

Analysis on the detection of new leprosy cases before, during and after the year of leprosy elimination campaigns

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Summary To analyse the impact on of case finding of leprosy elimination campaigns (LECs), data on newly detected leprosy cases in a leprosy endemic area were collected before, during and after the year of LEC. The number of new leprosy cases detected during the year of LEC was significantly higher than previously. The number of newly detected cases after the year of LEC was similar to that of detected before the year of LEC in counties with persisting case finding activities. However, the number of newly detected cases after the year of LEC significantly decreased in counties without active case finding activities. The average distance from the homes of leprosy cases detected during LEC to the leprosy control unit at the count town was 62.8 km, which is farther than that of other leprosy cases detected before and after the year of LEC. The average time from disease onset to diagnosis of leprosy cases detected after the year of LEC shortened. The results also showed that carrying out LECs is unlikely to have a significant impact on the trend of case finding within a short time in local areas, but it may improve some indicators of leprosy patients and so promote leprosy control in local areas.

Introduction

In recent years, leprosy elimination campaigns (LEC) as advocated by the World Health Organization have become an important strategy in implementing intensive case-finding and improving MDT coverage. Some documents¹ have reported that the majority of new leprosy cases have been detected by carrying LEC in areas with a high prevalence of leprosy. However, there are few reports of the influence on the situation regarding case-finding after carrying out a LEC. The authors have collected the data of newly detected cases and compared the situation of case-finding before, during and after the year of carrying out a LEC in areas with a high prevalence of leprosy in Yunnan, Guizhou, Sichuan and Hunan provinces.

Materials and methods

CASES STUDIED

The cases in the study were collected from eight counties with an annual leprosy incidence of more than 1/100,000 (one county in Yunnan province, two in Guizhou, three in Sichuan and two in Hunan province). All the cases (including relapsed leprosy cases) were checked up and confirmed to have leprosy on clinical and laboratory testing by the local professional staff before, during and after the year of LEC. LECs were carried out in Sangzhi and Yongshun counties and Hunan province in 1998, so the data were collected from 1997 to 1999. The other six counties, Lancang county in Yunnan, Xingyi and Bijie in Guizhou and Mianning, Xichang and Yanyuan in Sichuan, had implemented LECs in 1999, so the data were collected from 1998 to 2000. The classification of leprosy cases is based on the 7th report of the WHO Leprosy Expert Committee.²

METHODS OF CASE-FINDING

Before and after the year of LEC, case-finding in eight counties relied mainly on routine activities. The activities include passive detection by professionals at the skin clinic, and follow-up of some leprosy household contacts in some counties. However, in some poor mountainous counties, case-finding was done only in the skin clinic. During LEC, case-finding in all counties was performed with routine activities plus 3 months intensive LEC. The LEC procedures are described below.

At the beginning of LEC, the local leprosy control unit, with the support of central government, held a county-level training course and a working meeting on implementation of the intensive LEC. All the township leaders, directors of the township hospitals and health workers in charge of disease control in township hospitals attended the meeting. The governmental leader of the county attending the mobilizing meeting gave a motivating address to the delegates. The Chief of the Health Bureau of the local county made detailed arrangements regarding the more intensive aspects of the LEC. After the mobilizing meeting, all the participants were given a 1-day training course by leprosy experts on leprosy knowledge, especially on typical leprosy signs and symptoms. Health education booklets, reading materials, picture albums and other material on leprosy were given to all participants at the training course. Hundreds of slides with typical clinical features of leprosy were also shown to the participants, to improve their recognition of leprosy.

After county-level training and the meeting, all participants returned to hold township training course and working meetings in their own townships. The participants attending the township training course and meeting included village leaders, rural paramedical workers and volunteers in the villages. The town leader and director of the township hospital delivered the information obtained from county towns to every participant at the township training course and meeting.

The contents of LEC included implementation of an intensive health education campaign for the public, organized by leprosy control units and township hospitals. Using various mass media such as posters, slogans, leaflets, broadcasts, and TV, these intensive health education campaigns provided the public with a great deal of leprosy knowledge.

