

## Psychoeducational intervention for improving mental health of leprosy patients

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### Abstract

**Background:** Leprosy is a chronic disease that can cause disability as a result of nerve damage and causes complex problems. Stigma and association of psychosocial problems tends to occur and increases the risk of mental health disorders of the patients.

**Methods:** This research approach is mixing method with AB design type (intervention only). Assessment was conducted by interviewing methods, knowledge tests about leprosy and instrument Self Reporting Questionnaire-20 (SRQ-20). The sampling technique used purposive sampling, obtained 3 participants and allocated individually. Psychoeducational intervention provided through the description, discussion, sharing, chores and directly exercise through experiential learning approach, which consists of 5 sessions for 90 minutes and delivered every week.

**Results:** The result showed psychoeducational intervention was effective for improving mental health, which marked by the decline of psychological distress symptoms after the intervention.

**Conclusion:** This research suggests the follow-up session of the implementation from the interventions and psychoeducation material can be implemented as routine education in primary health centers for leprosy patients who experience psychological distress.

**Keywords:** Leprosy; Mental Health; Social Stigma

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### Introduction

Leprosy is a chronic, contagious disease caused by an infection of *Mycobacterium leprae*. Leprosy bacteria that get into a person's body have an average incubation period of 2 to 5 years, or even more. The bacteria attack the skin and peripheral nerves, such as the eyes, hands, and feet (1, 2). Leprosy is one of a chronic disease that causes complex problems. Not only medical problems, leprosy also extends to psychological, social, economic, cultural, security, and

even national security issues problems (1, 2) This is because leprosy typically occurs in developing countries as a result of the limitation of the government to provide adequate service in health, education, welfare and social economy. In this regard, Indonesia is the third highest contributor of new leprosy patients worldwide (after India and Brazil) and the second highest in Southeast Asia with around 15.000 new cases of leprosy every year and impairment rate level 2 for about 8-10% (2, 3).

Leprosy is commonly known in Indonesian from cultural tradition, religion, and not medically. This leads to the spreading of erroneous information, understanding, and belief of leprosy in Indonesian society, such as a belief that deems leprosy as highly transmissible, lethal, hereditary, God's curse, incurable, odious, and disabled (4, 5). Rumors, stigma, and leprophobia that spread in society clearly will cause disquiet and become a tremendous stressor for leprosy patients, consequently it could adversely impact on the psychological state and tend to underlie self-acceptance concept and coping mechanism on leprosy patients (2,6,7). Based on the previous researches on mental health leprosy patients' (8), it is known that most of them tend to experience mental distress and have higher prevalence to suffer from mental problems than patients with other chronic disease. Leprosy patients tend to have a lower psychological well being that affects their thoughts, feelings, behavior, and functioning as a complete human being (4,6,7,9).

Psychological distress of leprosy patients can be grouped into the following symptoms:

- a. Affective, which is characterized by negative emotional symptoms, such as: feeling afraid, disappointed and grieving with the illness that is currently suffered, not confident, embarrassed, feeling worthless and useful in his life, and fear of being ostracized (6-8).
  - b. Cognitive, which is characterized by disturbing thought symptoms, such as: lack of ability to solve problems and coping with the disease, perceive stigma so that sufferers feel losing sense of direction in life and seeing their future negatively even thinking they are better die (6-8).
  - c. Conative, which is characterized by symptoms of maladaptive behavior, such as: closed tendencies and avoidance when interacting intensively with others (6-8).
  - d. Physical, which is characterized by negative physiological symptoms, such as: always feeling underpowered due to inability to adapt to physical conditions after suffering from leprosy (6,8), even various complaints such as tension and fatigue that cannot be explained medically (7, 9).
- but not only that, from various literature explained there are several things that can aggravate the mental health conditions of leprosy patients, (1,1 0) such as:
- a) Leprosy type  
Some researches explain that people with leprosy type *multi basiler* (MB) tend to experience greater psychological distress than *pausi basiler* (PB) type patients (1, 5). The factors suspected of being the originator of the distress are related to the more complete and easier disability episodes of MB leprosy type so that patients are required to take pharmacological treatment for 12 months and also carry out more intensive self-care compared to PB type sufferers (1).
  - b) The level of disability experienced by leprosy patients  
Leekassa, *et all.* (11) and Tsutsumi, *et all.* (12) in their research, found that sufferers who had experienced disability (especially level 2 disability) had a very strong association with mental health problems, compared with leprosy patients who only experiencing level 1 disability and also those who do not experience disability.
  - c) Knowledge of leprosy  
Parijs (13) and Heijnders (7) explain that the lack of knowledge of patients regarding leprosy greatly influences the patient's belief in their treatment and the development of stigma in the life course of the sufferer. The stigma is not only obtained by patients from their environment, but also can develop from themselves (self-stigma) (6).

Knowledge and wrong views about leprosy make the sufferer have a wrong perception about his illness so that eventually the sufferer will experience a disruption in his mental health.

