



Effect of Irregularity of Treatment on the risk of disability in Lepers in Bone Bolango District

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ABSTRACT

Leprosy is still a significant public health problem, particularly in Indonesia. It caused medical, social, economic, cultural, and even political impacts. Disability caused by leprosy may influence a patient's personality and reduce their self-confidence. It will inflict medication or a healing process. Thus it can increase the risk of disability. This study aims to learn the risk of disability among leprosy patients in Pamekasan District, East Java province. This is an analytic observational study with a case-control design. Data was collected using a questionnaire and Multiple Drug treatment (MDT) medical records. Thirty (30) leprosy patients with disabilities were taken as the case group, while the unmatched control was leprosy patients without disabilities. The independent variables consisted of the type of leprosy, regularity of medication, age, sex, level of education, knowledge, and family income, while the dependent variable was disability. Data were statistically analyzed by Chi-square test and multivariate logistic regression ($\alpha = 0,05$). The results show that Multi Basilar is the most prevalent type of leprosy (94%). There is an association between regular medication and disability ($p = 0,005$; O.R = 6, 7). Regular medication has no effect on disability ($p = 0,150$). No effect of sex ($p = 0,069$), age ($p = 0,251$), level of education ($p = 0,366$), and family income ($p = 1,00$) on the regularity of medication. Knowledge affects the regularity of medication ($p = 0,003$; O.R = 0, 2; B = 1,881). The conclusion is that patients with a low knowledge level tend to take medicine irregularly, leading to disability. It is suggested that the Health Office of Pamekasan and Health workers will conduct public education more intensively in, particular among leprosy patients, including their families, and to optimize active case-finding programs.

Keywords: Disability, Type of Leprosy, Regularity of Medication

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INTRODUCTION

Leprosy is still a public health problem in Indonesia. This is because the impact is very complex. The problem in question is not only from a medical point of view but extends to social, economic, cultural, and security problems (MoH, 1999). Leprosy is a chronic disease caused by the germ *Mycobacterium lepra*, which first attacks the peripheral nervous system and can further attack the skin, mucosa (mouth), upper respiratory tract, endothelial reticulo system, eyes, muscles, bones, and testicles (Harahap, 2000). If lepers do not take medication regularly, leprosy germs in the patient's body will grow and develop more, damaging the patient's nerves which can eventually cause disability (Ministry of Health, 1999).

Indonesia is the third most leper country after India and Brazil, with a prevalence of 1.7 per 10,000 population (Harahap, M. 2000). East Java Province reported the number of new patients in 2006 was 5,360 people, with details of the number of Pausi Basiler (PB) 732 people and Multi Basiler (MB) as many as 4,628 people. In 2007 the CDR rate of Pamekasan Regency was 2.71 per 10,000 population, where the number of registered lepers was 200 people, with

details of the number of Pausi Basiler (PB) lepers as many as 25 people and Multi Basilers (MB) as many as 175 people and disabled people as many as 30 people (15%). Therefore, it is necessary to know what affects the risk of disability in the irregularity of treatment of the leper.

RESEARCH METHODS

This study is an analytical observational study with a design of control case research. The population of research cases is all leprosy-disabled people who are recorded as undergoing MDT treatment at Toto Kabila Hospital, Bone Bolango Regency. In contrast, the control population is all lepers who are not disabled and are recorded as undergoing treatment at Toto Kabila Hospital in 2022. The sample of cases is leprosy defects recorded as undergoing MDT treatment. The control sample was lepers who were not disabled and who were recorded as undergoing MDT treatment. The case sample size in this study was the total population of 30 people, while the control sample was equated to the case sample of 30 people.

This research was conducted in Kabila Subdistrict in Bolango District. The study was conducted from March to June 2022. The bound variables studied are disability, while the free variables are leprosy type, regularity of treatment, age, gender, education, knowledge, and income. Primary data were collected through interviews using questionnaires, while secondary data were obtained from patients' MDT treatment cards and other data supporting the study. Its statistical analysis used the Chi-square test and Multivariate Logistic Regression ($\alpha = 0.05$).

