

Integrating leprosy control into general health service in a war situation: the level after 5 years in Eastern Congo

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Summary South Kivu Province of the Democratic Republic of Congo, plagued by a turbulent civil war, started a process of integrating leprosy into general health services in 1995. A questionnaire survey was carried out in September 2000 to assess the level of structural and functional integration, after 5 years of the integration process, in nine of its 14 health districts. The survey revealed that a total of 76 clinic nurses remained of those trained in leprosy since 1993. In all, 33.6% of the total 226 health facilities had a trained nurse, but according to the district supervisors who filled the questionnaires, nurses in only 28.3% of health facilities could diagnose leprosy. Less than 40% of the total 226 health facilities were structurally integrated with MDT and other leprosy services. Functionally, the clinic nurses were involved in dispensing MDT drugs and keeping leprosy records in 90.8 and 81.6%, respectively, of the integrated facilities, and diagnostic activities in 43.7%. The degree of involvement put health facilities into four grades of functional integration: 1) fully-functional integrated, 2) semi-functional integrated, 3) semi-integrated (structural but not functional), 4) not integrated (vertical). On this scale, 80% of 107 health facilities reported by the supervisors had some form of integration and 20% were not integrated. Treatment activities were significantly more functionally integrated than the diagnostic and POD activities, which require more skills. The presence of a trained nurse in a health facility made no significant difference to the involvement of clinic nurses in dispensing MDT drugs and performing POD activities, but significantly affected their performance of diagnostic activities and records keeping. The endemic districts had higher levels of *structural* integration, were not more likely to be *functionally* integrated. The levels of structural integration after 5 years are considered low in South Kivu Province, and reflect the significant negative effect of civil conflicts on integration of leprosy programmes in Africa.

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Introduction

Leprosy may lead to severe physical impairments.^{1,2} However, the risk of these can be reduced if the disease is diagnosed early and treated completely with multidrug therapy (MDT).³ Therefore, an efficient leprosy control programme that would ensure early case finding and effective case holding is essential for successful control of both the disease and its complications. Until recently, virtually all leprosy control programmes were vertically structured in their organization: mainly carried out in leprosy institutions by leprosy only staff and mobile control teams. This strategy allowed programmes to treat and cure a large number of patients, but it also encouraged social isolation and stigma of the disease and operated at a relatively high cost per patient.⁴⁻⁸ The World Health Organization (WHO) recommended integration of leprosy control activities into existing general health services as an intensified strategy to eliminate leprosy. The integration process combines leprosy functions with those of general health services in order to maximize the use of the combined resources, and make health care provision more responsive to the needs of leprosy affected persons in the community. It also rapidly increases MDT geographical coverage and reduces the social stigma, thereby improving leprosy patients' accessibility to treatment.⁴⁻¹³ Integration is also considered as an effective tool to sustain leprosy control activities more cost-effectively under low endemic situations.^{4,8,12}

South Kivu Province in the east of Democratic Republic of Congo started the integration process in 1995, with the aim of treating leprosy patients in all health facilities in the entire Province, the services being provided by general health workers under regular supervision of district leprosy supervisors. Integration of leprosy services was made a government health policy, and provision of MDT was transferred to the general health facilities, focusing on those with leprosy patients. The transfer was followed with phased training of district supervisors and clinic nurses. A provincial coordination team based at Bukavu the provincial capital, and supported by The Leprosy Mission International (TLMI), catered for the distribution of logistics and periodic supervisory visits to the district supervisors. A survey was carried out in September 2000 to determine the extent of the integration process, structurally and functionally after 5 years of implementation.

However, the process of integrating the programme in South Kivu Province has not been an easy one, as the Province has experienced series of civil wars since 1996. The crisis led to mass departure of trained health workers and destruction of health facilities. The province is occupied and governed by forces opposed to the national government. As a result, the leprosy control programme operates in administrative isolation, disengaged from the central coordination of the Ministry of Health headquarters and the TLMI Congo Coordination Office, both based in Kinshasa, the national capital. The clinic nurses earn little or no salaries, but are motivated by the resources the programme provides. Only a small proportion of the province can be reached easily without additional risk to life and property.

