

The Influence of Health Services Factor on the Maintenance of Leprosy Elimination Status at Community Health Centers in Timor-Leste

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ABSTRACT

Introduction: Leprosy is a chronic disease caused by *Mycobacterium leprae* and manifests as damage to the skin and peripheral nerves. Globally, a total of 176,176 cases (0.2 cases per 10,000 population) were recorded for treatment at the end of 2015. Southeast Asia accounted for 72% of the global burden of new cases and 60% of global leprosy disabilities. Out of 14 countries globally reporting more than 1,000 cases annually, six are from the Southeast Asian Region. **Method:** This research is an epidemiological analytic study using a cross-sectional approach. The study population includes all managers and leprosy focal points from all Community Health Centers (CHCs) in Timor-Leste, with an estimated number of 136. **Result:** The findings of the study indicate that health policy, human resources, and drug supply influence leprosy elimination status, with the following results: $0.631 > 0.05$, $0.569 > 0.05$, and $0.396 > 0.05$, respectively, from the perspective of CHC managers, and $0.384 > 0.05$, $0.195 > 0.05$, and $0.071 > 0.05$ from the perspective of leprosy focal points. These results show that the hypothesis of no influence of health policy, human resources, and drug supply on the maintenance of leprosy elimination status was rejected. **Conclusion:** Based on the results outlined above, it can be concluded that health policy, human resources, and drug supply influence the status of leprosy elimination in Timor-Leste. Despite these results, this study also found that 53% of Community Health Centers in Timor-Leste are not properly implementing activities related to these three variables.

Keyword: Leprosy elimination; Health services; Health Policy; Human resources; Drug supply.

INTRODUCTION

Leprosy is a chronic disease caused by *Mycobacterium leprae* and manifests as damage to the skin and peripheral nerves (Bhat & Prakash, 2012). Without treatment, this disease can cause numbness in the hands and feet and paralysis of the muscles. Amputation of limbs, blindness, and facial disfigurement are also potential consequences of the disease if left untreated (Lockwood & Saunderson, 2012).

According to official reports received from 138 countries across all regions, the global number of registered leprosy cases at the end of 2015 was 176,176 (0.2 cases per 10,000 people). Leprosy burden reports show that the largest number of leprosy cases is concentrated in seven countries: Brazil, India, Madagascar, Mozambique, Myanmar, Nepal, and the United Republic of Tanzania, with India alone accounting for 64% of the global prevalence of leprosy and 78% of new cases detected worldwide (WHO, 2016).

Southeast Asia accounted for 72% of the global burden of new cases and 60% of global leprosy disabilities in 2015. (Tiwari & Richardus, 2016) Out of the 14 countries globally reporting more than 1,000 cases annually, six are from the Southeast Asia Region: Bangladesh, India, Indonesia, Myanmar, Nepal, and Sri Lanka. In 2015, the new case detection was

155,385. Of the new cases detected, around 85,788 (55.20%) were Multibacillary (MB) cases (WHO, 2016).

The leprosy annual report from the Ministry of Health of the Democratic Republic of Timor-Leste (RDTL) after the declaration of elimination shows that, from 2011 until now, the prevalence has remained stagnant at above 0.7 per 10,000 population. In 2013 and 2014, the prevalence even increased to 0.89 and 0.97, respectively. The report also highlighted that most of the newly detected cases were Multibacillary (MB), as indicated below:

In 2011, a total of 82 new cases were reported, with 56 cases (68%) being MB, and the prevalence at the end of the year was 0.7 per 10,000 population.

In 2012, a total of 70 new cases were reported, with 55 cases (79%) being MB, and the prevalence at the end of the year was 0.72 per 10,000 population.

In 2013, 102 new cases were reported, with 66 cases (64.74%) being MB, and the prevalence at the end of the year was 0.97.

In 2014, 89 new cases were detected, with 77 (86.51%) being MB, and the prevalence at the end of the year was 0.89 per 10,000 population.

From January to December 2015, 111 new cases were detected, with 88 cases (79.21%) being MB. The prevalence was 0.78.

From January to June 2016, 20 new cases were detected, and a total of 117 cases were under treatment. The 2017 and 2019 reports showed that the prevalence was 1.0 and 1.04 per 10,000 population, respectively (MoH, 2016).

Since the introduction of MDT in 1985, there has been a global reduction in leprosy cases over the past twenty years due to the combined efforts of WHO, local governments, health professionals, and non-governmental organizations. Based on this progress, in 1991, the World Health Assembly decided to eliminate leprosy as a public health problem by the year 2000 (Sandle, 2013; Organization, 2016).