Tsutsumi *et al.* (12) and Heijnders *et al.* (7) say that basically, there have been quite a lot of researches are done to get the depiction of mental health condition from leprosy patients, but very few researches discuss effort that could be done to mend and prevent it. They strongly advise the ensuing researcher to be able to design a therapeutic intervention in an attempt to restore psychological health condition from leprosy patients. The intervention should be aimed so that they could learn new values, help them understand and accept their physiological condition, the self, and their surroundings, and also to develop hopes and realistic future plans (7, 12, 13). A therapeutic intervention that could be given to leprosy patients, as reviewed from biopsychosocial problems faced by them, is psychoeducation (14, 15). Psychoeducation is an intervention in the form of education and information given to participants with psychological distress, such as depression and up to schizophrenia (16), or physical impairment (17).

The psychological problems mentioned above, of course, have negative impacts on the mental health status of leprosy patients. Regarding WHO concept (4, 18, 19) about the dimensions of mental health, namely the dimension of positive mental health. Researcher used that concept as a guide to explain the description of the psychological condition of leprosy patients. The concept describes about dimension of mental health as a source of strength and is related to wellbeing which is characterized by the ability of a participant to accept his condition (self-acceptance), compare and interpret the surrounding conditions, adapt or change if needed (autonomy), have a purpose in life (purpose in life), and has the ability to foster good social relations (positive relation with others). While the targets in the intervention design compiled

in this research will be based on the dimensions of mental illness, namely mental health disorders associated with the presence of symptoms of psychological distress, including: affective, cognitive, conative and somatic symptoms in participant's life as a result of psychosocial problems that they experienced since suffering from leprosy.

World Health Organization (20) describes mental health into two dimensions, including:

1. Positive mental health, which describes mental health as a source of strength and related to people wellbeing, which is characterized by:
  - a) The people's ability to accept his condition positively (self-acceptance). People who have high values in the dimensions of self-acceptance if they a positive attitude towards himself, appreciates and accepts various aspects that exist on them, both qualities that good and bad, and can feel the positive things from their past lives (21).
  - b) People's ability to compare and interpret the surrounding conditions, adapt or change them if needed (autonomy). The main characteristics of people who have high autonomy, among others, can determine everything independently, be able to make decisions without pressure and interference from others, have resilience in facing social pressure, can regulate behavior from within, and can evaluate themselves with standards personal (19, 21). The ability to interpret life in life (purpose in life). People who have high values in the dimensions of life goals are characterized by a sense of direction in life, able to feel the meaning of the past and present, have beliefs that provide life goals, and have targets to be achieved in life (19, 21).

- c) The ability to develop social relations well. People who have positive relationships with others are characterized by the ability to foster a warm and trusting relationship with others, have concern for the well-being of others, can show empathy, affection, and intimacy, and understand the principle of member and acceptance in interpersonal relationships (19).
2. Mental illness, which describes disorders, symptoms and mental problems. Mental health disorders are associated with the presence of symptoms of psychological distress between the symptoms of affective, cognitive, conative and functional (somatic) people in their lives. Sometimes mental health disorders do not lead to a particular clinical diagnosis and sometimes appear as a result of temporary or permanent distress (18). The main contributors to mental health disorders are depression, anxiety, cognitive, somatic complaints and functioning (20).

The mental illness dimension from World Health Organization (14) is used as the basis for the target in the design of the intervention in this research because the goal to be achieved is the condition of the patients being well, namely by minimizing, reducing and managing distress symptoms that are natural since they being diagnosed with leprosy. The symptoms of psychological distress experienced by leprosy patients have several characteristics related to their illness (6, 7) although that the psychosocial problems that they experienced appear at different levels, so the symptoms of distress psychological more or less the same can be explored through existing theoretical reviews.

In this research, psychoeducational intervention used in this research focuses on the curative effort by minimizing, reducing, and managing symptoms of distress shown in leprosy patients, however, due to the lack of standardized

psychological interventions commonly given to leprosy patients as the effort to boost their mental health.

The delivery techniques of psychoeducational intervention used in this research are through; description, discussion, sharing, homework, and training directly through experiential learning related to the diseases suffered by the research participant. The approach is intended to enable the participants to conduct catharsis on all the experiences that suppress them and try to open up to new knowledge and experience, being enthusiastic in carrying out treatment based on the ability to manage distress due to their illness, and continuously be able to develop their potential optimally (15, 17). The researcher also designed a psychoeducation module for leprosy patients to improve their mental health and have never been used in previous research related to interventions for leprosy patients, and hence, this research aimed to assess the effect of psychoeducational intervention for improving mental health of leprosy patients.

