Influence of Stress, Stigma, and Family Support to the Incidence of Leprosy Reaction at Sumberglagah Leprosy Hospital

Aisya Ramadhona

Student, Department of Health Administration and Policy, Public Health Faculty, Airlangga University, Surabaya, Indonesia

ABSTRACT

Background: This research is indicated by the high rate of disability that caused by leprosy reaction. Moreover, it is suspected the increased incidence of leprosy reactions at 6.76% in the 2013 and increased to 10.37% in 2016 (until September) in the inpatient unit at Sumberglagah Leprosy Hospital. This study aims to determine the influence of stress, stigma, and family support to the incidence of leprosy reactions in Sumberglagah Leprosy Hospital.

Materials and Methods: This was an observational study with cross-sectional design. This research was conducted on February 13, 2017-March 31, 2017, at Sumberglagah Leprosy Hospital. The sample of the study was 41 leprosy patients that suffering not more than 5 years and not new patients. Methods of sampling with total sampling. Data were collected using questionnaire through indepth interview. Data analysis by logistic regression to variable stress, stigma and family support.

Results: The results of data analysis showed that there two variable had significant and positive influences to incidence of leprosy reactions are behavioral stree (sig 0,039 and B 1,051) and emotional support (sig 0,027 and B 0,538).

Conclusion: The conclusion for this research is the behavioral stress and emotional support can affected the incidence of leprosy reactions.

Key words: Family support, Leprosy reaction, Stigma, Stress

INTRODUCTION

Leprosy is one of infectious diseases that is still a public health problem in Indonesia and some countries in the world (especially in developing countries). Problems that occur not only from the medical side but also from the side of social problems, economy, culture, security, and national defense. Leprosy is still feared by the community, the family, and including the health workers themselves, due to the lack of understanding about leprosy and the wrong belief in leprosy and disability. Leprosy is a chronic infectious disease that attacks the peripheral nerves, skin, and other tissues. Diagnosis of leprosy can be established with the discovery of the main signs of anesthesia skin lesions, the thickening of the peripheral nerve with accompanying disruption of nerve function, and the discovery of bacteria acid resistant. The World Health Organization classified leprosy into two types which are pausibasiler (PB) type and multibasiler (MB) type.[1-10]

Leprosy reactions that can occur in leprosy patients are an abnormal immune response (cellular immune response or humoral immune response), with consequences that can make the patient more worst. Leprosy reactions may occur before multidrug therapy (MDT) treatment, during MDT treatment or after MDT treatment. Classification of leprosy reaction is divided into 2 (two) that is type I leprosy reaction and type II leprosy reaction. Type I leprosy reactions (reversal reactions) are caused by the rapid increase of cellular immunity, characterized by reddened skin lesions, swelling, pain, heat, neuritis and impaired neurological function, and also fever. While the type II leprosy reaction (erythema nodosum leprosum [ENL] reactions) is a humoral reaction, characterized by the emergence of reddish nodules, neuritis, impaired peripheral nerve function, constitutional disorders, and the presence of complications in other organs.

Management of late or inadequate leprosy patients will result in disability. The disability is due to permanent peripheral

CORRESPONDING AUTHOR:
Aisya Ramadhona,
Master of Program Public Health Science, Health Administration and Policy, Public Health Faculty,
Airlangga University, Surabaya, Indonesia.
E-mail: aisyaramadhona@gmail.com

nerve damage during leprosy reactions, such as sensory, motoric, and autonomic nervous disorders. Regular monitoring of nerve function is essential in preventing leprosy disability. Early management and appropriate at leprosy reactions is one of the primary disability prevention efforts.[11-20]

Sumberglagah Leprosy Hospital is one of the regional referral hospitals of leprosy cases for 20 districts/cities in East Java according to the East Java Governor Decree number 188/359/KPTS/013/2015 on Regional Implementation of the East Java Province Referral System. Sumberglagah Leprosy Hospital responsible to Sumenep, Pamekasan, Sampang, Bangkalan, Surabaya, Gresik, Sidoarjo, Mojokerto, Jombang, Pasuruan, Probolinggo, Jember, Lumajang, Banyuwangi, Bondowoso, Situbondo, and Tuban. There are 13 district/cities with the high prevalence in East Java and the 12 districts/cities among which the regional referral of the leprosy case is in Sumberglagah Leprosy Hospital; this is the background of the choice of research in Sumberglagah Leprosy Hospital.