In 2000, the World Health Organization (WHO) announced that elimination had been reached globally, although some countries, including Timor-Leste, still needed to work hard to reach this goal. Ten years later, in 2010, all countries were declared to have achieved the elimination goal (Smith et al., 2015).

All 11 Southeast Asia Region (SEAR) member countries had achieved the elimination of leprosy as a public health problem at the national level (registered prevalence <1 case per 10,000 population) in 2010, with Timor-Leste being the last country to achieve this elimination target (SEAR, 2015).

Although leprosy has been eliminated as a public health problem in the region, challenges remain, particularly in capacity building (Schreuder et al., 2016). Maintaining expertise among healthcare workers is essential, especially in countries where endemicity is relatively low. WHO and its partners recommend that communities continue to have access to quality leprosy services, even in low-endemic areas (SEAR, 2015).

Timor-Leste, having been colonized by Portugal for over 450 years and under Indonesian occupation for 24 years (1975–1999), gained full independence in May 2002 after a transition period under the United Nations (SEAR, 2009).

As a newly independent country, Timor-Leste faces various challenges, including infectious diseases such as leprosy. Leprosy has been recognized as a public health problem for many years (Rodrigues & Lockwood, 2011). The program to eliminate leprosy in Timor-Leste began in 2003, with major partners such as WHO, Sasakawa Memorial Health Foundation, the Nippon Foundation, and the Leprosy Mission International, together with the Ministry of Health of the Democratic Republic of Timor-Leste (RDTL). The main components of this achievement included training health staff on leprosy detection and treatment, actively searching for cases, and ensuring a continuous, uninterrupted supply of Multi-Drug Therapy (MDT) to patients (Blok et al., 2015).

Timor-Leste achieved the elimination of leprosy as a public health problem at the end of 2010, with a total of 78 cases under treatment and a prevalence rate of 0.78 per 10,000 population. This was officially declared on March 23, 2011, by His Excellency President Dr. Jose Ramos Horta (SEAR, 2011).

Although leprosy was eliminated as a public health problem in Timor-Leste at the national level, there are still three municipalities lagging behind: Oecusse, Dili, and Baucau, which have not yet reached the elimination target at the municipality level. Additionally, new cases continue to be detected in some municipalities (MoH, 2015).

According to the Ministry of Health's report from 2003 to the present, 445 health staff from Community Health Centers (CHCs) and Health Posts (HPs) have been trained in diagnosing, classifying, and treating leprosy patients, as well as improving community awareness to recognize early signs and self-reporting to health facilities (Steinmann et al., 2017). A total of 705 Community Health Volunteers at SISCa levels have also been trained. However, based on information from the leprosy coordinator at the Ministry of Health (MoH), some facilities may no longer have trained staff due to staff movement. Even when trained staff remain in some health facilities, it is uncertain whether they consistently perform leprosy activities, such as health education. The MoH report also noted that no supervision had been conducted in the last three years (MoH, 2016).

The data after the declaration of leprosy elimination in Timor-Leste show that most of the newly detected cases are classified as Multibacillary (MB). This suggests that transmission of the disease occurred before the patient sought treatment, highlighting a potential threat to maintaining leprosy elimination status in the future (MoH, 2016).

WHO has repeatedly emphasized maintaining the quality of services and improving patient care to prevent disease transmission (SEAR, 2009). Dr. Samlee, former WHO Regional Director for the Southeast Asia Region, warned of the risk of complacency, urging governments to renew their political and professional commitment to leprosy control (SEAR, 2009). Dr. S.K. Noordeen, President of the Leprosy Elimination Alliance (LEA), expressed concerns about the reduced political commitment towards leprosy control, considering it a lower priority (WHO SEAR, 2009). Dr. Tin Shwe noted that in areas where endemicity has decreased, programs are reporting higher proportions of new MB cases, grade-2 disabilities, and more new cases detected among household contacts (SEAR, 2009).

Based on these challenges and observations, the investigator is interested in conducting research to assess whether health services are a contributing factor in maintaining leprosy elimination status (Richardus et al., 2021).

METHOD

The present study employed an epidemiological analytic research design using a cross-sectional approach, which allows the researcher to examine the relationship between independent and dependent variables at a single point in time. The population of this study consisted of all managers and leprosy focal points from Community Health Centers (CHCs) in Timor-Leste, totaling approximately 136 individuals. From this population, a sample of 56 respondents was selected from 28 CHCs using a purposive sampling technique, ensuring that only respondents directly involved in leprosy program management were included. The study variables comprised three independent variables health policy (X1), human resources (X2), and drug supply (X3) and one dependent variable, namely the maintenance of leprosy elimination status (Y).