### Methods

The basis for determining the participant criteria in this research will be determined based on literature studies on factors that affect the mental health of leprosy patients. In addition, based on several intervention techniques that can be given to people with leprosy, the researcher will make an intervention program that aims to overcome (curative), namely by minimizing, reducing, and managing distress symptoms that are natural subjects since being diagnosed with leprosy. These interventions will be therapeutic and educative (psychoeducation) through experiential learning, for leprosy patients who experienced very complex psychosocial problems and the implementation of interventions will be delivery by individually, as an effort to create a sense of security and open attitude from the research participants (14).

The effectiveness of the psychoeducational intervention on improving mental health of leprosy patients in this research will be seen based on the implementation process of the intervention (formative evaluation) and also the outcome (outcome evaluation) (22).

Both of these evaluations will be used simultaneously in this research. In formative evaluation, evaluating the effectiveness of psychoeducational interventions will focus on implementing the intervention at each stage based on the indicators specified in the intervention design. The researcher evaluates the process using interviews and observations at each session implementing the intervention (22).

The outcome evaluation, the researcher will measure the extent to which the intervention caused changes in the direction expected in the participant of the research. Assessment was conducted by interviewing, testing of knowledge about leprosy, and self-reporting questionnaire-20 (SRQ-20). In this case, the symptoms of psychological distress of leprosy patients will be measured using the WHO SRQ-20, which was developed by the WHO to measure mental health in health-care centers in developing countries (23, 24). SRQ-20 consists of 20 questions covering the main components of general mental health such as depression, anxiety, and somatic complaints and not for psychotic cases (23).

In addition, the participant's knowledge of leprosy will be measured by a knowledge test consisting of 17 objective choice questions outlined from 10 indicators regarding basic knowledge that should be known to leprosy patients (4). Then, the researcher will compare knowledge test scores as well as pre- and post intervention SRQ-20 scores and are considered effective if there are an increase in knowledge test scores and a decrease in SRQ-20 total score, initially at least 6 (included in the criteria of experiencing psychological distress that is necessary to watch out)

being lower than 6 (entering the criteria to experience some psychological distress) (23).

This research approach is mixing method with AB design type (intervention only), which is a research with N (sample) participants or groups in small numbers. A describes the initial situation (baseline), B describes the situation after the researcher gives the intervention (25). The researcher intervened in the form of psychology on the participants and saw differences in their mental health changes. The difference in a positive direction changes from baseline (before intervention) and after the psychoeducational intervention was seen as an evaluation of the success of this research (26).

Based on the results from two times screening at the public health center in Jakarta, the researcher got five leprosy patients who met the criteria to be the participants of the research. However, only three participants were willing (with inform consent) to take part in the intervention activity, namely participant 1, participant 2, and participant 3, while 2 other participants were absent and refused to take part in the activities planned by the researcher. The three persons with high psychological distress symptoms (need to watch out for) suffering from leprosy with multibacillary (MB) type and in the past 12 months still get leprosy pharmacological therapy or therapy for leprosy reactions.

This research uses mixed analysis method between quantitative and qualitative. Quantitative analysis is used for simple calculation, using the descriptive analysis method, which is a statistic procedure to summarize, organize, and simplify the data (26). Whereas, qualitatively, this research uses thematic analysis that aims to look for patterns shaped based on the theme (14).

Todd *et al.* (27) say that mixing methods (quantitative and qualitative) are approaches whose functions are complementary, more understandable, and easier to use in the context of natural psychology.

In this research, the researcher will quantification a particular psychological symptom and obtains a number of numbers that represent the symptoms, and also describe the symptoms with the qualitative approach so the information obtained will be broadly covered (27) The stages of analysis process are as follow:

- a. Researcher finds the main themes that appear as psychological problems rooted in participants' illness and acquired by interviewing the participants, and then, researcher could design an intervention that would be given to the participants.
- b. Researcher quantifies certain psychological symptoms on research participants, on pre- and post-intervention, so researcher will obtain some number from the test and questionnaire on pre- and post-intervention.
- c. Researcher then redoes qualitative analysis. Qualitative data are obtained by interviewing and observing the participants during the intervention process.

The approach used in evaluating the effectiveness of intervention success in this research is based on how the intervention helps participants to change toward positive direction based on the psychological distress symptoms shown in them (23). In this regard, researcher will compare pre and post intervention data from:

- 1) SRQ-20 total score, this intervention is considered effective if there is a decrease in the total SRQ-20 score, which is initially  $\geq 6$  point before the intervention becomes lower than 6 point after intervention (22, 24).
- 2) The percentage score of knowledge tests on leprosy, which is considered to be achieved if there is an increase in the percentage of after the psychoeducation intervention is implemented;
- 3) Participative scale scores on each research participant include: symptoms of affection, cognitive,

conative and physical. Affective, cognitive and physical symptoms are seen based on the SRQ-20 instrument (in each group of symptoms of target psychological distress), whereas in conative symptoms, that is based on participative scale scores of participants regarding self-acceptance since suffering from leprosy. The criteria for post intervention for each symptom were considered to be achieved if there was a decrease in intensity / score compared to pre-intervention. Specifically, the criteria for achieving intervention on each symptom are based on the items in the SRQ-20, as follows: (22, 24, 28)

