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ABSTRACT

To assess the successes of the leprosy elimination strategy before (2000 to 2005) and after (2006 to 2010) eradication period in referral hospital of Tamil Nadu District. Retrospective cross-sectional study of all registered new cases of leprosy carried out from records over a ten year period from referral Sacred heart leprosy hospital, Kumbakonam, Tamil Nadu. During the survey, total number of 5,794 new leprosy cases registered during 2000 to 2010 between before and after eradication period at referral leprosy hospital. Comparative analysis of 5 years of before and after eradication period survey shows that the total number of multibacillary and paucibacillary cases registered before eradication was 4177 and after eradication it was reduced to 1617, in that multibacillary cases reduced from 2724 to 1150 after eradication and paucibacillary cases reduced from 1453 to 467 cases. According to this analysed report concluding that the total number of leprosy cases reported in referral hospital per day before eradication was 2.28 and after eradication it was reduced to 0.88 cases per day. Leprosy was still an important public health problem and was getting out of control in some districts in Tamil Nadu, south India. However, leprosy elimination is well within sight, and after eradication period also risk of the leprosy cases in endemic districts. So leprosy awareness days and community-based surveillance could help to improve early detection, treatment, case holding and prevention of disabilities. Increase the awareness program for endemic districts is a very well method in decrease the leprosy.

Keywords: Leprosy, Multibacillary, Paucibacillary, Multi Drug Therapy

INTRODUCTION

Leprosy is caused by *Mycobacterium leprae* and manifests as damage to the skin and peripheral nerves. The disease is dreaded because of the damage that occurs in weak and anaesthetic hands and feet, as well as in blindness and facial disfigurement [1]. In 1991, the 44th World Health Assembly set a target for the elimination of leprosy from the world as a public health problem by 2000 [2]. Elimination was defined as a prevalence of less than 1 case per 10,000 populations. The elimination strategy is based on detecting and treating all leprosy cases with Multi Drug Therapy (MDT) and thereby reducing the disease burden to a very low level. The key is to ensure that all new cases continue to have access to MDT services [3]. MDT is based on the combination of dapsone, rifampicin, and clofazimine which was introduced in 1982 after dapsone-resistant strains appeared and spread. MDT proved highly efficacious in killing the bacteria without inducing resistance, although the optimal length of treatment and associated relapse rates are still controversial [4]. The regional leprosy prevalence in the South East Asian (SEA) region declined from 4.6/10,000 population in 1999 to 0.55/10,000 population in 2005 [5]. The SEA Region was on the verge of achieving the leprosy elimination goal at the regional level and in countries, by the end of 2005. Among the 11 countries of the Region, India, Nepal and Timor-Leste were yet to achieve elimination, with prevalence of 1.2, 1.8 and 3.9/10,000 population respectively in 2005 [5]. Child proportion among new cases dropped from 12% in 2004 to 5% in 2007 and increased to 9% in 2008 and grade 2 disability among new cases has remained very high between 21%-27% within the previous five years period [6]. Most previously highly endemic countries have now reached elimination. After the creation of the Global Alliance to Eliminate Leprosy in November 1999 and the drafting of the WHO’s “Final Push” strategy (2000-2005) to eliminate leprosy, many partners supported the elimination struggle including the WHO, the World Bank, the International Leprosy Federation (ILEP), the Nippon Foundation and the Sasakawa Memorial Health Foundation (SMHF), Novartis, the Danish International Development Agency (DANIDA) and many more [7]. A significant proportion of patients in Kerala and a few other states did not get MDT in the nearest health facility, and there was no patient counseling in most states. Similar comments were made on the need for effective monitoring and evaluation of the integration process [8]. Another research study carried out in tribal state of Gujarat in India reports a decline in prevalence, but which has not yet reached the elimination level [9]. Singh advocates active surveillance not to miss hidden cases in the community [9]. Another state with a large tribal population is Chhattisgarh, which is still endemic for leprosy; a study carried out during 2003–2009 showed a total of 1530 untreated leprosy cases reported to the Leprosy Mission Referral Hospital in Champa (Chhattisgarh, India), of which 151 (9%) were classified as belonging to the scheduled tribes [10]. Even after a country has achieved elimination of leprosy, the profile of new leprosy might change; for example, in India, new cases of historic are still recorded with the same incidence rate [11]. This successfully reduced the national prevalence of leprosy from 57.6 per 10,000 in March 1981 to 2.44 per 10,000 in March 2004 [12]. Leprosy was eliminated nationally by December 2005 [12]. In the present study we have described the results of an active leprosy survey of before and after eradication intervention during 2000 to 2010, a ten years period in the southeast Indian state of Tamil Nadu.

