

## LEPROSY: An OVERVIEW OF EPIDEMIOLOGY AND RISK FACTOR IN INDONESIA

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### ABSTRACT

Leprosy patients in Indonesia is third in quantity in the world, with new cases found higher and higher from year to year. Leprosy is one of the most contagious diseases that cause very complex problems in Indonesia. The problem is not only medical but extends to social, economic, cultural, security and national security issues. Leprosy is common in developing countries such as Indonesia, as a result of the country's limited ability to provide adequate services in health, education, socio-economic welfare to the community. The main objective of this review article is to provide an overview of epidemiology of leprosy in Indonesia and as a reference for performing health programs about leprosy. The review was performed by searching in PubMed with keywords "epidemiology leprosy in Indonesia". We found 67 articles but only 4 articles taken for reference because full meet criteria (explain risk factor and or epidemiology in Indonesia after 2000). We add 9 reference book to complete the discussion . the incidence of leprosy in Indonesia is still quite high. The risk factor leprosy in Indonesia are genetic, household size and gender.

**Keywords:** leprosy, epidemiology, risk factor.

**No: of Figures: 1**

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## INTRODUCTION

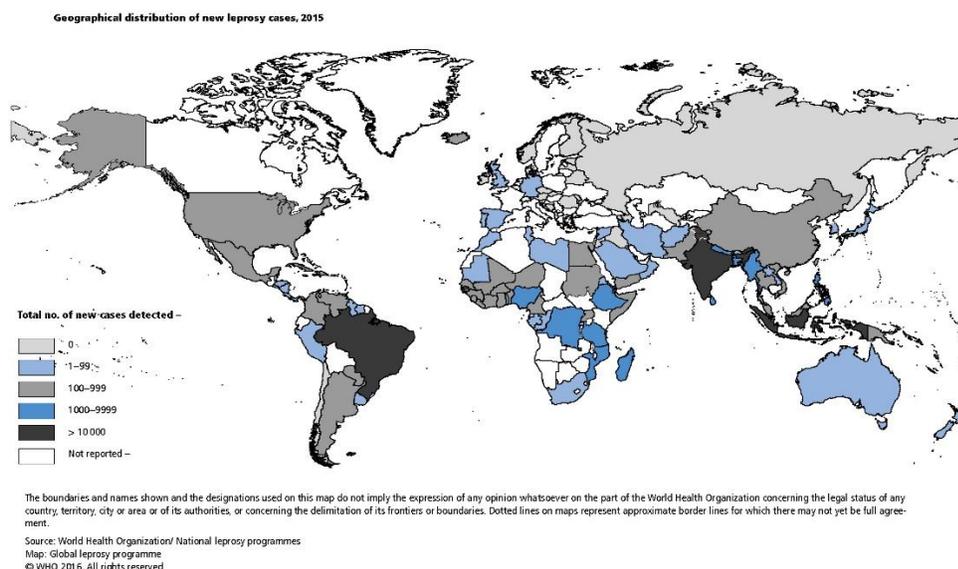
It is a fact that most of leprosy patients are people with a weak economy. The development of disease in the patient if not handled carefully can cause defects and this situation becomes an obstacle for leprosy patients in social life to meet their socio-economic needs, also cannot play a role in nation and state development.<sup>1</sup>

In addition to the defects that arise, the wrong opinion of the community against leprosy, excessive fear or leprosy phobia will strengthen the socio-economic problems of leprosy patients. In Indonesia, leprosy patients are present in almost all areas with uneven distribution. In fact, in eastern Indonesia there is a higher rate of leprosy morbidity. Leprosy patients 90% live among their families and only a few

sufferers live in Leprosy Hospital, colonies of settlement or leprosy.<sup>2</sup>

## EPIDEMIOLOGY

Epidemiology is the study of the distribution and determining factors of an event related to disease / health in a population and its application in controlling health problems. The emergence of disease is an interaction between the various factors that cause: hosts and the environment, through a process known as an infection chain consisting of 6 components, namely: (1) causes, (2) the source of transmission, (3) the way of transmission, (4) how to enter the host, (5) the host. By understanding the process of infection or chain of transmission that is then we can do one or several interventions in order to break the chain of transmission.<sup>3</sup>



**Figure 1.** Geographical Distribution and Prevalence

Leprosy is spread around the world with different endemicity. Among the 122 endemic countries in 1985, 98 countries had achieved leprosy elimination in example prevalence rate  $<1 / 10.000$  population. More than 100,000,000 patients had been cured with MDT by the end of 1999 and 641,091 cases were still in treatment in 2000. Indonesia occupied third place after India and Brazil in donating leprosy in the world. Despite the drastic decline in the number of registered cases, the actual number of new case detection (New Case Detection) is not reduced at all. Therefore, in addition to the prevalence rate (PR: Prevalence Rate), the new case finding rate (NCDR: New Case Detection Rate) is also an indicator to be considered. Because even if a country has achieved elimination, it does not mean that leprosy is no longer a problem. It seems that leprosy patients will continue to exist for at least the next few years, so the continuity of the leprosy program must be maintained.<sup>4</sup>