Based on Table 1, it can be seen that some of the problems of leprosy prevalence decrease from 2012 to 2014, but the prevalence still exceeds the target of <1 per 10,000 population while in 2014, it is still above the target of 1.08. Case detection rate still exceeds of target of <5 per 100,000, although it decreases from 2009 to 2014. The proportion of leprosy in children still exceeds the target of 5%, the proportion of children in 2014 still reaches at 9%, which illustrates the high incidence of leprosy in children. The proportion of disabilities level 2 is still high over the 5% target of 11% by 2014, many factors can lead to this disability, from late discovery, rehabilitation and monitoring processes that do not go well, and one of the main causes of disability is a leprosy reaction.[20-25]

Based on Table 2, it can be seen that outpatients that still receiving MDT treatment from hospital with leprosy diagnosis either PB or MB and had leprosy reaction increased significantly in 2015 by 20% for leprosy reaction from PB type and 21.74% for leprosy reaction from MB type.

Based on Table 3, it can be seen that the percentage of inpatients with leprosy reaction diagnosis handled at Sumberglagah Leprosy Hospital tends to increase from 2013 to 2016 (until September). Patients treated with leprosy reaction diagnoses 31 people (10.37% of total inpatient in leprosy unit). In 2016, an increase in the percentage of leprosy reaction cases treated in leprosy inpatient units. Most cases of leprosy reactions that are hospitalized are referral cases from various

primary health care throughout East Java (according to the regional referral of leprosy to Sumberglagah Leprosy Hospital).

Leprosy reactions that can occur in leprosy patients are expected to be known and diagnosed as early as possible so that patients get immediate treatment and disability that can be caused by reactions can be avoided. Leprosy reaction is one of the risk factors for the occurrence of disability. Ariyani and Wahjuni (2011) states that one of the causes of leprosy is a leprosy reaction. Leprosy reactions can occur and are experienced on the course of leprosy but if not handled properly, it can lead to complications and ends in leprosy disability.[25-28]

Based on the background, the problem raised in this research is the increasing incidence of leprosy reaction handled that is 6.76% in the year 2013 increased to 10.37% in the year 2016 (until September) at the Leprosy Inpatient Unit of Sumberglagah Leprosy Hospital. This study aims to determine the effect of stress, stigma, and family support to the incidence of leprosy reactions in Sumberglagah Leprosy Hospital.

MATERIALS AND METHODS

This research is observational research, the approach in collecting data and information only observe without doing intervention, or giving treatment to population. The approach with cross-sectional design which emphasizes time measurement or observation of independent and dependent variable data only at one time (point time approach) so that variable which cause and effect is not distinguished (Supriyanto, 2011).

This research was conducted at Sumberglagah Leprosy Hospital conducted on 13 February 2017 until 31 March 2017. The population in this research is leprosy patients that came to Sumberglagah Leprosy Hospital both in inpatient and outpatient unit. This research used technique sampling total sampling which is patients came to hospital fro 13 Februari 2017 until 12 April 2017, is an leprosy patients undergoing with MDT treatment or leprosy patients had released for MDT treatment, had suffer from leprosy less than 5 years and not patients newly diagnosed with leprosy. The number of respondents obtained in that period was 41 respondents.

Techniques of collecting data of this study are an interview with a questionnaire guide, where researchers conducted interviews directly to patients with leprosy when examined health after health services performed.

