190–1191.
22. Needham DM, Bowman D, Foster GM & Godfrey-Faussett P (2004) Patient care seeking barriers and tuberculosis programme reform: a qualitative study. Health Policy 67, 93–106.
23. Eastwood & Hill, A gender-focused qualitative study of barriers to accessing tuberculosis treatment in The Gambia, West Africa, International Journal of Tuberculosis and Lung Disease, 2004
24. Macq J, Dembele M, Solis A & Martinez G (2005a) Comparing Community Involvement in TB Care in Nicaragua and Burkina Faso. Presented at the Joint Meeting of the DOTS Expansion, TB/HIV and DOTS-plus Working Groups of the STOP-TBPartnership, Versailles.
25. Macq J, Solis A, Martinez G & Dembele M (2005b) The frontline TB care providers' supportive systems: findings from three experiences in Central America and West Africa. International Journal of Tuberculosis and Lung Disease 9, S70–S71.
26. Macq J, Solis A, Martinez G, Martiny P & Dujardin B (2005c) An exploration of the social stigma of tuberculosis in five 'municipios' of Nicaragua to reflect on local interventions. Health Policy (Amsterdam, Netherlands) 74, 205–217
27. Bravo et al, Conceptualising patient empowerment:a mixed methods study, BMC Health Services Research (2015)