In 1991 the World Health Assembly made a resolution on leprosy elimination as a public health problem in 2000 by reducing the prevalence of leprosy to below 1 case per 10,000 population. In Indonesia it is known as Leprosy Elimination of 2000 (EKT 2000). The number of cases of leprosy worldwide over the last 12 years has declined sharply in most countries or endemic areas. Cases registered at the beginning of 2009 accounted for 213,036 people who were from 1221 countries, while the number of new cases in 2008 was 249,007.<sup>5</sup>

The prevalence of leprosy in Indonesia ranks third in the world after India and Brazil. Every year, thousands of new cases of leprosy in were found in Indonesia with recovery rate 80-90% while dropout rate is more than 10%.<sup>6</sup> The number of leprosy cases recorded beginning of 2009 was 21,538 people with new cases in 2008 amounted to 17,441 people. Uneven distribution, the highest among others in Java, Sulawesi, Maluku and Papua. The prevalence in 2008 per 10,000 population was 0.76. Leprosy is a creepy and feared disease, because it can occur ulceration, mutilation and deformity. Leprosy sufferers do not suffer because of the disease alone, but also because ostracized the surrounding community. This is due to large irreversible skin damage in the face and extremities, motor and sensory, as well as with repetitive damage to the anesthetic region with paralysis and muscle atrophy.<sup>7</sup>

By mid-2000, Indonesia had achieved elimination as targeted by WHO. In 2003, the distribution of leprosy by place and time was as follows: Patients enrolled in Indonesia at the end of December 2003 were 18,312 patients consisting of 2,814 PB and 15,498 MB with Prevalence Rate 0.86 per 10,000 population in 10 provinces, namely: East Java, West Java, Central Java, South Sulawesi, Papua, NAD, DKI Jakarta, North Sulawesi, North Maluku and East Nusa Tenggara.<sup>7</sup>

Bakker *et al* (2002) found 96 leprosy patients (85 new and 11 old patients) from the 4140 were screened for leprosy 4774 inhabitants living in South Sulawesi (Indonesia).<sup>8</sup>

## Risk Factors

Factors to consider are pathogenesis of germs, mode of transmission, socioeconomic and environmental conditions, genetic variants associated with susceptibility, immune change and the possibility of reservoirs outside of humans. Today's leprosy differs from the leprosy of the past, but yet there are still many things that are not immediately known, so it is still a broad challenge for scientists to solve.<sup>9</sup> Research Bakker et al found the risk factor of leprosy in Indonesia are: genetic,<sup>10</sup> household size and gender.<sup>11</sup> People living in households with more than 7 members had a risk of 3.1 times higher (95% CI: 1.3-7.3) than families with 1-4 members. Men had a 22-fold higher risk develops leprosy than women [95% confidence interval (CI): 1.2-4.1].<sup>11</sup>

No artificial medium has been found, making it difficult to study the properties of *M. leprae*. As a source of infection only humans, though still dikkitakan existence of possibilities outside humans. Patients containing *M. leprae* are much more (up to 103 per gram of tissue), compared with patients containing 107, the transmission rate is only three to ten times greater.<sup>12</sup>

Leprosy is not a hereditary disease. Germs can be found in the skin, hair follicles, sweat glands, and breast milk, rarely found in urine. Sputum may contain *M. leprae* from the upper respiratory tract. The implantation site is not always the site of the first lesion. Can attack all ages, children are more vulnerable than adults. In Indonesia, children under the age of 14 are  $\pm$  13%, but children under 1 year old

are rarely. At present the effort of recording the patient under 1 year of age is important to look for the possibility of existence of congenital leprosy. The highest frequency is in the age group between 25-35 years.<sup>13</sup>

Leprosy is present throughout the world, especially in Asia, Africa, Latin America, tropical and sub-tropical regions, societal socioeconomic communities. The lower the socioeconomic the more severe the disease, on the contrary the high socioeconomic factor is very helpful healing. Variations of reaction to *M. leprae* infection resulted in variation of clinical picture (spectrum and others) in various tribes. This is thought to be caused by different genetic factors.<sup>5</sup>

## CONCLUSION

The incidence of leprosy in Indonesia is still quite high. The prevalence of leprosy in Indonesia ranks third in the world after India and Brazil. The risk factor leprosy in Indonesia are genetic, household size and gender. Determination of policies and methods of eradicating leprosy in Indonesia is largely determined by leprosy epidemiology knowledge, development of science and technology in the field of health.

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