Contribution of mini-LECS to cluster approach case finding in Kaduna State, Nigeria

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Summary Mini-leprosy elimination campaigns (Mini-LECs) were carried out over a period of 5 years (2000–2004) in Kaduna State, Nigeria. After careful preparation, the campaign team visited areas with a high suspicion of hidden cases in 12 selected Local Government Areas (LGAs). During the years of the 12 campaigns, 156 new cases of leprosy were detected against an expected number of 70 within the same LGAs. The results of the mini-LECs were analysed to find out if this cluster approach contributed significantly to the overall leprosy case finding and change in the proportion of the multi-bacillary (MB) forms of leprosy among new cases in the State. The analysis shows that, at LGA level, the number of cases detected during the year of mini-LEC is statistically higher than the expected number of cases. The MB proportion at LGA level did not change due to the mini-LEC exercises. Due to the limited number of exercises, the impact at state level is insignificant. However, the experience at LGA level suggests that with an increase in number of mini-LEC campaigns per state per annum an impact at the state indicators can be expected. In addition the campaigns should be repeated for further yield of new leprosy cases.

Introduction

Kaduna State is one of the 36 states of Nigeria located in the Northwest geopolitical zone of the country. It has a landmass of about 46,053 km² with a projected (from 1991 census with annual growth rate of 2.8%) 2005 population of 5,793,173. The State is administratively divided into 23 local government areas (LGAs) and the leprosy control programme is implemented within the primary health care (PHC) system in the State.

The World Health Assembly (WHA 44.9) declared in 1991 its target to eliminate leprosy as a public health problem by setting the elimination target of leprosy at prevalence rate of <1 case per 10,000 population by the end of 2000, which was later extended to 2005. Leprosy elimination can be achieved by secondary prevention through early case detection and adequate chemotherapy using multi drug therapy (MDT). Although estimation of the number

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of persons harbouring the disease in a given area is not practical, it is still believed that if leprosy is diagnosed and treated early, not only the patient will be cured without deformities, also disease transmission can be interrupted.

Kaduna State has eliminated leprosy since 1994 (see Figure 1). In 1999, the prevalence rate was 0·4/10–000 population. Despite this, the MB proportion remained high and patients were reporting late; the disability grade 2 proportion was 13% in 1999 (see Figure 2). The programme wanted to find out if the situation could be explained by the existence of hidden cases or that leprosy was dying out. Therefore, early case finding exercises such as the mini-LECs, which are a smaller replica of the state-wide LEC (confined to a particular LGA), were embarked upon with the hope of finding these hidden cases early and treating them to cure and thus interrupting disease transmission. With this intervention hidden cases are expected to increase the number of cases detected and to gradually increase the MB proportion indicating a reduction in disease transmission.

From the year 2000 to 2004 the Kaduna State Tuberculosis and Leprosy Control Programme (KDTBLCP) carried out 12 mini-leprosy elimination campaigns (mini-LECs) in selected suspected leprosy endemic villages of which the results are analysed to determine whether such interventions are effective on significantly increasing the overall case detection and increasing the proportion of multi-bacillary (MB) forms of leprosy among newly detected cases in the state, so as to justify its continuity. A literature search has shown only articles which mention number of cases found during mini-LECs compared with cases of the year before and after. No statistical analysis was given.

Materials and methods

The mini-LECs involve 6 stages of activities:

Stage 1. Meeting with stakeholders of the communities with poor leprosy indicators to agree on what is to be done, how it shall be done, who shall do what, where and when within these communities. The stakeholders are the state TBL control team, representatives of the local government authority (usually the TBL supervisor and the head of health department), traditional village heads or their representatives, health workers in-charge of the clinics within the villages, traditional healers and leprosy ex-patients when available. A village volunteer is appointed by the traditional leaders to be joining the mini-LEC team.

Stage 2. A day workshop for the health workers in-charge of the village clinics and the selected village volunteers.

Stage 3. Public enlightenment on early symptoms and signs of leprosy through the health workers in-charge of the villages and the selected village volunteers.