MATERIALS AND METHODS

Diagnosis of leprosy

A person was diagnosed as the leprosy affected persons had one or more hypo-pigmented (whitish or brownish) skin patches with loss of sensation in the patch and/or enlargement of peripheral nerves and/or was currently on leprosy treatment with multidrug therapy.
Leprosy patches could be pale or reddish, could be flat or raised, do not itch, usually painless, lack sensation to touch, pain or heat and could appear anywhere on the body. Other signs of leprosy include reddish or skin-coloured nodules or smooth, shiny diffuse thickening of the skin without a loss of sensation [13]. Patients with leprosy were then classified using the 1990 WHO classification in which patients are classified as paucibacillary (PB) if they have up to five skin lesions and as multibacillary (MB) if they have five or more skin lesions [14]. The identified new cases of leprosy were diagnosed and reported with the hospital. Leprosy cases currently on treatment were assessed for compliance to MBT treatment in the leprosy cases.

Study design
A descriptive cross-sectional hospital based study was designed and conducted in four different parts. Part one comparison of before eradication MB and PB type. Part two comparison of after eradication MB and PB type. Part three comparison of before/after eradication MB and PB type male cases. Part four comparison of before/after eradication MB and PB type female cases.

Selection of study sites and sample size
Detailed data were collected from the sacred heart leprosy hospital Kumbakonam, Thanjaur district, Tamil Nadu, South India. Registered new leprosy cases data were collected in before/after eradication period. Before eradication total number of cases reported were 5,467; paucibacillary cases was 1,722(31.6%) and multibacillary cases was 3,745(68.4%). Total number of male adult multibacillary cases reported was 1,477 and paucibacillary cases was 1,718(31.3%). Total number of male child multibacillary cases reported was 48(4.5%) and paucibacillary cases was 5(0.5%).

<table>
<thead>
<tr>
<th>No</th>
<th>YEARS</th>
<th>MA cases</th>
<th>Multibacillary (MB) cases</th>
<th>Paucibacillary (PB) cases</th>
<th>TOTAL NO. OF MB CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2000</td>
<td>591(77.3)</td>
<td>154(20.1)</td>
<td>15(2.0)</td>
<td>766(100.0)</td>
</tr>
<tr>
<td>2</td>
<td>2001</td>
<td>469(70.6)</td>
<td>177(26.7)</td>
<td>6(8.7)</td>
<td>260(100.0)</td>
</tr>
<tr>
<td>3</td>
<td>2002</td>
<td>335(63.3)</td>
<td>192(36.2)</td>
<td>12(4.2)</td>
<td>259(100.0)</td>
</tr>
<tr>
<td>4</td>
<td>2003</td>
<td>63(50)</td>
<td>41(32.3)</td>
<td>11(9.0)</td>
<td>115(100.0)</td>
</tr>
<tr>
<td>5</td>
<td>2004</td>
<td>197(72.4)</td>
<td>73(26.8)</td>
<td>1(0.4)</td>
<td>271(100.0)</td>
</tr>
<tr>
<td>6</td>
<td>2005</td>
<td>267(73.2)</td>
<td>94(25.7)</td>
<td>9(2.5)</td>
<td>368(100.0)</td>
</tr>
<tr>
<td>Total</td>
<td>1922(70.6)</td>
<td>731(26.8)</td>
<td>41(1.5)</td>
<td>596(100.0)</td>
<td>272(165.2)</td>
</tr>
</tbody>
</table>

Table 1: Profile of Leprosy new cases reported and classified before eradication period at referral hospital, Tamil Nadu, 2000 – 2005.