BACKGROUND OF SOUTH KIVU PROVINCIAL CONTROL PROGRAMME

South Kivu Province, with an estimated population of 3.43 million, runs a combined tuberculosis and leprosy control programme in 14 health districts, with a geographical MDT coverage of 47% of the total 331 health facilities by mid-2001. The programme aims at eliminating leprosy as a public health problem, controlling the burden of TB and preventing the occurrence of new leprosy disabilities. The registered prevalence rate by the end of 2000

was barely below WHO elimination level (0.97 per 10⁴). Between 1995 and 2000, both prevalence and case detection rates reduced by 72 and 63%, respectively and the number of districts with sub-elimination levels increased from two to eight, indicating a remarkable reduction of the caseload of registered leprosy in the province in 5 years. Apart from programme efficiency, the war played a role in this reduction of leprosy caseload. However the new case proportions of MB, children and WHO grade 2 of 40, 5 and 10%, respectively, during the period suggest a low transmission and relatively early diagnosis of leprosy. In addition, case holding of MB patients has remained relatively stable, with an MDT completion rate of about 75%; for PB, the rate has increased from 32 to 85%.

Disability assessment of leprosy patients is, however, infrequently performed. While trained district supervisors are able to interpret the voluntary motor and sensory tests (VMT/ST), the clinic nurses to a large extent are unable to understand or translate VMT/ST records to WHO grading or to disability prevention interventions. The provincial coordination recently introduced a pilot POD register in two districts.¹⁴

Materials and methods

A questionnaire survey was used to measure the level of structural and functional integration as at September 2000. Ten health districts were selected out of the 14 in the province. Three districts were excluded on security grounds, and the remaining district was left out because the incidence of leprosy was considered relatively too low. District leprosy supervisors attending a seminar completed the structured questionnaire forms designed to obtain information on the situation of leprosy control services in health facilities in their districts. However, only nine of the 10 supervisors returned completed questionnaires.

The capacity or the level of preparedness of the districts for integration was measured by the proportion of health facilities with a trained nurse or with health workers who can suspect leprosy in the district. Structural integration was measured by the proportion of health facilities providing MDT, screening and POD services or having leprosy recording materials. Functional integration was assessed by the proportion of health facilities where general health workers are involved in performing basic leprosy tasks such as confirming diagnosis of leprosy, dispensing MDT drugs or keeping leprosy records. The degree of involvement of general health workers was also assessed: whether they performed the tasks alone or jointly with the district supervisors.

The relationships of the training of the clinic nurses and the year of training with the level of integration were reviewed, as well as the correlation of the structural and functional integration levels with the registered prevalence rate of leprosy in the districts. The STATCALC function of the EPIINFO 6 program was used to determine the chi-square and *P*-values for the level of statistical significance. An apparent relationship was considered significant if the *P*-value was less than 0.05. The test of correlation was performed with the Correll function of the Microsoft Excel program. The closer the coefficient of correlation is to +1 or -1, the stronger the significance of the observed correlation.

Results

LEVEL OF STRUCTURAL INTEGRATION

From provincial sources, the nine districts had an estimated population of 2.23 million people and 226 health facilities. 237 leprosy cases were registered for MDT as at September 2000

Table 1. Registered caseload of leprosy and level of preparedness for integration in September 2000

District	Population	Health facilities	Prevalence		Nurse trained		Can suspect	
			Total	Rate Per 10,000	<i>n</i>	%	<i>n</i>	%
Bukavu	286,488	33	12	0.42	8	24.2	7	21.2
Bunyakiri	231,823	23	41	1.77	7	30.4	5	21.7
Idjwi	131,127	23	20	1.53	7	30.4	8	34.8
Kabare	114,215	12	10	0.88	5	41.7	7	58.3
Katana	292,851	36	30	1.02	13	36.1	12	33.3
Mwenga	318,270	22	59	1.85	12	54.5	2	9.1
Nyangezi	171,865	15	4	0.23	3	20.0	2	13.3
Uvira	287,500	26	33	1.15	5	19.2	7	26.9
Walungu	400,348	36	27	0.67	16	44.4	14	38.9
Total	2,234,487	226	237	1.06	76	33.6	64	28.3

^a Total facilities known to exist in the districts according to data at the Provincial Health headquarters.