RESULTS

Based on the type of leprosy, respondents were dominated by the MB leprosy type, namely 47 respondents (94%), while respondents with the PB leprosy type 3 respondents (6%). All respondents to the case sample were respondents with the MB type of kuta, as many as 25 respondents (100%). In comparison, the control sample respondents were 22 respondents with MB leprosy type (88%) and 3 respondents with PB leprosy type (12%). For more details, see the table below:

Table 1. Distribution of Respondents by Leprosy Type

| Leprosy Type | Disabled | Unblemished | Sum |
|--------------|-----------|-------------|-----------|
| PB | 0 (0%) | 3 (12%) | 3 (6%) |
| MB | 25 (100%) | 22 (88%) | 47 (94%) |
| Sum | 25 (100%) | 25 (100%) | 50 (100%) |

Regularity of treatment for disability in lepers

From the results of this study, it is known that respondents who regularly take medication are 23 respondents (46%), while respondents who do not regularly take medication are 27 (54%). People with disabilities were found in patients who did not regularly take medications, namely 19 respondents (76%). In contrast, patients who were not disabled were found in patients who regularly took drugs, namely as many as 17 respondents (68%). There is a relationship between regularity of treatment and disability in lepers with a significance of 0.005 and O.R = 6.7, meaning that the probability that patients who are not regularly seeking treatment will be disabled is 6.7 times greater when compared to patients who regularly take medication. However, regularity of treatment did not affect disability in lepers after being analyzed with a Multivariate Logistic Regression statistical test. More details can be seen in the table below:

Table 2 Distribution of Regularity of Treatment of Respondents Based on Disability

| Regularity of Treatment | Disability | Sum |
|-------------------------|------------|-----|
|-------------------------|------------|-----|

| | Disabled | Unblemished | |
|-----------|-----------------|--------------------|--------------|
| Orderly | 6 (24%) | 17 (68%) | 23 (46%) |
| Irregular | 19 (76%) | 8 (32%) | 27 (54%) |
| Sum | 25 (100%) | 25 (100%) | 50 (100%) |

Gender against the regularity of leprosy treatment

From the results of this study, it is known that 33 respondents (66%) and 17 respondents (34%) were female (34%). Patients who do not regularly take medications are found in the male sex, namely 21 respondents (78%). There was no influence between the sexes on the regularity of leper treatment with a significance of 0.069. For more details can be seen in the table below:

Table 3 Gender Distribution of Respondents Based on Regularity of Treatment

| Gender | Regularity of Treatment | | Sum |
|---------------|--------------------------------|-------------------|-------------|
| | Orderly | Unsettledr | |
| Man | 12 (52,2%) | 21 (77,8%) | 33 (66%) |
| Woman | 11 (47,8%) | 6 (22,2%) | 17 (34%) |
| Sum | 23 (100%) | 27 (100%) | 50 (100%) |

Knowledge of the regularity of leper treatment

From the results of this study, it is known that respondents who have a good level of knowledge, 21 respondents (42%), while respondents who have a piece of less knowledge, 29 respondents (58%). Patients who regularly take medications were found in patients with a good level of knowledge, as many as 15 respondents (65%), while patients who did not regularly take drugs were found in sufferers with a lack of knowledge level of as many as 21 respondents (78%). There is a relationship between knowledge of the regularity of leprosy treatment with a significance of 0.005 and O.R = 6.6, meaning that the probability that patients whose level of knowledge is less will not regularly take medications is 6.6 times greater when compared to patients with a good level of knowledge.