- 4) Affective symptoms: if the items number 3, 4, 5, 6, 9, 10, 13, 15, 16 (selected pre-intervention participants) a decrease in intensity / symptom score post psychoeducation intervention is given;
- 5) Cognitive symptoms: if the items number 8, 12, 17 (selected pre-intervention participants) a decrease in intensity / symptom score post psychoeducation intervention is given;
- 6) Somatic symptoms: if in item number 1, 2, 7, 11, 14, 18, 19, 20 (selected by pre-intervention participants) there is a decrease in intensity or symptom score post psychoeducation intervention is given;
- 7) Formative evaluations that focus on implementing interventions at each stage, namely based on predetermined indicators. The researcher evaluates the process by using interviews and observations at each session of intervention (breakdown evaluation for each stage attached to the intervention design).

- 8) The results of this evaluation will support the achievement of previous evaluations (based on the SRQ-20 instrument and knowledge tests). If in this evaluation, the participant fulfills the post intervention indicator for each psychological distress symptom, then the participant is considered to meet the criteria (achieved) in an effort to reduce these symptoms.

Psychoeducation is a specific form of therapeutic aid based on the learning process and related to the provision of information to anticipate the gap between participant knowledge and perceptions (patients) and how patient's behavior is related to knowledge and perceptions (15). Based on this and a literature research on psychoeducation, researcher consider most appropriate learning process in psychoeducational interventions in this research is experiential learning.

The term experiential learning is done to emphasize that experience plays an important role in the learning process and distinguishes it from other learning theories such as cognitive learning theory or behaviorism. The experiential learning approach has a comprehensive perspective by combining participant experiences, perceptions, cognitions, and behaviors (29,30).

The experiential learning model consists of four stages, which describe two processes related to how to absorb experience, namely concrete experience (CE) and

abstract conceptualization (AC), and two processes related to experience transformation, namely reflective observation (RO) and testing concepts in new situations or referred to as active experimentation (AE). This makes learning a process where knowledge created through the transformation of experiences that emphasize CE here and now and feedback processes that involve social learning processes and problem solving, which can be used to improve knowledge and choose new experiences (29, 30).

Schematically, the experiential learning approach consists of four stages of the learning process that can be started at any stage but must follow the sequence, as shown in Figure 1.

Through the experiential learning approach, mental health problems in the participants in this research were carried out participantly, so that the participants really absorbed and understood each session of the psychoeducation material they participated in. Psychoeducational interventions in this research begin with the process of RO from the experience of the disease suffered by the research subjects. The results of this reflection will be assimilated or accommodated in the cognitive structure (abstract/AC conceptualization), and then, a new hypothesis is formulated to be tested again on the new situation (AE). The results of the experimental stage will lead the participant to the stage of CE (29, 30).

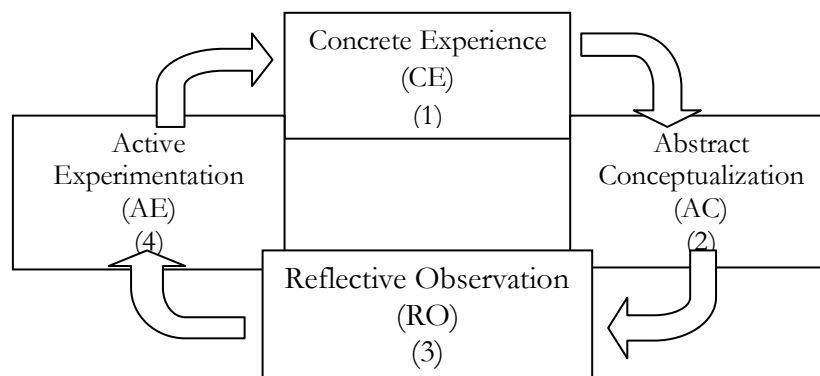


Figure 1. Experiential learning process

The objectives in the design of this intervention are based on the dimensions of mental illness (29, 30), which describes psychological distress experienced by leprosy patients, which includes symptoms of feeling (affective), thinking (cognitive), behavior (conative), and physical (somatic) maladaptive or negative. The results analysis of the psychological distress symptoms that experienced by people with leprosy, have several characteristics associated with the disease (6,7) so that even though the psychological distress symptoms may appear at different levels in each participant, basically the symptoms that are experienced are not much different from those that researcher examine based on existing theoretical reviews.

From various literatures, it is known that psychoeducational interventions for increasing well-being can be done around 60 min or more with a duration of 1–2 times a week between 4 and 16 sessions. This is assuming that the participant of research requires time to precipitate the essence of the session and doing the homework assignments that researcher given, and 1 week is considered ideal enough for that purpose (31).