(Table 1). The overall prevalence rate of 1.06 per 10⁴ population indicates that the study sample was still endemic for leprosy. The prevalence rates in the individual health districts ranged from 0.23 to 1.77, with five of the nine districts still having rates above one case per 10,000 population. Table 2 shows the level of integration of existing facilities in the various districts. On the whole, 39% of the total 226 health facilities in the province provided MDT and had leprosy recording materials. Screening for new cases was done in 26%. POD was present in 10%. The proportion of facilities providing MDT at the district level ranged from 9 to 59%. Four districts had 50% or more of their facilities providing MDT. Screening and records were in 50% or more of facilities in one and two districts, respectively. Presence of POD in health facilities in all districts ranged from 0 to 21.7%. Thus in the sample of districts studied, less than 40% of facilities had any of the leprosy services, but MDT provision was the most frequently practised aspect of leprosy services by the general health services.

Table 2. Proportion of general health facilities providing leprosy services in South Kivu, September 2000

Health districts	Total facilities	Have MDT		Screening		Have records		Have POD	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Bukavu	33	3	9.1	3	9.1	8	24.2	1	3.0
Bunyakiri	23	12	52.2	10	43.5	11	47.8	4	17.4
Idjwi	23	12	52.2	8	34.8	12	52.2	5	21.7
Kabare	12	2	16.7	4	33.3	4	33.3	0	0.0
Katana	36	18	50.0	4	11.1	16	44.4	2	5.6
Mwenga	22	13	59.1	11	50.0	11	50.0	1	4.5
Nyangezi	15	5	33.3	0	0.0	4	26.7	3	20.0
Uvira	26	8	30.8	7	26.9	7	26.9	2	7.7
Walungu	36	14	38.9	11	30.6	14	38.9	4	11.1
Total	226	87	38.5	58	25.7	87	38.5	22	9.7

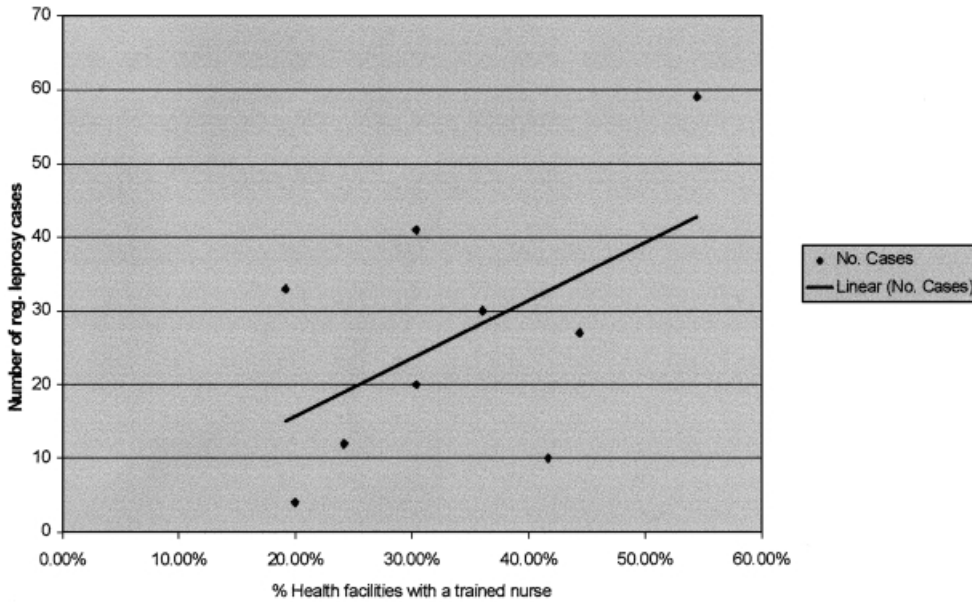


Figure 1. Proportion of health facilities having a trained nurse with the leprosy caseload of the district ($r=0.542$).