No.	Indicator	Target	2009	2010	2011	2012	2013	2014
Table 1: Results of Leprosy Program for East Java Leprosy Program 2010-2014								
1	Registered patients		6.392	5.496	6.157	5.570	4.289	4.157
2	Prevalence rate per 10.000	<1 per 10.000	1.69	1.48	1.63	1.46	1.12	1,08
3	New patients		6.040	4.653	5.284	4.807	4.132	4.050
	CDR per 10.000	<5 per 100.000	16.0	12.5	13.99	12.63	10.62	10.08
	Proportion of disabilities II (%)	<5	11	13	13	14	13	11
	Deformity rate (per 100.000 population)	Year 2015 decreased 35% compared at year 2010	1.76	1.61	1.85	1.78	1.25	1.10
	Child proportion (%)	5	12	11	11	9	9	9
4	RFT rate (%)	90	94	90	90	89	87	90

Source: Health Profile of East Java at year 2014. CDR: Case detection rate

RESULTS

Of all respondents (*n* = 41), 34 (82.9%) respondents were from the outpatient unit and 7 (17.1%) respondents from the inpatient unit. 38 (92.7%) respondents had type of leprosy MB and 3 (7.3%) with PB type leprosy. 10 (24.4%) respondents had not leprosy reaction and the 31 (75.6%) had leprosy reaction. Of the total respondents who had leprosy reaction were 31 respondents, 23 (56.1%) had type 2 reactions (reversal type) while 8 (19.5%) had type 1 reactions (ENL type).

The following distribution of respondents by type of stress can be seen in the following Table 4.

From Table 4 it can be seen most respondents with moderate stress category on psychic stress (58,5%) and physical stress (56,1%), only on behavior stress most respondent in low stress category (73,2%). It shows that most leprosy patients who become respondents had moderate stress category on psychic and physical stress and had low stress category on behavior stress.

From Table 5 it can be seen that most respondents with low stigma category on perceived stigma (92,7%) and enacted stigma (70,7%), only in self stigma illustrates that tends to moderate stigma category (46, 3%) in most respondents. It can be showed that most respondents with low and moderate stigma category or the stigma that happened is quite low.

From Table 6, it can be illustrated that moderate support is most happen on emotional support (56.1%) and instrumental (53.7%). While the information support and spiritual support are in the category of high support which are 41.4% and 56.1%, respectively. It can be concluded that most respondents already have received family support. This could also illustrate that they have received high support from the family because they suffer from leprosy.

Based on Table 7, there is one sub variable that influence the incidence of leprosy reaction is stress behavior (sig 0,039). This means that behavioral stress had positive influence to occurence of leprosy reaction. This behavioral stress contains a description of behavior that describes the level of stress. Behavioral stress can be described as isolated or self-isolated, avoiding eye contact, difficulty in relationships with others, and not paying attention to self-appearance. Behavioral stress can affect the incidence of leprosy reaction because stress can decreased the immune system, which will trigger a reaction.

Based on Table 8, there is no subvariable of stigma affecting the occurrence of leprosy reaction; in other words, sub-variable of stigma does not affect to the occurrence of leprosy reaction.

Based on Table 9, there is one subvariable that affecting the incidence of leprosy reaction that is emotional support (sig 0.027). This means that the higher emotional support is likely to occur in leprosy reaction. Emotional support is the feeling of empathy, trust, and attention given by one member of the family to the lepers. Emotional support can affect the incidence of leprosy reactions because emotional support can provide confidence to lepers.

DISCUSSION

The result of the research that the influence of stress, stigma, and family support to leprosy, there are two variables that influence to the incidence of leprosy reaction that is stress variable and family support variable. From this research, stress

as one influential variable has the meaning that the higher the stress of behavior tends to leprosy reaction can occur.