Information about suspected leprosy cases was extensively collected. Every village leader was required to convene a village gathering to tell the villagers about typical leprosy signs and to encourage villagers to report suspected leprosy cases to the paramedical workers. Rural schoolteachers, village accountants, women leaders and volunteers living at the villages also helped to follow up the villager's families. Village paramedical workers reported to the leprosy control unit if they found leprosy suspects in their villages. The information on leprosy suspects was entered into a 'clue table' by the village paramedical worker and submitted to the leprosy control unit.

Lastly, mobile medical teams consisting of two or three leprosy professional staff went into the field to perform checks and diagnosis of leprosy suspects according to information collected.

Result

NUMBER OF LEPROSY CASES DETECTED BEFORE, DURING AND AFTER YEAR OF LEC

A total of 385 leprosy cases were detected in eight counties in 3 years. Before, during and after the year of the LEC, 107, 190 and 88 leprosy cases were reported, respectively. The number of leprosy cases detected during the year of LEC was almost twice that in the year pre-LEC. Although the total number of reported cases in the year post-LEC was less than that reported in the pre-LEC year, caution is necessary in comparing the situation between counties. Sometimes, the number of reported cases did not decrease, but remained at the same level as pre-LEC, for example in Xichang, Sangzhi, Xingyi and Yanyuan counties. In other areas, the number of reported cases decreased significantly after the year of LEC compared with that reported in the year of LEC itself. The number of cases sometimes even decreased by more than 50% compared with the pre-LEC level, for example in Bijie, Yongshun, Lancang and Mianning counties (see Table 1).

AVERAGE DISTANCE FROM HOMES OF NEW PATIENTS TO LEPROSY CONTROL UNIT

The average distance from the homes of new patients detected during the year of LEC to the leprosy control unit in the nearest county town was 62.8 km. However, for cases detected before and after the year of LEC, the average distance was 47.6 km and 47.1 km, respectively. In addition, the new cases were leprosy household contacts, and accounted for 33.75% (35/107), 27.89% (35/190) and 42.4% (36/88) of total cases, respectively, before, during and after the year of LEC (Table 2).

Table 1. Information on case-finding before, during and after the year of LEC

Counties	General information about case-finding			Total
	Pre year of LEC (no. of cases)	During year of LEC (no. of cases)	Post year of LEC (no. of cases)	
Bijie	18	27	14	59
Xichang	14	15	17	46
Sangzhi	11	17	11	39
Yongshun	13	31	7	51
Mianning	12	18	3	33
Xingyi	13	30	15	58
Yanyuan	16	19	16	51
Lancang	10	33	5	48
Total	107	190	88	385

DELAY BETWEEN LEPROSY ONSET TO DIAGNOSIS

The average delay-time from leprosy onset to diagnosis in new cases was 30.7 months, 42.9 months and 26.5 months before, during and after the year of LEC, respectively. The new cases detected during the year of LEC had the longest delay time, but cases detected after the year of LEC had the shortest delay time in all new cases. It is interesting to see that the average delay times for some cases in Bijie, Yongshun and Lancang counties were 35.3 months, 44.0 months and 27.4 months, respectively, i.e. delay was not shortened significantly compared with that pre-LEC in these counties.

DISABILITY RATE IN NEW CASES OF LEPROSY

The rates of grade 2 disability in new cases before, during and after the year of LEC were 32.7%, 30.5% and 25.9%, respectively. There was a decreasing trend in the disability rate.