LEVEL OF CAPACITY OF DISTRICTS FOR INTEGRATION

Seventy-six of the nurses trained in leprosy since 1993 remained in the nine districts. The district supervisors gave year of training for only 67 nurses. Eight (12%) were trained before and 59 (88%) since 1995, when the integration started. No training was possible in 1997 because of the war. Thirty-four percent of the total 226 health facilities had a nurse, but in only 28% could the staff diagnose a case of leprosy (Table 1). Two districts had a nurse who was trained or could diagnose leprosy in more than 50% of health facilities. There was no significant relationship between training and the ability to suspect leprosy ($P>0.05$). Figure 1 shows that there appears a direct but weakly positive correlation between proportion of facilities with a trained nurse and the number of registered cases of leprosy ($r=0.542$).

LEVEL OF STRUCTURAL INTEGRATION BASED ON THE HEALTH FACILITIES REPORTED BY SUPERVISORS

The district supervisors reported a total of 107 health facilities in the survey questionnaires, which represented 47% of the total 226 facilities known to exist in the province. According to the provincial team, the remaining 119 facilities they did not report were those where without patents are on MDT or ex-patients receiving care after cure. The proportion of health facilities in each district the supervisors reported ranged from 30 to 67%, and was below 50% in four of the nine districts. Table 3 shows that the levels of capacity and structural integration were higher among the facilities reported. Up to 80% of the reported facilities provided MDT as at September 2000 and 20% did not.

Table 3. Comparing the levels of capacity and structural integration of the using the denominators of total health facilities known to exist in the nine health districts and the number reported by the district supervisors

Leprosy service/capacity	Level of capacity for integration		Level of structural integration			
	Nurse trained	Can suspect	MDT	Screening	Posters	POD
Number of health facilities providing service	76	64	87	58	87	22
Proportion out of the 226 health facilities existing	33.6%	28.3%	38.5%	25.7%	38.5%	9.7%
Proportion out of the 107 health facilities reported	71.0%	59.8%	81.3%	54.2%	81.3%	20.6%

LEVEL OF FUNCTIONAL INTEGRATION

Table 4 shows the level of functional integration in the health facilities providing MDT. It shows that while general health workers (GHW) were involved in confirming leprosy diagnosis in 44% of MDT facilities, while they dispensed MDT and kept leprosy records in 91 and 82%, respectively. The proportion of facilities where GHW diagnosed was 100% in two districts and more than 50% in five districts, but they dispensed drugs or kept leprosy records in more than 50% of facilities in all districts. Table 5 shows that according to the supervisors, GHW confirmed diagnosis alone in only 7% of MDT facilities, while they dispensed and kept records alone in 91 and 79%, respectively. Diagnosis is the main task, and is jointly performed by GHW and the district supervisors, done together in 37% of MDT facilities. It is also the major task that the supervisors still do alone in 48% of MDT facilities. Table 5 shows that there are some MDT facilities where according to the supervisors, these leprosy tasks are not performed by anyone. This affects particularly records keeping and diagnosis: functions completely absent in about 10 and 8% of MDT facilities. There are about 6% of MDT facilities where nobody dispenses MDT drugs. These were MDT facilities where activities have stopped due to lack of registered patients.

Table 4. Proportion of MDT facilities where GHW are involved in with leprosy activities^a

Districts	No. MDT facilities	Confirm diagnosis		Dispense drugs		Keeping records	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Bukavu	3	3	100.0	3	100.0	3	100.0
Bunkayiri	12	8	66.7	11	91.7	9	75.0
Idjwi	12	5	41.7	11	91.7	10	83.0
Kabare	2	2	100.0	2	100.0	2	100.0
Katana	18	3	16.7	14	77.8	13	72.2
Mwenga	13	7	53.8	13	100.0	11	84.6
Nyangezi	5	0	0.0	4	80	3	60.0
Uvira	8	2	25.0	8	100.0	7	87.5
Walungu	14	8	57.1	13	92.9	13	92.9
Total	87	38	43.7	79	90.8	71	81.6

^a GHW (General Health Workers) perform task alone or together with the district supervisors

Table 5. Levels of involvement of health workers in leprosy activities in MDT facilities