Table 2: Number of leprosy patients and leprosy reactions in Outpatient Unit at Sumberglagah Leprosy Hospital 2012-2016 (until three semester III)

No.	Year	Number of leprosy patients with MDT treatment (person)		Number of Leprosy reactions patients with MDT treatment (person)		Percentage of number of Leprosy reactions patients (%)	
		PB	MB	PB	MB	PB	MB
1	2012	7	25	1	0	14.29	0
2	2013	5	32	0	1	0	3.13
3	2014	2	22	0	1	0	4.55
4	2015	5	23	1	5	20.00	21.74
5	2016 (TW III)	2	11	0	1	0	9.1

Source: Data processed from three-semester report of Leprosy Program of Sumberglagah Leprosy Hospital. PB: Pausibasiler, MB: Multibasiler, MDT: Multidrug therapy

Table 3: Number of Inpatients with leprosy reactions at Sumberglagah Leprosy Hospital Year 2013-2016 (until September)

No.	Year	Total patients in unit inpatient leprosy*	Inpatient with leprosy reaction	
			Number (people)	Percentage (%)
1	2013	562	38	6.76
2	2014	451	33	7.32
3	2015	207	18	8.70
4	2016 (September)	299	31	10.37

Source: Data processed from inpatient report and registered patient in Sumberglagah Leprosy Hospital. *Leprosy inpatient unit not only provides health care of inpatient with leprosy diagnosis alone but also with diagnosis other than leprosy in patients with a history of leprosy

Table 4: Distribution of frequency of respondents based on stress level in Sumberglagah Leprosy Hospital in 2017

Stress category	Frequency (%)		
	Psychic stress	Physical stress	Behavior stress
High-stress category	3 (7.3)	6 (14.6)	2 (4.9)
Moderate-stress category	24 (58.5)	23 (56.1)	9 (22.0)
Low-stress category	14 (34.1)	12 (29.3)	30 (73.2)
Total	41 (100)	41 (100)	41 (100)

Table 5: Distribution of frequency of respondents based on stigma level at Sumberglagah Leprosy Hospital in 2017

Stigma category	Frequency (%)		
	Perceived stigma	Enacted stigma	Self-stigma
High stigma category	1 (2.4)	1 (2.4)	6 (14.6)
Moderate stigma category	2 (4.9)	11 (26.8)	19 (46.3)
Low stigma category	38 (92.7)	29 (70.7)	16 (39.0)
Total	41 (100)	41 (100)	41 (100)

Table 6: Distribution of frequency of respondents based on the level of family support at Sumberglagah Leprosy Hospital in 2017

Family support category	n (%)			
	Emotional support	Instrumental support	Information support	Spiritual support
Low support category	3 (7.3)	12 (20.3)	8 (19.5)	4 (9.8)
Moderate support category	23 (56.1)	22 (53.7)	16 (39.0)	14 (34.1)
High support category	15 (36.6)	7 (17.1)	17 (41.5)	23 (56.1)
Total	41 (100)	41 (100)	41 (100)	41 (100)

Table 7: Logistic regression test results of stress variables on leprosy reaction at Sumberglagah Leprosy Hospital Year 2017

Subvariable	B	Sig.
Psychic stress	−0.230	0.608
Physical stress	−0.623	0.138
Behavior stress	1,051	0.039

Table 8: Results of logistic regression test of stigma variable to incidence of leprosy reaction at Sumberglagah Leprosy Hospital Year 2017

Subvariable	B	Sig.
Perceived stigma	0.222	0.779
Enacted stigma	−0.264	0.807
Self-stigma	−0.089	0.760

Table 9: Logistic regression test results of family support variables on leprosy reactions occurrence at Sumberglagah Leprosy Hospital Year 2017

Subvariable	B	Sig.
Emotional support	0.538	0.027
Instrumental support	0.224	0.361
Information support	−0.339	0.155
Spiritual support	−0.182	0.509