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**Figure 1.** Trends in prevalence and case detection rates in Kaduna State, Nigeria, between 1994 and 2004 (W. van Brakel, Report of Mid-Term Review Kaduna State Tuberculosis and Leprosy Control Programme, 2004).
Stage 4. Screening of suspected cases, identifying leprosy cases and registering them for treatment with MDT by the mini-LEC team consisting of the State TBL Control Officer, two State TBL Supervisors, the LGA TBL Supervisor, the health worker in-charge of the village clinic and a selected village volunteer.

Stage 5. Evaluation and dissemination of results to stakeholders.

Stage 6. Follow-up of cases registered until released from treatment.

The Kaduna State Tuberculosis and Leprosy Control Programme (KDTBLCP) carried out 12 mini-LECs in selected suspected leprosy endemic villages over a period of 5 years (2000–2004) alongside the ‘routine’ leprosy control activities (including passive case finding, IEC, training of staff and supervision). During the mini-LECs, eight villages within one local government were visited within 1 week. The villages have a catchment area of on average 10 000 population, each giving a State coverage of about 1·4% per exercise. Mini-LEC cases are the cases registered for treatment during the 1-week exercise.

The total number of cases detected was used as an indicator of leprosy case finding during this analysis instead of case detection rate (CDR) because of non-reliability of the population figures available for Kaduna State.

CLUSTER SELECTION

Selection of the villages in a particular local government area (LGA) was based on the leprosy statistical indicators as reported quarterly from the LGA by the LGA TBL supervisor. LGAs with the following indicators, either high WHO grade 2 disability, and/or high MB proportion among new cases, and/or high child proportion among new cases, and/or low case detection, and/or high prevalence rate were chosen and the villages around the clinics qualified for the mini-LEC. In 2000 and 2001, an additional selection criterion was the availability of local government support. Kaduna North LGA was selected based on the urban environment in order to compare the findings with all other (rural) LGAs. Unfortunately, data concerning disability grade 2 proportion were incomplete; therefore no conclusion can be drawn on the difference in time of reporting between mini-LEC and non mini-LEC cases.

Figure 2. Trends in the proportion MB, children and people with grade 2 disability among new cases in Kaduna State, Nigeria, between 1994 and 2004 (Netherlands Leprosy Relief. Databank).
Results

Table 1 summarizes the results of the programme performance at LGA level in terms of number of cases detected and the proportions of MB cases among the cases detected. The total number of mini-LEC exercises was too small to draw any conclusions on the difference between urban and rural LGAs. However, the number of cases found during the exercise was lowest in the urban LGA (Kaduna North).

The data at LGA level showed a mean number of cases detected during the period of $13 \pm 4.8$, compared to the expected cases of $5.8 \pm 5.3$. The difference was statistically significant ($P = 0.001$).

The MB proportion at LGA level was $72.9 \pm 15.6\%$, compared with an expected MB proportion of $77.3\%$. The difference was not statistically significant ($P = 0.36$).

Additional analysis was performed on data of the programme performance at state level in terms of number of cases detected and the proportion of MB cases among the cases detected compared with what was expected on the basis of data from the previous 5 years. The data are shown in Table 2.

The mean case detection at state level during the period was $191.0 \pm 29.1$. The expected case detection was $166.6 \pm 43.9$. This means that the case detection during the years of the mini-LECs was $14\%$ higher then expected, but this was not statistically significant.

The mean MB proportion at state level during the period was $81.6 \pm 2.0\%$. The expected MB proportion was very similar: $81.4 \pm 4.7\%$.

Since we are looking at the total number of cases and MB proportion the data analysis is not hampered by the absence of reliable population data.