The design of the intervention in this research is based on a number of scientific evidence, namely from the results of research and literature studies on leprosy, chronic diseases, and mental health, so that the form will refer to guide illness management and recovery<sup>(32)</sup> with a multicomponent approach (33), which combines various methods that aim to

increase participant knowledge about their illness and teach new skills that can used by participants in managing leprosy they suffer.

Psychoeducational intervention is provided through the description, discussion, sharing, chores, and direct exercise through experiential learning approach. The intervention consists of five sessions for 90 min, delivered every week. The delivery model on psychoeducational interventions in this research is individually with experiential learning. Through the experiential learning approach, the researcher not only provide insights into the knowledge of only concepts from psychoeducation material but also provide real experiences that will build skills through real assignments (homework assignments that researcher give at the end of each session) to the research subjects. This method is intended to provide a feedback and evaluation process between the results of implementation and what should be done.

Psychoeducational intervention is provided through the description, discussion, sharing, chores and direct exercise through experiential learning approach. The intervention consists of 5 sessions for 90 minutes, delivered every week and participants will be allocated in Individually intervention, as shown in table 1. The application of stages in experiential learning in psychoeducation interventions in this research will be described, as shown in table 2.

Table 1. Psychoeducational intervention sessions' summary

Session	Theme	Time (min)
1	Psychoeducation on leprosy	±90
2	How to cope with uncomfortable situation?	±90
3	What is leprosy?	±90
4	How to manage disrupting thoughts?	±90
5	How to maintain our current physical health?	±90



Table 2. Stage of Experiential Learning at the Implementation of Psychoeducation Interventions

Implementation	Description of Experiential Learning Stages
Session 1	Participant were asked to reflect on their experience of pain seen from physical changes after taking medicine (reflective observation) → the researcher explained how the connection between biopsychosocial since a person is declared sick in general (abstract concept) → connects concepts with participant' reflections (testing concepts in new situations) → assigning tasks to the participant to write honestly the problems they experienced were related to their thoughts, feelings, behavior and physical condition since suffering from leprosy. This is so that there is a change in the attitude of closure with others (concrete experience) →
Session 2	Participant were asked to report their results and difficulties when writing honestly the problems they experienced were related to their thoughts, feelings, behavior and physical condition since suffering from leprosy (reflective observation) → the researcher explained some stressful material (accompanied by inflatable balloon illustrations), then the researcher explained stress management through breathing relaxation how to manage it (abstract concept) → the respondent tries breathing relaxation exercises (testing concepts in new situations) → assigns the respondent the task of applying his relaxation exercises in the next 1 week (concrete experience) →
Session 3	Participant were asked to report their results and difficulties when practicing breathing relaxation (reflective observation) → the researcher explained some material about leprosy, then the researcher also explained about adaptation strategies that can be done by participants when experiencing uncomfortable conditions (both physical and psychological) (abstract concepts) → connect the concept with the respondent's reflection about the disease and how the respondent has adapted (testing the concept in a new situation) → giving the respondent the task to write honestly regarding how the adaptation strategy has been done since he suffered from leprosy. This is so that there is a change in the respondent's attitude in recognizing effective coping (concrete experience) →
Session 4	Participant were asked to report their results and difficulties when writing honestly related to how the adaptation strategy had been carried out since suffering from leprosy (reflective observation) → the researcher explained the adaptation and importance of managing problems within us, then explained how the mind affects us (illustration 'if we think ... ') and discussion of how to manage these disturbing thoughts (abstract concepts) → linking concepts with respondent's reflections about the mind that disturbs them (testing concepts in new situations) → giving assignments to participant to learn material about self care and train how to manage thoughts that he has been troubled since he suffered from leprosy. This is so that there is a change in the respondent's attitude regarding maladaptive thinking (concrete experience) →
Session 5	Participant were asked to report their experiences, results and difficulties when doing positive thinking exercises and self-dialogue in the past week (reflective observation) → the researcher asked the respondent's understanding of leprosy self-care and explained about self-care and leprosy exercises to improve the physiological health of participant (abstract concept) → linking the concept of self-care and leprosy exercise with the reflection of the respondent relating to his current activities and physical needs (concept testing in a new situation) → the respondent did leprosy exercises (concrete experience) → reflection of the respondent and his confidence to continue the skills he acquired during the intervention (reflective observation) → contemplation of 'seeds' (abstract concepts) → connecting concepts with the results of knowledge tests and SRQ-20 questionnaires, then participant are motivated to practice the skills they have acquired during educational activities and apply to the new situation or problematic situation (testing concepts in new situations)

Table 3. Overview of Research Participant

Participant*	1	2	3
Sex	Man	Female	Female
Age	26 YO	17 YO	15 YO
Education	Drop Out of Elementary School	Senior High School	Junior High School
Family Status	The first child of 5 siblings	3rd child of 3 siblings	2nd child of 3 siblings
Marital Status	Single	Single	Single
Work	parking officers	Student	Student
Leprosy History			
Leprosy Type	MB	MB	MB
Pharmacological treatment for leprosy within the last 12 months	MDT	MDT and Prednisone	MDT and Prednisone
Disability level and Physical Conditions	2 (Absorption of the right and left thumbs and index finger. Right leg injured)	0 (Skin color that becomes reddish black, accompanied by inflamed patches)	0 (Scars that have not been evenly distributed with skin color)

### Results

The number of participants in this research is 3 people with high psychological distress symptoms and suffering from leprosy with MB type and in the past 12 months still get leprosy pharmacological therapy or therapy for leprosy reactions, as shown in table 3. The overview mental health conditions of participants shown in table 4 and psychological distress symptoms of participants show in table 5.

