

# Path Analysis of the Factors that Influence the Prevention of Leprosy Clients Depression in Leprosy Hospital Sumberglagah Mojokerto, East Java, Indonesia

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**Abstract:** ***Introduction:** Depression is often happened to leprosy clients, and it will inhibit the recovery process of their leprosy which affects their psychosocial life. The aim of this research is to analyzed factors that influence to prevent depression Leprosy clients in Leprosy Hospital Sumberglagah Mojokerto based on psycho education and modeling and Role-Modeling. **Method:** This research applied explanative survey with cross sectional approach. The sample used 72 respondent. The sampling technique was simple random sampling. The variables of this research were age, sex, level of defect leprosy, clients' duration of leprosy, education, level of knowledge, skills, hope, family support, tribe, self-stigma, jobs, and adaptability. Data was collected using structured questionnaire and analyzed by using Partial Least Square (PLS). **Result and Analysis:** The result showed that: (1) biophysics gave significant effect to adaptability in order to prevent depression, (2) cognitive factor significantly affected to adaptability in order to prevent depression, (3) psychological factor gave significant affected to adaptability in order to prevent depression, (4) social factor gave significant affected to adaptability in order to prevent depression, (5) determinant factor which had significant effect to the patients' adaptability to prevent depression was social factor. **Discussion and Conclusion:** Treatment factors that influence to prevent depression based on psychoeducation and Modeling and Role-Modeling theory which take biophysics, cognitive, psychological, and social factor into account were logically adequate and comprehensive for the nurse to explain and predict to prevent depression to enhance adaptability of leprosy clients.*

**Keywords:** preventing depression leprosy patients, psychoeducation, Modeling and Role-Modeling theory

## 1. Introduction

Leprosy is one type of infectious disease that is a health problem not only in terms of physical, but also in terms of psychological and social that can cause depression [1]. Depression is a common comorbid condition in leprosy clients. The prevalence of psychiatric disorders was found to be 25% in the inpatient unit and 20% in outpatient clients, of which 65% of leprosy clients were depressed [2]. The prevalence is greater when compared with the incidence of depression in the general population or in clients with other diseases [3].

The number of cases of leprosy in the world according to WHO 2014 detected 213,899 people with leprosy. Southeast Asia ranks first in five WHO regions, with 154,834 people suffering from leprosy [4]. The prevalence of leprosy still high in Southeast Asia indicates that Southeast Asia is a leprosy pandemic. Indonesia as one of Southeast Asia region, ranks third in the world after India and Brazil [4], [5]. The leprosy client in Indonesia in 2014 is 17,025 people [4]. Leprosy is spread in endemic areas namely, Java, Papua, South Sulawesi, Aceh, and North Maluku [6]. Java Island, especially East Java, ranked first among leprosy nationally. The prevalence of new leprosy in East Java in 2014 is still very high, which is 4,110 cases with 1.07 per 10,000 population [5]. Depression is often found in leprosy clients if not handled carefully can be an obstacle for leprosy clients in accelerating the healing process of leprosy that will

impact on the lives of clients in the community. Based on preliminary study conducted by the researchers, it was found that 8 out of 10 (80%) leprosy clients expressed feelings of sadness, lack of enthusiasm in activities, especially socializing with the community, 8 out of 10 (80%) leprosy clients complained of fatigue when little activity. Based on observations made by researchers to leprosy clients indicate that leprosy clients appear moody, and embarrassed when invited to speak.

Nursing as an integral part of health care plays an important role in providing nursing care to leprosy clients [7]. Nurses in providing nursing care to handle depression in leprosy clients to interaction process regulate the responses to stressor by increasing the response of psychophysiological adaptation based on Modeling and Role Modeling theory. Handling the prevention of depression that occurs in leprosy clients can affect the results of treatment of better leprosy and adequate so expected benefits and functions of prevention of depression can be maximized by the use of Modeling and Role Modeling theory approach.

## 2. Literature Survey

The prevalence of depression in leprosy does not close the possibility of continuous increase along with the high incidence of leprosy cases, although not yet found the exact number of cases of depression cases in leprosy patients in Indonesia. Mental disorders leprosy patients in the Polyclinic

Skin and Gender dr. CiptoMangunkusumo hospital is a depression of 66.6%, then depression disorder with anxiety disorder (18.8%), anxiety disorder (8.7%), distimia (2.9%), and depression with panic disorder (1, 5%) less than 1 year (57.6%)[8]. Depression has a greater influence on decreasing quality of life of leprosy patients in Polyclinics of Skin and Gender dr. Sardjito hospital Yogyakarta compared with the disability of the body where more than half (51,3%) of subjects had depression symptoms with 25,8% detail had mild depression score, 16,9% had medium depression score and 16,9% had severe depression score[8][10].