There is an influence between knowledge on the regularity of leprosy treatment with a significance of 0.003, B = -1.881, and O.R = 0.2, meaning that the probability that patients with a good level of knowledge will not regularly take medications is 0.2 times greater when compared to patients whose level of knowledge is lacking or the possibility that sufferers whose level of knowledge is less will be irregular taking medications is 6.6 times greater when compared to patients whose level of knowledge good. More details can be seen in the table below:

Table 4 Distribution of Respondents' Knowledge Levels Based on Regularity of Treatment

| Knowledge Level | Regularity of Treatment | | Sum |
|-----------------|-------------------------|------------|-------------|
| | Orderly | Unsettledr | |
| Good | 15 (65,2%) | 6 (22,2%) | 21 (42%) |
| Less | 8 (34,8%) | 21 (77,8%) | 29 (58%) |
| Sum | 23 (100%) | 27 (100%) | 50 (100%) |

Age to the regularity of leper treatment

From the results of this study, it is known that the most lepers were found in the adult age group as many as 19 respondents (38%), followed by the young age group as many as 18 respondents (36%), and the lowest percentage in the adolescent age group as many as 13 respondents (26%). In the regularity of treatment, the age groups of adolescents, young, and adults are not much different. There was no effect between ages on the regularity of leper treatment, with a significance of 0.251. More details can be seen in the table below:

Table 5 Age Distribution of Respondents Based on Regularity of Treatment

| Age | Regularity of Treatment | | Sum |
|------------|-------------------------|------------|-----------|
| | Orderly | Unsettledr | |
| Adolescent | 7 (30,4%) | 6 (22,2%) | 13 (26%) |
| Adult | 16 (69,6%) | 21 (77,7%) | 37 (74%) |
| Sum | 23 (100%) | 27 (100%) | 50 (100%) |

Income to the regularity of leper treatment

From the results of this study, it is known that respondents dominate the income level of respondents, with a low-income level of 49 respondents (98%). In contrast, the high-income level is only 1 respondent (2%). There was no effect between incomes on the regularity of leper treatment, with a significance of 1.00. More details can be seen in the table below:

Table 6 Distribution of Respondents' Income Levels Based on Regularity of Treatment

| Income Level | Regularity of Treatment | | Sum |
|--------------|-------------------------|-------------|-------------|
| | Orderly | Unsettledr | |
| Low | 23 (100%) | 26 (96,3%) | 49 (98%) |
| Tall | 0 (0%) | 1 (3,7%) | 1 (2%) |
| Sum | 23 (100%) | 27 (100%) | 50 (100%) |

Education on the regularity of leper treatment

From the results of this study, it is known that 38 respondents with low education (76%), moderately educated respondents (24%), and respondents with high education were absent. The regularity of treatment between low and moderate levels of education is similar. There was no effect between educations on the regularity of leper treatment with a significance of 0.366. More details can be seen in the table below:

Table 7 Distribution of Respondents' Education Levels Based on Regularity of Treatment

| Level of education | Regularity of Treatment | | Sum |
|--------------------|-------------------------|------------|-----------|
| | Orderly | Unsettledr | |
| Low | 16 (69,6%) | 22 (81,5%) | 38 (76%) |
| Tall | 7 (30,4%) | 5 (18,5%) | 12 (24%) |
| Sum | 23 (100%) | 27 (100%) | 50 (100%) |

DISCUSSION

Leprosy is still a public health problem in Indonesia. This is because the impact is very complex. The problem in question is not only from a medical point of view but extends to social, economic, cultural, and security security security problems (MoH, 1999).

Leprosy Type

Based on the WHO classification in 1981, leprosy is divided into 2: Multi Bacillary type leprosy (MB) and Pausi Basiler type leprosy (PB). It says leprosy type PB if BTA is negative, the number of spots is 1 to 5, and only one peripheral nerve undergoes thickening, accompanied by impaired function. It says MB leprosy type if BTA is positive, the number of spots > 5 and > 1 peripheral nerve thickens and is accompanied by impaired function.