Evaluation based on SRQ-20 total score

Total collected data from pre and post psychoeducational intervention consists of data from SRQ-20 questionnaire and testing of knowledge results. The results are show in table 6.

Based on the criteria above, it is concluded that psychoeducational intervention was effective for participant 2 and 3, but less effective for participant 1. Evaluation in each symptom based on the purpose the intervention shows in table 7.

Table 4. Overview Mental Health Conditions of Participants

Dimension	Participant 1	Participant 2	Participant 3
Self-Acceptance	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Feel worse (useless) with the state of illness)</li> <li>✓ Not accepting the situation and questioning God's justice for his fate</li> </ul>	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Disappointed and often asks why it should happen to her</li> <li>✓ Often cry if she remember that she has leprosy</li> </ul>	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Feeling shy and bad luck</li> <li>✓ Feeling unhappy and able to do things that have been beneficial so far</li> </ul>
Autonomy	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Easily to think of other people's negative opinions about him</li> <li>✓ Although so far the participants are quite responsible for his daily lives, he has not tried to control the situation in his lives</li> </ul>	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Very dependent on family support, especially the mother</li> <li>✓ Easily to think and get sad when you hear other people's negative opinions about her</li> </ul>	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Easily affected by other people's negative opinions about her</li> <li>✓ Confromis so as not to get reproach from others</li> </ul>
Purpose In Life	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Feeling that his life has not progressed and is not sure of a better future</li> <li>✓ Not doing self-care for his current physical condition)</li> <li>✓ Lack of effort to change the situation or problem in his life</li> </ul>	<p>Average</p> <ul style="list-style-type: none"> <li>✓ Trying to believe that her future will be better</li> <li>✓ Underwent treatment and enough routine self-care to maintain his current physical condition</li> <li>✓ Trying to achieve good grades in education</li> </ul>	<p>Average</p> <ul style="list-style-type: none"> <li>✓ Trying to believe that her future will be better</li> <li>✓ Underwent treatment and sometimes self-care to maintain her current physical condition</li> <li>✓ Trying to achieve value both in education</li> </ul>
Positive Relation With Others	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Hiding his illness from the nuclear family for fear of being ostracized and blamed for the condition of his brother who is also leprosy</li> <li>✓ Just interact as needed with other people and tend to hide the true condition of yourself in others</li> </ul>	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Tends to be closed and avoids interaction with others for fear that other people will comment negatively on changes in skin color</li> <li>✓ Often lying to cover up the disease that she has been suffered</li> </ul>	<p>Low</p> <ul style="list-style-type: none"> <li>✓ Low self-confident and keep a distance when interacting with other people (just as needed) for fear that other people will know that she has leprosy</li> <li>✓ Cover the pain from her father and brothers</li> <li>✓ Often lie to teachers and school friends to cover up their illnesses</li> </ul>

Table 5. Psychological Distress Symptoms of Participants

Symptom	Participant 1	Participant 2	Participant 3
Affective	<ul style="list-style-type: none"> <li>✓ Easy to feel scared, anxious, worried about the disease and if other people know.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Feeling scared, anxious, worried when others mention about their physical changes</li> </ul>	<ul style="list-style-type: none"> <li>✓ Feeling shy and insecure</li> <li>✓ Feel unhappy and feel unable to do things that have been beneficial so far</li> </ul>
Cognitive	<ul style="list-style-type: none"> <li>✓ Repeated thoughts about the illness so that they are less able to think about solving other problems</li> </ul>	<ul style="list-style-type: none"> <li>✓ easy to think and become sad when you hear other people's negative opinions about her</li> </ul>	<ul style="list-style-type: none"> <li>✓ easy to think of other people's negative opinions about her</li> </ul>
Conative	<ul style="list-style-type: none"> <li>✓ Lack of effort to change the situation or problem in his life (negative stress coping)</li> <li>✓ Just interact as needed with other people and tend to hide the true condition of himself in others</li> </ul>	<ul style="list-style-type: none"> <li>✓ Closed and avoid interaction with other people for fear that other people will comment negatively with changes in skin color</li> <li>✓ Often cry if she remember that she has leprosy</li> </ul>	<ul style="list-style-type: none"> <li>✓ Maintain distance when interacting with other people (only as needed) because she afraid if other people will know that they have leprosy</li> </ul>
Physical	<ul style="list-style-type: none"> <li>✓ Easily tired</li> </ul>	<ul style="list-style-type: none"> <li>✓ Often dizzy</li> <li>✓ Easily tired</li> </ul>	<ul style="list-style-type: none"> <li>✓ Not excited</li> <li>✓ Feeling tired constantly tense</li> </ul>