Table 2. Average distance from the homes of new cases to the leprosy control unit, and proportion of cases being leprosy household contacts and later developed leprosy

County	Average distance from homes of new cases to leprosy control unit			Proportion of cases who were leprosy household contacts and later developing leprosy, % (number of cases)		
	Pre LEC (km)	During LEC (km)	Post LEC (km)	Pre LEC	During LEC	Post LEC
Bijie	42.78	45.00	44.64	0.0 (0)	14.8 (4)	85.7 (12)
Xichang	22.14	57.53	28.71	50.0 (7)	53.3 (8)	41.2 (7)
Sangzhi	53.19	47.59	49.18	27.3 (3)	29.4 (5)	36.4 (4)
Yongshun	27.15	41.03	28.14	69.2 (9)	38.7 (12)	0.0 (0)
Mianning	66.25	72.50	46.33	16.7 (2)	11.1 (2)	0.0 (0)
Xingyi	47.69	40.43	40.67	38.5 (5)	6.7 (2)	40.0 (6)
Yanyuan	67.63	83.05	66.38	56.3 (9)	57.9 (11)	31.3 (5)
Lancang	92.80	122.67	96.00	0.0 (0)	27.3 (9)	40.0 (2)
Average	47.64	62.82	47.07	32.7 (35)	27.9 (53)	40.9 (36)

Table 3. Delay between disease onset and diagnosis and rate of grade 2 disability in new cases

Counties	Average disease delay-time in new cases			Rate of disability grade 2 in new cases		
	Pre-LEC (months)	During LEC (months)	After LEC (months)	Pre-LEC% (cases)	During LEC% (cases)	After LEC% (cases)
Bijie	36.7	52.1	35.3	61.2	33.3	28.6
Xichang	18.6	34.9	17.1	23.1	13.3	0.0
Sangzhi	24.5	32.6	30.9	20.0	6.3	27.3
Yongshun	46.9	48.2	44.0	23.1	32.2	28.6
Miannig	33.8	104.4	28.0	25.0	25.0	33.3
Xingyi	34.0	49.6	24.7	16.7	51.7	50.1
Yanyuan	25.1	22.2	18.1	25.0	15.8	18.8
Langcang	22.1	30.7	27.4	60.0	37.5	40.0
Total	30.7	42.9	26.5	32.7 (34)	30.6	25.9

However, there was also a difference in the disability rate between new cases in the counties. The incidence of new cases with grade 2 disability, which was more than 60% in some counties, such as in Bijie and Lanfan, decreased significantly after the year of LEC. However, the incidence of new cases with the lowest grade of disability before the year of LEC in counties such as in Mianning and Sangzhi increased after the year of LEC (Table 3).

TYPE OF DETECTION IN LEPROSY CASES

The spot or extensive clue survey for leprosy suspects was the main type of case detection before and during the year of LEC. In all, 40.2% (43/107) and 58.9% (112/190) of new cases were detected by this method before and during the year of LEC, respectively. The skin clinic ranked second, detecting 34/107 (31.8%) and 31/190 (16.3%) cases before and during the year of LEC, respectively. It is also interesting that after the year of LEC, detection of leprosy at the skin clinic again ranked first, with 28.4% of cases. In all, 35.2% (31/88) of all cases were detected by this method (see Table 4).

Table 4. Type of detection in leprosy cases

Counties	Detection by clue survey			Detection at skin clinic		
	Pre LEC	During LEC	After LEC	Pre LEC	During LEC	After LEC
Bijie	7	22	3	4	1	0
Xichang	6	2	1	3	1	1
Sangzhi	5	12	1	3	5	9
Yongshun	9	21	3	2	4	2
Mianning	6	5	1	1	1	1
Xingyi	4	14	2	6	11	7
Yanyuan	0	11	1	11	1	9
Lancang	6	25	3	4	7	2
Total	43 (40.2%)	112 (62.2%)	15 (17.1%)	34 (31.8%)	31 (16.3%)	31 (28.4%)

Discussion

LECs are an active and intensive activity in leprosy case-finding. They operate under relative fixed procedures. Usually, they are carried out over a vast area with a large population. The contents of LECs include providing leprosy health education to the public, mobilizing and training the rural paramedical workers, conducting clue surveys on leprosy suspects and diagnosing leprosy cases. If LECs were carried out in an area with a high prevalence of leprosy, the number of newly detected cases would be about twice that detected by routine activities in previous years.³ By linking the quality of routine leprosy control activities in counties and analysing the situation of case finding before, during and after the year of LEC, the leprosy problem and quality of carrying out leprosy control program in the local area could be evaluated.