### 3. Method

The design of this research using explanative research design survey approach cross sectional. This method is expected to explain the results of a latent exogenous laten endogenous variables. The variables of the research were independent variables, consisting of age, sex, level of defect leprosy's condition, clients' duration of leprosy, education, level of knowledge, skills, hope, family support, tribe, self-stigma, jobs and the dependent variable consisting of adaptability. The population is leprosy client at Leprosy Hospital Sumberglagah Mojokerto. The sample size is 72 respondents. Data were collected by questionnaire. Data were analyzed using Partial Least Square (PLS).

### 4. Result and Discussion

#### 1) Descriptive Analysis Research Results

##### a) Biophysical

**Table 1.1:** Distribution of Biophysical Components Leprosy Clients in Leprosy Hospital SumberglagahMojokerto

Variable	Frequency	Percentage (%)
<b>a. Sex</b>		
1) Men	39	54,2
2) Women	33	45,8
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>b. Age (year)</b>		
1) 17-25	6	8,3
2) 26-34	15	20,8
3) 35-43	22	30,6
4) 44-52	16	22,2
5) 53-60	13	18,1
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>c. Level of defect Leprosy's</b>		
1) Level of defect leprosy's 1	25	34,7
2) Level of defect leprosy's 2	47	65,3
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>d. Clients duration of leprosy</b>		
1) < 12 months	9	12,5
2) ≥ 12 months	63	87,5
<b>Total</b>	<b>72</b>	<b>100,0</b>

Based on table 1.1 shows that of 72 clients who became respondents in this study are male of 39 respondents (54.2%) and women of 33 respondents (45.8%). Age of respondents in this study mostly resided in the age range 35-43 years of 22 respondents (30.6%). The level of respondent disability in this research is mostly at the level of leprosy's 2 of 47 respondents (65.3%). The duration leprosy of respondents in

this study is mostly ≥12 months by 63 respondents (87.5%) and <12 months by 9 respondents (12.5%).

##### b) Cognitive

**Table 1.2:** Distribution of Cognitive Components Leprosy Clients in Leprosy Hospital Sumberglagah Mojokerto

Variable	Frequency	Percentage (%)
<b>a. Education</b>		
1) No school	3	4,2
2) SD	41	56,9
3) SMP	24	33,3
4) SMA	4	5,6
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>b. Level of knowledge</b>		
1) Good	34	47,2
2) Less	38	52,8
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>c. Skill in personal care</b>		
1) Good	30	41,7
2) Less	42	58,3
<b>Total</b>	<b>72</b>	<b>100,0</b>

Based on table 1.2 shows that most of respondent's education level is elementary school (SD) of 41 respondents (56,9%). Respondents in Leprosy Hospital Sumberglagah Mojokertomostly have less knowledge level to 38 respondents (52,8%) and skill in personal care less of 42 respondents (58,3%).

##### c) Psychological

**Table 1.3:** Distribution of Psychological Components Leprosy Client in Hospital Leprosy Sumberglagah Mojokerto

Variable	Frequency	Percentage (%)
<b>Hope</b>		
1) High	35	48,6
2) Low	37	51,4
<b>Total</b>	<b>72</b>	<b>100,0</b>

Based on table 1.3 shows that most respondents have low expectations of 37 respondents (51.4%).

##### d) Social

**Table 1.4** Distribution of Social Components Leprosy Client in in Hospital Leprosy Sumberglagah Mojokerto

Variable	Frequency	Percentage (%)
<b>a. Family support</b>		
1) Good	31	43,1
2) Less	41	56,9
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>b. Tribe</b>		
1) Java	64	88,9
2) Madurese	8	11,1
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>c. Self stigma</b>		
1) High stigma	45	62,5
2) Low stigma	27	37,5
<b>Total</b>	<b>72</b>	<b>100,0</b>
<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>

d. Work		
1) Freelance	2	2,8
2) Housewife	28	38,9
3) Farmers	30	41,7
4) Entrepreneur	12	16,7
<b>Total</b>	<b>72</b>	<b>100,0</b>

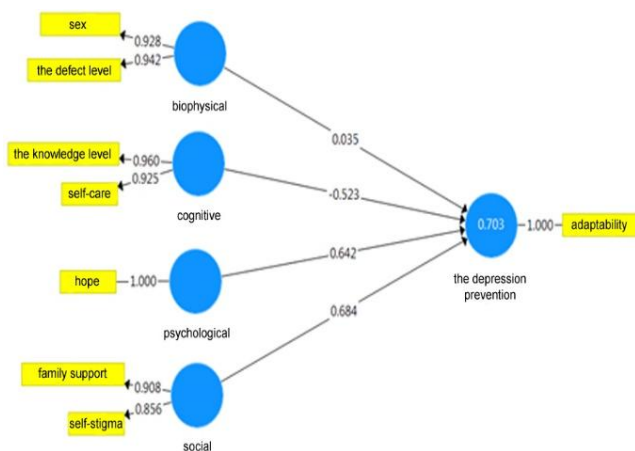
Based on table 1.4 shows that most of respondents are Javanese that is 64 respondents (88,9%), have job as farmer equal to 30 respondent (41,7%), have less family support that is equal to 41 respondent (56,9%) , And has a self-stigma about leprosy is high by 45 respondents (62.5%).