Table 6. Individual Score SRQ-20

Individual	SRQ-20 score		Change of score
	Pre intervention	Post intervention	
1	7	6	1
2	7	4	3
3	6	3	3

SRQ: Self-reporting questionnaire

Table 7. Evaluation in each symptoms based on the purpose the intervention

Intervention target	Post intervention indicator	Participant 1	Participant 2	Participant 3
1 Negative affective symptoms	Decrease in negative emotional symptoms (decrease in SRQ-20 intensity/score related to affection symptoms, i.e., item numbers 4, 5, 6, 9, 10, 14, 15, and 16)	Not achieved, post intervention He still feels negative affective symptoms said in item numbers 4, 5, 9, and 16 in SRQ-20	Achieved *Item number 4, pre=8 and post intervention=5 *Item number 5, pre=8 and post intervention=5. *Item number 10, pre=4 and post intervention=0	Achieved Item number 9 does not occur again post intervention *Item number 9, pre=5 and post intervention=0
	Participant is able to perform catharsis on materials related to self-identification to recognize and appreciate himself/herself Participant is able to acknowledge self-stress and tries to control his/her condition, indicated by dong the first, second, and third homework	Achieved He feels that he recognizes himself better because of being able to express then buried feelings	Achieved She feels that she has learned much about herself over the past 5 weeks	Achieved Rosi's self-confidence and her hope for becoming fully healthy increases. (pre=4, post=8)
2 Disruptive cognitive symptoms	Decrease in disruptive cognitive symptoms (decrease in SRQ-20 intensity/score related to cognitive symptoms, i.e., item numbers 8, 12, and 17)	Achieved post intervention He does not feel any cognitive symptoms (item number 8 and 12)	Achieved post intervention She does not feel any cognitive symptoms (item numbers 8 and 12) *Item number 8, pre=5 and post intervention=0 *Item number 12, pre=6 and post intervention=0.	She does not feel any cognitive symptoms both pre- and post-intervention
	Receive the correct information about leprosy, as an effort to neutralize the negative stigma about self (according to the participant and indicated by increase in knowledge test percentage) Participant is able to acknowledge negative thinking about self and tries to train positive thinking and self-	Unachieved He feels unsure about his treatment, and there is 5.89% decrease in knowledge test	Achieved She feels confident about her treatment, and there is 11.76% increase in knowledge test	Achieved She feels confident about her treatment, and there is 11.76% increase in knowledge test
	Participant is able to acknowledge negative thinking about self and tries to train positive thinking and self-	Unachieved He acknowledges negative thinking about himself, but there is little effort to deal with it	Achieved She acknowledges negative thinking about herself and tries to control it	Achieved She acknowledges negative thinking about herself and tries to control it

dialogs for the past week (fourth homework)					
3	Maladaptive conative symptoms	Participant gets insights of ineffective coping mechanisms and hopes to change in the positive direction (indicated by increase in intensity of self-acceptance felt by the participant according to subjective scale)	Unachieved He is unable to answer scaling questions pre- and post-intervention. He feels that he is unable to change his current beliefs	Achieved She feels that there is an increase in self-acceptance (pre=4, post=6)	Achieved She feels that there is an increase in self-acceptance (pre=4, post=7)
		Participant has a desire to acknowledge his/her physical needs as a leprosy patient	Unachieved He does not do homeworks, does not acknowledge that his foot requires intensive treatments, and says that his work on the parking lot does not allow him to rest even for 5 min	Achieved She is able to identify which self-treatments she needed to do routinely, i.e., keeping her hands and feet dry and is committed to do them	Achieved She is already used to do the treatments but not routinely. Rose is determined to do them routinely
		Actively contributing (indicated by step cycle in experiential learning) by catharsis about his/her life experiences (mainly while suffering from leprosy)	Unachieved Only two steps of experiential learning happened to him, i.e., AC and RO, but He feels listened and appreciated and is able to express problems he used to hide	Achieved Almost all steps of experiential learning happened to her. She feels the benefits of being open during her psychoeducation so that she feels gradually being able to manage negative emotions related to her disease	Achieved, although She tends to only respond when she is asked first, She always do the homeworks and instructions as proofs of positive responses about psychoeducation (only three steps happened, i.e., AC, RO, CE)
4	Disruptive physical symptoms	Decrease in energy-draining and disruptive physical symptoms (indicated by decrease in intensity/score related to item numbers 1, 2, 3, 7, 11, 13, 18, 19, 20 in SRQ-20)	Unachieved Post=symptom 11, 20 pre=20 (symptoms increased)	Achieved *Item number 1, pre=8 and post-intervention=5. *Item number 20, pre=7 and post-intervention=6	Achieved * Item number 1, pre=6 and post-intervention=4. * Item number 3, pre=7 and post-intervention=0. * Item number 11, pre=8 and post-intervention=5. *Item number 18, pre=8 and post-intervention=67 *Item number 20, pre=6 and post-intervention=5.