Leprosy patients who experience emotional stress will tend to require a heavier adaptation than patients who do not experience stress. In the state of stress, the body will experience a general disorder, which can lead to leprosy reactions. According to Swarth, 2001, stress can lead to a 50% decline in immunity. The results of another study states that stressful conditions triggered from conditions such as pregnancy, emotional, and menstruation will trigger the occurrence of ENL. Physical stress and mental stress can trigger the occurrence of leprosy reactions either type I or type II. This study showed that stigma variable not significant and not influence the occurrence of leprosy reaction. Although other research mentioned that stigma gives big influence in the incidence of leprosy reaction because until now stigma in society still cannot be eliminated and this matter can influence to behavior of leprosy patient. One of the strategies in prevention, control, and management of leprosy reactions is treatment planning to prevent nerve damage and also eliminate existing stigma from leprosy.

The third variable is family support that has a significant result in this study, which means that the higher the emotional support the leprosy reactions tend to occur. Andayani, 2006, states that families who care for family members with leprosy feel the psychological burden of the views of society and the physical burden because the treatment of leprosy patients takes long in few months.[29-34]

CONCLUSION

Leprosy patients feel that families are less able to provide support both physically and psychologically. Rahayu, D. 2011 states that the family can not provide support for the leprosy patient to face the problem of his illnes. In this study showed that emotional support actually had influence to the occurrence of leprosy reaction.

REFERENCES

1. Adhikari B, Kaehler N, Raut S, Babu SM, Ggyanwali K, Chapman SR. Risk factors of stigma related to leprosy - A systemic review. J Manmoha Mem Inst Health Sci 2013;1:3-11.
2. Antunes DE, Araujo S, Ferreira GP, Cunha AC, Costa AV, Gonçalves MA, et al. Identification of clinical, epidemiological and laboratory risk factors for leprosy reactions during and after multidrug therapy. Mem Inst Oswaldo Cruz 2013;108:901-8.
3. Ariyani N, Wahjuni CU. Faktor yang Berhubungan dengan Kejadian Reaksi Kusta di Rumah Sakit kusta Sumberglagah Mojokerto. Surabaya: FKM Universitas Airlangga; 2011.
4. Blum HL. Expanding Health Horizon: From a General Systems Concept of Health to a National Health Policy. Oakland, California: Third Party Publishing Company; 1983.
5. Brakel VW, Khawas I, Lucas S. Reaction in leprosy: An epidemiological study of patients in Nepal. Lepr Rev 1994;65:190-3.
6. Christian M. Jinakkan Stress. Bandung: Nexx Media; 2005.
7. Dayakisni T, Hudaniah H. Social Psikologi. Revision Edition. Malang: UMM-Press; 2003.
8. Jatim DP. Profil Kesehatan Provinsi Jawa Timur 2014. Surabaya: Dinas Kesehatan Provinsi Jawa Timur; 2015.
9. Ditjen P2PL. Buku Pedoman Nasional Pemberantasan Penyakit Kusta, Cetakan XVIII. Jakarta: Kemenkes RI; 2012.
10. Djohan J, Supriyanto S. Metodologi Riset Bisnis dan Kesehatan. Banjarmasin Post Group Edition. Banjarmasin, Kalimantan: PT. Grafika Wangi Kalimantan; 2011.
11. Irsan Q, Abdurrachman B, Raharjo W. Kejadian Reaksi Kusta di Puskesmas Kota Pontianak. Pontianak: FK Universitas Tanjungpura; 2014.
12. Joshi DP. Training Manual for Medical Officers. Nirman Bhawan, New Delhi: National Leprosy Eradication Programme, Directorate General of Health Services, Ministry of Health and Family Welfare; 2009.
13. Julan T. Jawa Timur Kantong Kusta di Indonesia. Jakarta: Koran Sindo; 2015.
14. Kosasih A, Wisnu MI, Emmy S, Linuwih S. Kusta. In: Juanda A, editor. Ilmu Penyakit Kulit Kelamin. IVth ed. Jakarta: FKUI; 2005. p. 73-88.
15. Kumar B, Dogra S, Kaur I. Epidemiological characteristics of leprosy reactions: 15 years experience from north India. Int J Lepr Other Mycobact Dis 2004;72:125-33.
16. Machado FR, Shoenfeld Y. Leprosy and autoimmunity. In: Infection and Autoimmunity. Brazil: Elsevier B.V; 2015. p. 583-97.
17. Mastrangelo G, Marcer G, Cegolon L, Buja A, Fadda E, Scoizzato L, et al. How to prevent immunological reactions in leprosy patients and interrupt transmission of Mycobacterium leprae to healthy subjects: Two hypotheses. Med Hypotheses 2008;71:551-63.