**2) The Result of Inferential Analysis**

**a) Outer measurement model testing**

**Convergent validity test**

In the research, the convergent validity value can be observed on the following figure:



**Figure 1:** The outer loading model and value to the nursing model in preventing depression in leprosy patients

Based on Figure 1.1, it can be known that there are several invalid indicators including age, leprosy period, education, tribe, and job. They can be reduced as the outer loading value <0.5. The indicator on which the outer loading is <0.5 shows the indicator fulfills the validity test in the structure.

**The reliability test**

**Table 1.5:** The Average Variance Extracted (AVE), Composite reliability, and Cronbachs alpha of the Nursing Model to Prevent Depression in Leprosy Clients

No.	Variable	AVE	Composite reliability	Cronbachs alpha
1.	Biophysical Factor	0,874	0,933	0,857
2.	Cognitive Factor	0,888	0,941	0,877
3.	Psychological Factor	1,000	1,000	1,000
4.	Social Factor	0,778	0,875	0,718

Based on Table 1.5 the value of composite reliability and cronbachs alpha shows > 0.7 so it can be concluded that all latent variables (biophysical, cognitive, psychological, and social factors) have met the reliability test. The next examination of convergent validity is the average variance extracted (AVE). AVE values above 0.5 are strongly recommended. Based on the above table, the AVE value for all constructs or latent variables is above 0.5.

**a) Inner structural model testing**

The inner model testing is purposed to test the research hypothesis. The coefficient value of path and t statistics of the inner model is described as the following table:

**Table 1.6:** The Result of Hypothesis Test to Prevent Depression in Leprosy Patients

No.	Variable	Original sample (O)	T statistics
1.	The effect of biophysical factor to the adaptability in preventing depression in leprosy patients	0.035	0.220
2.	The effect of cognitive factor to the adaptability in preventing depression in leprosy patients	-0.523	2.207
3.	The effect of psychological factor to the adaptability in preventing depression in leprosy patients	0.642	2.431
4.	The effect of social factor to the adaptability in preventing depression in leprosy patients	0.684	5.272

Based on Table 1.6, it is shown that the cognitive factor (with t statistics of 2.207 >2.0), the psychological factor (with t statistics of 2.431 >2.0), and the social factor (with t statistics of 5.272 >2.0), so the cognitive, psychological, and social factors have a significantly positive effect to the adaptability in preventing depression in leprosy patients, while the biophysical factor does not have a significantly positive effect to the adaptability in preventing depression in leprosy patients (with t statistics of 0.220 <2.0). The value of the influence of the relationship between the constants or the latent variables hypothesized was indicated by the coefficient value of the path. The four hypotheses proposed, the social factors had a positive significant effect in preventing depression in the leprosy patients with the path coefficient (0.684). Therefore, the social factors had the strongest effect in preventing depression of leprosy patients. The next step was to look at the value of R<sup>2</sup> for the contract or the latent variables of the adaptability in preventing the depression. However, analysis using chi-square test of biophysical factor association (sex and disability level) to adaptation ability in preventing leprosy client depression resulted that p value = 0.000 and p value = 0,003 with significant level equal to 0,05. The value of p value is smaller than the value of significant level, however Ho is rejected, which means there is correlation of biophysical factor to the adaptability ability in preventing leprosy client depression in Leprosy Hospital Sumberglagah Mojokerto. However, biophysical factors have a significant positive effect on adaptability in preventing leprosy clients' depression.

**Table 1.7:** The R<sup>2</sup> Nursing Model Result to Prevent Depression in the Leprosy Clients

Variable	AVE	Composite reliability	Cronbachs alpha	R <sup>2</sup>
Adaptability	1,000	1,000	1,000	0,703

Based on Table 1.6 and Table 1.7, the biophysical, cognitive, psychological, and social factors were able to show the variability of constants or the latent variables of adaptability in preventing depression by 70.3% (R<sup>2</sup> value). The remaining 29.7% was explained by the other constants that

were not hypothesized. According to Chin, this value was included in the high category [12].