Giving positive response about self-care and leprosy workout, in addition to having the desire to do them as an effort to stabilize maladaptive physical symptoms	Unachieved He is able to imitate the workout and learn about the self-treatments but says that he cannot do them	Achieved She is able to imitate the workout moves and learn about the self-treatments, and commits to do them routinely	Achieved She is able to imitate the workout moves and learn about the self-treatments, and commits to do them routinely
Giving positive response about the benefits of relaxation training and doing homework 2 at least for the past week	Unachieved, He tried to do the relaxation training and felt more relaxed although he sometimes felt pain in his stomach and he says overall he does not yet feel the benefits	Achieved, She feels the benefit several times when confronting stressors at school	Achieved She feels the benefit of relaxation training and does them almost every day

AC: Abstract conceptualization, RO: Reflective observation, AE: Active experimentation, SRQ: Self-reporting questionnaire

**Discussion**

From the whole process and the result of the intervention, there are six matters that have to be discussed. The first matter is related to the decreasing of knowledge percentage from one of the participants as much as 5.89% after the intervention. During the implementation of psychoeducational intervention, the participant seemed to have trouble to distinguish between belief and facts and the causal effect of an action. This may be because the participant has low intelligence, and hence, his comprehension is also rudimentary. Comprehension affects views and ability of participants to process relevant information about his illness and treatment (34).

Another matter that has to be discussed in this research is that all three participants and their families who know that participants have leprosy tried to cover this fact even from their own nuclear family. Leprosy turns out to still be deemed as disgrace in society in general (1, 6, 8). It shows that conceivably, there are things that are concealed by all participants from researcher, and there may be a tendency to give a good impression (faking good), so the participants give the expected response

rather than the true answer that depicts the actual condition.

The third matter is the difference of social support that all participants received. Participants who do not receive social support from others tend to be more prone to depression or psychological distress because of their illness (34-36). In addition, the first participant tends to do maladaptive coping when faced by stressors rooted in his illness. Some researches show that participants who do not cope effectively to uncomfortable situation while still suffering from an illness, then it will adversely impact their psychological well-being (32).

The fourth matter to be discussed is the intervention be used in participant approach. Since being diagnosed with leprosy, the three participants tended to cover up and save themselves the psychological problems they experienced so there seemed to be a sense of reluctance and concern to engage in intensive activities (37, 38). In addition, the participants refused to get involved if the implementation was classical. Participants admitted that they only

did outpatient care at the public health Jakarta, where the researcher screened and did not know the patients there. Basically it will take a long time to do rapport or even rejected by participants if a group approach is taken (39, 40) and since the participants have been diagnosed with leprosy, they tend to cover and keep their own psychological problems to themselves and feel reluctant and afraid to engage intensively on an activity (2).

The fifth matter is that based on scale measurement on SRQ-20 score, the decline on the participants centered around affective, cognitive, and conative symptoms; however, the physiological aspect tends to remain the same (41). Physiological symptoms shown in research participants may be affected by leprosy itself because a chronic disease tends to weaken the immune system and alter the stamina (42). In addition, some researches about stress explain that the easiest stress symptoms on participants to be observed are physiological symptoms; however, on the other side, these symptoms may need the longest time to be reduced (43).

The last matter to be discussed is that not all stages of experiential learning happened in all participants in this research. Furthermore, experiential learning cycle on psychoeducational intervention in this research was finished (the fifth session) on the testing phase of the concept on a new situation (AE), when the participants used the theory to make a conclusion from their experiences (16), and it did not proceed to CE stage.

This research involved 3 participants with leprosy and high psychological distress symptoms. Psychoeducational intervention was given participantly, and consisted of 5 session for each participant, held in different place and time.

The result of this research shows that psychoeducational intervention was effective to improve the mental health in participant 2 and 3, however it was less effective in participant 1. The improvement

of mental health in this research is marked by the declining of psychological distress symptoms shown in research participants after psychological intervention is given.

Based on the evaluation of the total SRQ-20 score that were obtained in pre and post intervention, the first participant displayed a lower 1 point score from his previous total SRQ-20 score of 7, thus his score turned to 6, which means the first participant is still classified as having psychological distress symptoms which must be managed so that it does not become a more severe psychological problem. The second participant showed the declining as much as 3 points from a total score of 7 before the intervention, thus her total SRQ-20 score turned to 4. While the third participant showed the declining as much as 3 points from a total score of 6, thus her total SRQ-20 turned to 3 after the intervention. It is concluded that psychoeducational intervention was effective for the second and the third participant, but less effective for the first participant.

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#### *Conflict of interest*

Authors declare no conflict of interests.

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