MA (Male Adult), FA (Female Adult), MC (Male child), FC (Female child)

Profile of Leprosy new cases reported and classified after eradication period at referral hospital. The total number of multibacillary and paucibacillary cases registered before eradication was 2,683 and after eradication was 2,341. Comparative analysis of 5 years of before and after eradication period showed that the total number of multibacillary and paucibacillary cases registered before eradication was 1,477 and after eradication was 2,174.

<table>
<thead>
<tr>
<th>No</th>
<th>YEARS</th>
<th>MA cases</th>
<th>Multibacillary (MB) cases</th>
<th>Paucibacillary (PB) cases</th>
<th>TOTAL NO. OF MB CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2006</td>
<td>189(63.3)</td>
<td>99(33.1)</td>
<td>11(3.6)</td>
<td>299(100.0)</td>
</tr>
<tr>
<td>2</td>
<td>2007</td>
<td>174(65.4)</td>
<td>91(34.2)</td>
<td>11(4.1)</td>
<td>276(100.0)</td>
</tr>
<tr>
<td>3</td>
<td>2008</td>
<td>153(76.5)</td>
<td>44(22.5)</td>
<td>5(2.5)</td>
<td>203(100.0)</td>
</tr>
<tr>
<td>4</td>
<td>2009</td>
<td>143(76.9)</td>
<td>40(21.5)</td>
<td>10(5.5)</td>
<td>193(100.0)</td>
</tr>
<tr>
<td>5</td>
<td>2010</td>
<td>150(75.4)</td>
<td>49(24.6)</td>
<td>11(5.5)</td>
<td>210(100.0)</td>
</tr>
<tr>
<td>Total</td>
<td>809(70.4)</td>
<td>323(28.1)</td>
<td>11(1.1)</td>
<td>364(100.0)</td>
<td>295(165.2)</td>
</tr>
</tbody>
</table>

Table 2: Profile of Leprosy new cases detected and classified after eradication period at referral hospital, Tamil Nadu, 2006 – 2010.
DISCUSSION

Leprosy is a chronic infectious disease caused by Mycobacterium leprae, which was first described in 1873 by the Norwegian scientist Amauer Hansen. It is an intracellular acid-fast bacillus with an affinity for Schwann cells and skin macrophages. Patients with the multibacillary forms of the disease are considered the principal source of infection; nevertheless, the role of paucibacillary forms in the chain of transmission has already been demonstrated [15,16]. Although leprosy control programmes try their best to reach the WHO goal of eliminating leprosy as a public health problem, defined as reduction of the leprosy prevalence to a level below 1/10 000 population at a national level per 2005 (WHO 2000b) and pockets with extremely high leprosy prevalence still exist. In our survey analysis, total number of 5,794 new leprosy cases registered during 2000 to 2010 between before and after eradication period. Comparative analysis of 5 years of before and after eradication period survey shows that the total number of multibacillary and paucibacillary cases registered before eradication was 4,177 and after eradication it was reduced to 1,617, in that multibacillary cases reduced from 2,724 to 1,150 after eradication and paucibacillary cases reduced from 1,453 to 467 cases. According to this analysed report concluding that the total number of leprosy cases reported in referral hospital per day before eradication was 2.28 and after eradication it was reduced to 0.88 cases per day and presented in Table 3.

So leprosy awareness days and community-based surveillance could help to improve early detection, treatment, case holding and prevention of disabilities. Increase the awareness program for endemic districts is a very well method in decrease the leprosy.

ACKNOWLEDGEMENTS

We are highly thankful to the Director, the Superintendent and outpatient department staffs of sacred heart leprosy hospital, Kumbakonam, Tamil Nadu, for permitting and helping us to collect the data for this study. I express my sincere thanks to Dr. T.P. Velavan, Scientist, Institute of Tropical Medicine, University of Tübingen, Germany, Dr. Vijaya Lakshmi Valluri, Scientist, Blue Peter Public Health and Research Centre, Hyderabad, India, I deeply appreciate the motivations and support the research.

REFERENCES