Biophysical factor analysis has no significant effect on adaptation ability in preventing leprosy client depression. Biophysical factors consisting of sex and leprosy levels do not affect the client's adaptability in preventing depression in leprosy clients. However, based on the chi-square test the association of biophysical factors (sex and disability level) on the adaptability ability of leprosy clients in preventing depression indicates a significant relationship. This is supported by Amir [9], said that gender and leprosy levels may increase the risk for depression. Berry et al said that generally a man has a strong mentality against something that is considered threatening to him and has an adventurous character than an emotionally weak woman [13]. This is reinforced by the results of research Joannesaid that men are more able to adapt because of their adventurous nature while women longer adapt due to inherent emotional factors so that men have the ability to adapt in preventing depression better than women [14]. Most of the respondents experienced the level of disability 2. Defects in leprosy patients resulted in a bad stigma in the community so that lepers are shunned and ostracized. Clinical manifestations of defects in leprosy patients can cause feelings of shame, inferiority and depression [18]. Research conducted by ArifNurman, et al., shows that there is a relationship between the level of disability with coping mechanisms in leprosy patients in Poli Leprosy Hospital Leprosy Kediri [19]. Therefore, researchers assume that the level of a person's disability due to leprosy can increase the risk of depression because someone is less able to adapt to the condition of the disease. Thus, biophysical factors have a significant effect on adaptability in preventing leprosy clients' depression.

Cognitive factor analysis has significant effect on adaptation ability in preventing leprosy client depression. Cognitive factors consisting of the level of knowledge and skills in self-care affects the ability of adaptation of clients in preventing depression in leprosy clients. This is supported by the research of Teguh Budiantosaid that there is a significant correlation between the level of knowledge with coping mechanisms used in leprosy clients where a person's knowledge level is high then the coping mechanism used is adaptive[17]. Leprosy patients who have good knowledge and good self-care skills about leprosy will have a good coping mechanism to deal with the problem so as not to get depressed. Psychological factor analysis has significant effect on adaptation ability in preventing leprosy client depression. Psychological factors consisting of expectations affect the ability of adaptation of clients in preventing depression in leprosy clients. Psychological factors that are thought to be the cause of depression are loss of social role, decreased health, chronic illness, self-isolation, poverty, low expectations and decreased cognitive function [15]. Erickson and Swain suggest that expectations are a potential measure to adapt to stress and contribute in an adaptive way to overcome pain in order to protect against despair and inculcate motivation [16]. Another study by Barbara Louise, resulting in a response to stress can be mediated by self-care resources such as expectations [16]. Clients who have

pessimistic thoughts during their illness will be more distressed and distressed [20].

Social factor analysis has significant effect on adaptation ability in preventing leprosy client depression. Social factors consisting of family support and self-stigma influence adaptability in preventing depression in leprosy clients. Family support is a form of interpersonal relationship that protects a person from the effects of stress, family support can also provide clues about one's mental, physical, and emotional health [21] [22].

Stigmatization, discrimination, negative public attitudes, and leprosy clients who can not accept the physical disability of leprosy will make lepers depressed [3], [4], [10]. The impact of self-stigma for lepers is low self-esteem, fear, alienation, loss of employment due to discrimination, depression, and increased recurrence. This is supported by research Tsutsumi said that there is a relationship between the stigma felt by lepers with depression in leprosy patients[3]. According to Goldman, quoted, the process of attitude and behavior modification reduces the sense of stigma is done by developing an adaptive coping mechanism when a person faces problems related to the disease.

Biophysical, cognitive, psychological, and social factors are able to explain the variability of constants or latent variables of adaptability in preventing depression by 70.3% (R<sup>2</sup> value) the remaining 29.7% are explained by other constants that are not hypothesized in the model. Other non-hypothesized constituents are genetic factors, personality type, economic status, type of leprosy, routine leprosy treatment. This is supported by Oltmans and Emery and Sue et al suggests that other causes of depression are biology (genetic), and social culture (economic status).

## 5. Conclusions

- 1) The biophysical factor had the significance effect on the adaptability in preventing the depression.
- 2) The cognitive factor effect had the significant effect in the adaptability in preventing depression where the level of knowledge and self-care skill of leprosy patients affected the adaptability of leprosy patients.
- 3) The psychological factor had significant effect on the adaptability to prevent the depression where the hopes affected the adaptability of patients in preventing depression.
- 4) The social factors had significant effects on the adaptability in preventing depression where the family support and self stigma affected the adaptability in preventing depression.
- 5) The determinant factor which had the significant effect on the adaptability in preventing depression was the social factor.

## 6. Future Scope

- 1) The results of the study can be used nurses in nursing interventions to reduce the level of depression by improving leprosy client adaptation capabilities that focus on efforts to improve knowledge and skills of self care about leprosy,

- 2) Organize self help group in improving the confidence of leprosy client,
- 3) For other research is to apply in a nursing prevention intervention depression through observation comprehensively.

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