In our study, 88 new cases were detected after the year of LEC, which was significantly less than the 190 cases detected during the year of LEC, and also less than the 107 cases detected before the year of LEC. Because of the epidemiology of leprosy, and the characteristics of leprosy transmission, leprosy prevalence is unlikely to be changed in a short time after one or two intensive case-finding campaigns, and therefore the decrease in the number of new cases after the year of LEC must be interpreted with caution. The number of new cases after the year of LEC was almost equal to that of pre-LEC in Sangzhi and Yanyuan counties. In some counties, such as Xichang and Xingyi, the number of new cases detected after the year of LEC even increased (see Table 1). The above-mentioned four counties have a well-organized leprosy control programme and a strong professional team on leprosy control. It could be concluded that this led to a high quality of leprosy control in routine activities, so that the number of newly detected cases after the year of LEC remained at the level of pre-LEC. The number of newly detected cases after the year of LEC in the other four counties significantly decreased compared with that of pre-LEC, because these counties lacked a well-organized leprosy control programme and enough professional health workers.

Dr Sri Sahadev Behera reported⁴ that repeated implementation of LEC in just 2 years produced a 41.14% fall in detection rate. He also considered that repeated implementation of LEC with more than 80% coverage of the population can help in bring down the incidence of the disease. However, if compared with the numbers of cases detected by routine activities, there may be little difference before and after the year of LEC, as was observed in our study. With the shortened time between disease onset and diagnosis, and the decreased rate of grade 2 disability in new leprosy cases after the year of LEC, we would expect the leprosy incidence to decrease in subsequent years, provided that leprosy control measures continued to be implemented in these counties. We agree with the view of Dr Behera that LEC could speed the achievement of the goal of leprosy elimination.

Dr Tiendrebeogo reported⁵ that active case finding is more effective than passive case finding in areas with high leprosy prevalence. He also advocated that active case finding should be combined with passive case finding, and that active case finding should also be used in remote areas or the places more than 30 km away from county towns. In our study, the average distance from home to leprosy control units of new leprosy cases detected during the year LEC was 62.82 km, which is much far than that of cases detected before and after the year of LEC. The result is similar to that reported by Dr Tiendrebeogo.

New leprosy cases detected during the year of LEC have the longest disease delay time to diagnosis (on an average of 42.9 months). New cases detected after the year of LEC have the shortest delay time (on average of 26.5 months). The results indicated that many leprosy cases

with a long disease history harboured in the community had been detected by carrying out LEC over a short time. However, it is interesting to see that the delay time of new cases detected after the year of LEC in several counties was still as long as 35.3–44.0 months, i.e. not significantly different to that pre-LEC. Linked with the fact that the number of new cases detected after the year of LEC markedly decreased in these counties, the results suggest that the long disease delay time of new cases was related to poor leprosy case finding activities.

The rates of grade 2 disability in new cases detected before, during and after the year of LEC were 32.7%, 30.5% and 25.9%, respectively, which showed a continuously declining trend. In accordance with a shortened disease diagnosis time for new cases in most counties, we conclude that case finding activity is strengthened, and the quality of leprosy control has improved in most counties after implementing LEC.

Following the clue survey, detecting new cases at the skin clinic is still the main method in case finding. In our study, the number of cases detected at skin clinics accounted for 31.85%, 17.25% and 35.2% of total cases detected before, during and after the year of LEC. After the year of LEC, the method of case reporting by rural paramedical workers detected 25 leprosy cases, which counted for 28.5% of all cases in the year. We consider that the increase in case reporting and detecting new cases at the skin clinic could be attributed to the intensive leprosy health education given to the public, and the leprosy training for rural paramedical workers during the implementation of LEC.

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