18. Mondal A, Kumar P, Dash KN, Datta KP. A clinicodemographic study of lepra reaction in patients attending dermatology department of a tertiary care hospital in Eastern India. J Pak Assoc Dermatol 2015;25:252-8.

19. Mongi RA. Gambaran Persepsi Penderita Tentang Penyakit Kusta dan Dukungan Keluarga pada Penderita Kusta di Kota Manado. Manado: FKM Universitas Sam Ratulangi; 2012.

20. Nery JA, Bernardes Filho F, Quintanilha J, Machado AM, Oliveira Sde S, Sales AM. Understanding the Type 1 reactional state for early diagnosis and treatment: A way to avoid disability in leprosy. An Bras Dermatol 2013;88:787-92.

21. Pagolori P. Analysis Risk Factors of Leprosy Reaction after MDT Treatment to Leprosy Patient at Kabupaten Gowa Year 2002. Makasar: FKM Universitas Hasanudin; 2003.

22. Prawoto P. Faktor-Faktor Risiko Yang Berpengaruh Terhadap Terjadinya Reaksi Kusta. Semarang: Magister Epidemiologi, Program Pascasarjana, Universitas Diponegoro; 2008.

23. Pusat Pelatihan Kusta Nasional. Modul Epidemiologi dan Program Pemberantasan Penyakit Kusta. Makasar: Kemenkes RI; 2012.

24. Ramaswari NP. Problem in reversal reaction and eritema nodosum leprosum at leprosy. CDK 2015;42:654-7.

25. Ranque B, Nguyen VT, Vu HT, Nguyen TH, Nguyen NB, Pham XK, et al. Age is an important risk faktor for onset and sequele of reversal reactions in vietnamese patients with leprosy. Clin Infect Dis 2007;44:33-40.

26. Salim P. The Contemporary English-Indonesia Dictionary. 7th ed. Jakarta: Modern English Press; 1996.

27. Schollard D, Smith T, Bhoopat L, Theetranont C, Rangdaeng S, Morens DM. Epidemiologic characteristics of leprosy reactions. Int J Lepr 1994;64:559-65.

28. Sharma N, Patel NM, Mahakal N. Lepra reactions-a clinical and histopathological study. Int J Sci Res 2013;2:185-6.

29. Smet B. Psikologi Kesehatan. Jakarta: Gramedia; 1994.

30. Soedarjatmi S. Background factors to the perception of leprosy patients to the leprosy stigma. J Health Promot Indones 2009;4:75-81.

31. Supriyanto S, Djohan AJ. Metodologi Riset Bisnis dan Kesehatan. Banjarmasin Post Group edition. Banjarmasin, Kalimantan: PT. Grafika Wangi Kalimantan; 2011.

32. Swarth J. Stress Dan Nutrisi. Jakarta: Bumi Aksara; 2001.

33. Udi MA, Soebono H, Kusnanto H. Faktor Risiko Kejadian Reaksi Kusta di Rumah Sakit Kusta Kediri. Yogyakarta: Universitas Gadjah Mada; 2015.

34. Woodard PP. Four Key Determinants of Health - The Blum Model. 2 September; 2015.