The MB leprosy type dominated the respondent's leprosy type. This is because sufferers are late in treatment, do not consume leprosy drugs regularly, and the discovery of active cases is not optimal. Factors that cause sufferers to arrive late for treatment to puskesmas or other health facilities are sufferers do not understand the early signs of leprosy, shame in coming to the Puskesmas, some puskesmas are not ready, do not know that there are medicines available free of charge at the Puskesmas and the distance of the patient to the Puskesmas or other health facilities is quite far (Hiswani, 2001). This follows Utami's research in 2007 which showed that lepers are dominated by MB type. In addition, Andreas's research in 2007 showed that out of 28 patients studied, there were 19 MB-type patients.

This type of leprosy can affect the risk of disability in lepers. The defect is usually asymmetrical in lepers of the Pausi Basiler type (PB). It occurs early, while the Multi Basiler (MB) type leprosy defect occurs at an advanced stage (Ministry of Health, 1999). This follows Lathifah Mukminin's research in 2006 which showed that Multi Bacilillary type leprosy is 7.8 times more likely to suffer from disability than Pausi Basiler type.

The effect of the regularity of treatment on disability in lepers

People with disabilities are found in lepers who do not regularly take medication, while people who are not disabled are found in lepers who regularly take medication. There is a relationship between the regularity of treatment and disability in lepers. The risk of patients who do not regularly seek treatment will be disabled 6.7 times greater when compared to patients who regularly take medication. This is because treatment in lepers is aimed at killing

leprosy germs so that they are powerless to damage body tissues so that the signs of the disease become less active and eventually disappear. If lepers do not take medication regularly, leprosy germs in the patient's body will grow and develop more, damaging the patient's nerves which can eventually cause disability (Ministry of Health, 1999).

This is following Mukminin's 2006 research which showed that lepers who do not seek treatment regularly have a 9.1 times greater risk of suffering from disability than lepers who regularly seek treatment. In addition, Gunadi's research in 2000 also showed a meaningful relationship between the regularity of treatment and disability.

There is no meaningful influence between the regularity of treatment and disability in lepers. This is due to the confounding factors of the regularity of treatment, such as age, gender, knowledge, education, and income. The variable of the regularity of treatment can affect disability in lepers if the variables of the regularity of treatment and disability alone are analyzed in statistical tests. However, if variables of age, gender, knowledge, education, and income are added, there will be interactions between the variables, causing the variables of the regularity of treatment to be insignificant.

The influence of gender on the regularity of leper treatment

Patients who do not regularly take medications are found in the male sex. There was no meaningful influence between the sexes on the regularity of leper treatment, with a significance rate of 0.069. This can be caused because, in this day and age in general, both men and women work together so that both men and women have relatively the same level of busyness and free time. In addition, men and women get the same leprosy treatment therapy, so the regularity of sufferers taking medicine depends on the sufferer's level of awareness and determination.

This follows the research of Marhaento et al. in 2004, which showed a significance level for men 0.79. In addition, it also follows Panigoro's research in 2007 which showed no sex influence on the regularity of treatment. Similarly, the research of Indriyanti et al. in 2003 showed no influence between sex and irregularities in treating leprosy patients.

Based on Mukminin's research in 2006 showed that gender is not at risk of disability. Based on the research of Tarusaraya and Paulus Wahyudi Halim in 1996, it was found that men were more disabled, namely 618 out of 809 people (76.39%) and women 227 out of 334 people (65.99%).

The influence of knowledge on the regularity of leper treatment

Patients who regularly take medications are found in patients with good levels of knowledge, while patients who do not regularly take medications are found in sufferers with less knowledge. The influence between knowledge on the regularity of treatment for lepers and the risk of patients whose knowledge is less will irregularly take medications is 6.6 times more significant compared to patients whose knowledge is good. The knowledge here includes the patient's knowledge about the causes of leprosy, the symptoms of the disease, how to transmit it, and how to treat it.

The more information about leprosy obtained by sufferers through counseling health workers, television, radio, and other media, the patient will know how important it is to do leprosy treatment to trigger sufferers to do so early treatment and seek treatment regularly. This supports the theory that a person's attitudes and behaviors are closely related to the level of health knowledge, habits, norms, health facilities, and so on (Notoadmodjo, 2005).