The research instrument used in this study was a structured questionnaire designed to measure each variable based on predefined indicators relevant to health service performance. Prior to data collection, the instrument underwent validity and reliability testing, where validity was assessed using correlation analysis to ensure that each item accurately measured the intended construct, and reliability was tested using Cronbach's Alpha to confirm internal consistency. Data collection was conducted through direct distribution of questionnaires to respondents at selected CHCs. The research procedure included preparation of instruments, obtaining research permission, conducting pilot testing, distributing questionnaires, collecting responses, and verifying the completeness of the data.

Data analysis was performed using statistical software such as SPSS, which facilitated both descriptive and inferential statistical analysis. Descriptive analysis was used to summarize respondent characteristics and variable distributions, while inferential analysis employed the Chi-square test to examine the relationship between independent variables and the dependent variable. The level of significance was set at 0.05. The analysis results were interpreted to determine whether health policy, human resources, and drug supply significantly influenced the maintenance of leprosy elimination status, thereby providing empirical evidence to support or reject the research hypotheses.

RESULTS AND DISCUSSION

The Chi-square test result of *p-value* for health policy, (human resource and drug supply variable) was as much as 0.99, which was greater than 0.05. This means that, the null hypothesis that mentioned there is no simultaneous influence of health policy, human resource and drug supply on the leprosy elimination status was not rejected in the perspective of CHC managers. However, in the perspective of leprosy focal points, the null hypothesis was rejected at Chi-square test result *p-value* $0.049 < 0.05$. So that the health policy, human resources and drug supply variables simultaneously have a slight influence to the leprosy elimination status from the perspective of leprosy focal points.

The influence of Health Services factors (Policy, Human Resources and Drug Supply) on Leprosy Elimination Status

The availability of good-quality health services will influence the status of community health. Good quality service will help reduce and overcome health problems in an area or community (Dharmawan et al., 2022).

The result of data analysis using the Chi-square test shows that health services do not have an influence on the maintenance of leprosy elimination status, with a p-value of $0.99 > 0.05$ for CHC Managers. However, from the perspective of Leprosy Focal Points, the result of data analysis using the Chi-square test indicates a slight influence of health services on the maintenance of leprosy elimination status, with a p-value of $0.049 < 0.05$.

Even though the statistical test result indicated no significant influence of health services on the maintenance of leprosy elimination status, it cannot be assumed that there was no impact. The descriptive results of this research indicated that Community Health Centers in Timor-Leste maintained only 45.5% of activities from the perspective of CHC Managers and 30.5% from the perspective of Leprosy Focal Points in implementing leprosy activities related to the leprosy control program. This finding is also supported by the statistical test result, which showed a slight influence of health services on the maintenance of leprosy elimination status from the perspective of Leprosy Focal Points.

We can also assume that the lack of significant influence from health services on the maintenance of leprosy elimination status, from the perspective of CHC managers, and the slight influence from the perspective of Leprosy Focal Points, may be affected by the 5% error margin in the interval (Reibel et al., 2015; Mieras et al., 2016).

This situation is in support of an article that suggests good quality health services influence the status of community health. Knowledge and skills of health workers supported by sufficient facilities and funding will guarantee the quality of health services. Good quality services will reduce or overcome health problems in an area or community (Notoatmojo, 2011).

CONCLUSION

The findings of this study indicate that health service factors, namely health policy, human resources, and drug supply, do not show a statistically significant influence on the maintenance of leprosy elimination status from the perspective of Community Health Center (CHC) managers, while a slight influence is observed from the perspective of leprosy focal points (van Brakel et al., 2012; Martins-Melo et al., 2016; Sermrittirong & van Brakel, 2014). This suggests that although quantitatively the impact appears limited, qualitatively there are still gaps in the implementation of leprosy-related health services. The relatively low level of program implementation across CHCs reflects underlying challenges such as inconsistencies in policy execution, limited capacity of health personnel, and constraints in drug availability. Therefore, maintaining leprosy elimination status requires not only statistical validation but also strengthening the quality and consistency of health service delivery at the operational level.

For future research, it is recommended to conduct longitudinal studies to better capture the dynamic relationship between health service factors and leprosy elimination over time. Further studies should also incorporate additional variables such as community participation,

health education effectiveness, and surveillance systems to provide a more comprehensive understanding of determinants influencing disease control sustainability. Expanding the sample size and including multiple regions or countries would improve generalizability, while mixed-method approaches combining quantitative and qualitative data could offer deeper insights into contextual challenges. Additionally, future research should explore intervention-based studies to evaluate the effectiveness of targeted strategies in improving health service performance and sustaining leprosy elimination status (Notoatmodjo, 2011).

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