Discussion

The result of this analysis in terms of early case finding at LGA level has shown that the number of the cases detected in relation to the expected case finding was found to be statistically

<table>
<thead>
<tr>
<th>LGA</th>
<th>Expected number of new cases*</th>
<th>Total cases detected during the year of the mini-LEC</th>
<th>Expected % MB among new cases**</th>
<th>% MB during study period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 B.Gwari</td>
<td>7</td>
<td>13</td>
<td>83.6</td>
<td>76.9</td>
</tr>
<tr>
<td>2 Ikara</td>
<td>3</td>
<td>21</td>
<td>98.7</td>
<td>66.7</td>
</tr>
<tr>
<td>3 Sanga</td>
<td>0</td>
<td>10</td>
<td>0.0</td>
<td>80.0</td>
</tr>
<tr>
<td>4 Giwa 1</td>
<td>13</td>
<td>11</td>
<td>81.3</td>
<td>90.9</td>
</tr>
<tr>
<td>5 Jema'a</td>
<td>3</td>
<td>9</td>
<td>92.5</td>
<td>66.7</td>
</tr>
<tr>
<td>6 Giwa 2</td>
<td>9</td>
<td>10</td>
<td>96.0</td>
<td>70.0</td>
</tr>
<tr>
<td>7 K.North</td>
<td>16</td>
<td>18</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>8 Lere</td>
<td>0</td>
<td>10</td>
<td>91.4</td>
<td>90.0</td>
</tr>
<tr>
<td>9 Soba</td>
<td>0</td>
<td>10</td>
<td>87.6</td>
<td>50.0</td>
</tr>
<tr>
<td>10 Kagarko</td>
<td>2</td>
<td>21</td>
<td>26.7</td>
<td>61.9</td>
</tr>
<tr>
<td>11 Kaura</td>
<td>9</td>
<td>16</td>
<td>61.6</td>
<td>50.0</td>
</tr>
<tr>
<td>12 Makarfi</td>
<td>8</td>
<td>7</td>
<td>100.0</td>
<td>71.4</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>156</td>
<td>76.6</td>
<td>72.9</td>
</tr>
</tbody>
</table>

* Based on the trend of case detection of the previous 5 years.
** Based on the trend of MB proportion of the previous 5 years.
significantly higher. However, the results of this analysis were statistically insignificant at state level, which could be due to the poor coverage of the total population (≈ 1.4%). This is similar to the findings in the Western Pacific Region. Repetition of mini-LECs, as suggested by Jianping, might be needed in order to make a definite impact on leprosy elimination.

The MB proportion did not significantly change at both LGA and State level. This contrasted with the findings in the Philippines, which contributes about 36% of new leprosy cases in the Western Pacific Region, where there was an increase in the MB proportion among new cases 2 years after the implementation of mini-LECs. Increase in MB proportion can be expected in the situation where leprosy is dying out, since the MB cases have the longest incubation time. The findings indicate that leprosy might not yet be dying out and that transmission is still going on in Kaduna State.

At the moment, the leprosy component of the programme has covered all LGAs and the majority of the general health workers has been trained to suspect and refer leprosy suspects. The programme will embark upon intensified information, education and communication (IEC) in the near future in order to enhance routine case finding and increase early case detection. In addition the practical feasibility of a statewide LEC has to be investigated.

In conclusion, mini-LECs alone as a strategy does not significantly improve case-detection among new cases of leprosy detected nor does it change the MB proportion at State level.

Acknowledgements

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References


### Table 2. Summary of case findings during the period 2000–2004

<table>
<thead>
<tr>
<th>Year</th>
<th>Expected number of new cases*</th>
<th>Total cases detected during the years of mini-LECs</th>
<th>Expected % MB among new cases**</th>
<th>% MB among new cases during the years of mini-LECs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>236</td>
<td>205</td>
<td>74.3</td>
<td>80.5</td>
</tr>
<tr>
<td>2001</td>
<td>180</td>
<td>185</td>
<td>81.2</td>
<td>78.9</td>
</tr>
<tr>
<td>2002</td>
<td>155</td>
<td>155</td>
<td>80.6</td>
<td>83.9</td>
</tr>
<tr>
<td>2003</td>
<td>126</td>
<td>178</td>
<td>84.3</td>
<td>81.5</td>
</tr>
<tr>
<td>2004</td>
<td>136</td>
<td>226</td>
<td>86.6</td>
<td>82.7</td>
</tr>
</tbody>
</table>

* Based on the trend of case detection of the previous 5 years.
** Based on the trend of MB proportion of the previous 5 years.