The above things are by Fajar's research in 2004 which showed that the factor that influences the regularity of treatment is insufficient knowledge and also in those with medium/average knowledge. In addition, Ratrikis' research also showed a relationship between patient knowledge and order in taking drugs in lepers ($p = 0.014$).

Based on Hutabarat's research in 2007 also showed a relationship between knowledge and adherence to taking leper medications. Also, the research of Indriyanti et al. in 2003 showed that the risk of lepers with insufficient knowledge would irregularly take medications is 2.89 times more significant compared to lepers with high knowledge. Based on Bastaman's research in 2000–2001 which showed that there is a meaningful relationship between knowledge variables and the occurrence of level I defects in new lepers and the risk of patients whose level of knowledge is less will irregularly take medications 2.09 times greater when compared to patients whose level of knowledge is good.

The effect of age on the regularity of leper treatment

In the regularity of treatment, the age groups of adolescents, young, and adults are not much different. There is no meaningful influence between ages on the regularity of leper treatment. This is because the leper's age cannot determine whether he or she regularly seeks treatment. The older a person is older cannot guarantee that the more information or knowledge about leprosy the person has also developed or increases according to their development or age. Age increase also does not guarantee that a person to be more mature and obedient to the existing rules. Children sometimes have higher obedience than adolescents (Smet, 1994). Therefore, it is more emphasized how active the sufferer is in processing information about leprosy to provide motivation and awareness to the sufferer to be regular in treatment.

This follows Panigoro's research in 2007, which showed no influence between age and regularity of treatment. In addition, bastaman's research in 2000–2001 showed no meaningful relationship between age and the occurrence of level I defects in new lepers.

The effect of income on the regularity of leper treatment

Respondents dominate the income level of respondents with low-income levels. There is no meaningful effect between income and regularity of leper treatment. From the results of this study, it is known that the number of lepers with a low-income level is 98%, so the regularity of treatment will remain the same. In addition, lepers can get leprosy medicine for free at the Puskesmas. With leprosy drugs that can be obtained for free, it does not affect sufferers seeking treatment, either for patients with high or low incomes. So the regularity of treatment for lepers depends on the will and awareness of the sufferers themselves, not looking at how much income the sufferer earns. This follows Gunadi's research in 2000 which showed no meaningful relationship between the level of well-being and disability.

The effect of education on the regularity of leper treatment

The regularity of treatment between low and moderate levels of education is similar. There is no meaningful influence between educations on the regularity of leper treatment. This can be because although the level of education of sufferers is high, it does not guarantee that the level of knowledge of sufferers about leprosy is also high, and vice versa. The regularity of treatment of a leper does not depend on the high level of education he has taken but depends on how much knowledge the leper has about leprosy.

The level of education can indicate a person's level of intelligence in formal subject areas. However, it cannot show a person's intelligence in informal fields, or it can be said that a person's high level of education does not guarantee the more comprehensive insight he has, including his insight into leprosy. If the sufferer has a broad insight into leprosy, it is possible that they will take medication more regularly and can avoid the risk of disability. Knowledge about leprosy can be obtained through counseling leprosy officers, television, radio, the internet, and so on.

This follows the research of Henny Indriyanti et al. in 2003, which showed no influence between education and the regularity of treatment. Based on Gunadi's research in 2000 showed

that there was no meaningful relationship between education level and disability. In addition, Bastaman's research in 2000-2001 also showed no meaningful relationship between the level of education and the occurrence of level I disabilities in new lepers. Similarly, Mukminin's 2006 research showed that education is not at risk of disability.

CONCLUSION

There is a relationship between the regularity of treatment and disability in lepers. However, the regularity of treatment does not affect disability in lepers after being analyzed with the Multivariate Logistic Regression statistical test. Knowledge affects the regularity of leper treatment. There is no influence between gender, age, income, and education on the regularity of treatment in lepers. The MB leprosy type dominated the respondent's leprosy type.

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