Workers	Diagnosis		Dispensing		Recording	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
GHW alone	6	6.9	79	90.8	69	79.3
GHW + Supervisor	32	36.8	0	0.0	1	1.1
Supervisor alone	42	48.3	3	3.4	8	9.2
Nobody	7	8.0	5	5.7	9	10.3
Total	87	100	87	100	87	100

TRAINING AND THE LEVEL OF INTEGRATION

According to Table 6, there is no significant relationship between the presence of a trained nurse and facilities providing MDT, having records or where GHW dispense MDT drugs ($P > 0.05$). However, there is a significant correlation with facilities screening for new cases, with GHW confirming diagnosis or keeping leprosy records ($P < 0.05$). The year of training, or how recently the GHW was trained, had no influence on the level of structural or functional integration in the province.

DISTRICT ENDEMICITY OF LEPROSY AND INTEGRATION LEVEL

The coefficients of correlation in Figure 2 and the scatter diagrams in Figures 3 and 4 suggest a positive direct correlation between the district prevalence rates and the proportions of facilities providing MDT, having leprosy recording materials, and screening for new cases. Figure 2 shows that the district prevalence rates did not correlate significantly with the proportion of facilities that provide POD, or have GHW who can suspect or diagnose a leprosy case, dispense drugs or keep leprosy records. Thus leprosy endemicity had no influence on the level of functional integration.

Discussion

Ordinarily, for a 5-year-old integration process, the provincial level of structural integration at about less than two in five health facilities providing MDT is still low. Likewise, the level

Table 6. Significance of relationship between the presence of a trained nurse in a health facility and the level of integration

Integration	Variable of integration	Degree of freedom	Chi ² value	<i>P</i> -value
Structural	Providing MDT	1	0.18	0.58
	Screening for new cases	1	19.1	0.000124
	Suspecting leprosy	1	0.01	0.94
	Displaying posters	1	0.03	0.86
	Providing POD	1	1.36	0.24
Functional	Confirming Diagnosis	3	16.3	0.00096
	Dispensing MDT drugs	3	2.62	0.27
	Keeping records	3	13.5	0.0038

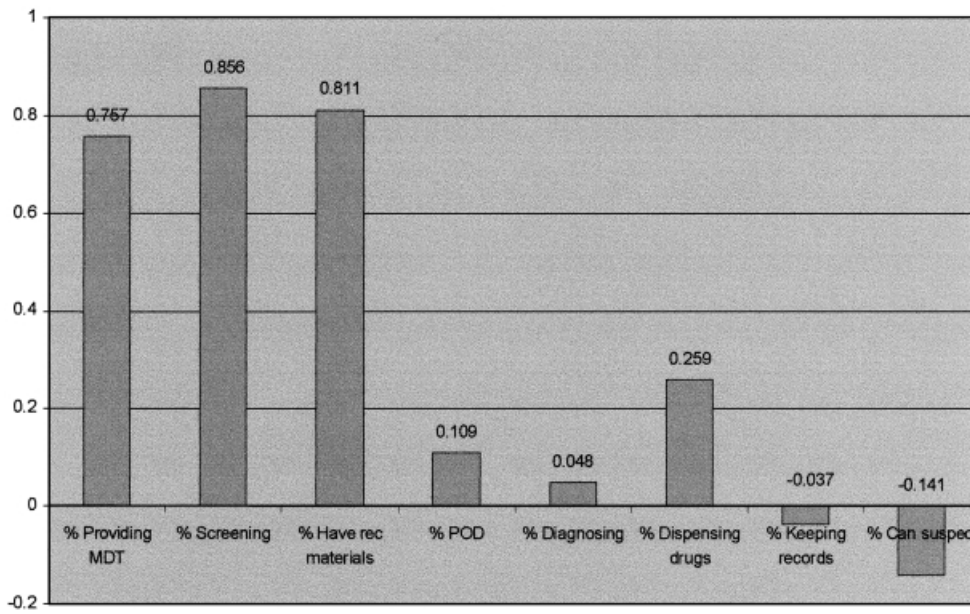


Figure 2. Coefficients of correlation between District Prevalence Rates and level of integration of leprosy in South Kivu (September 2000).

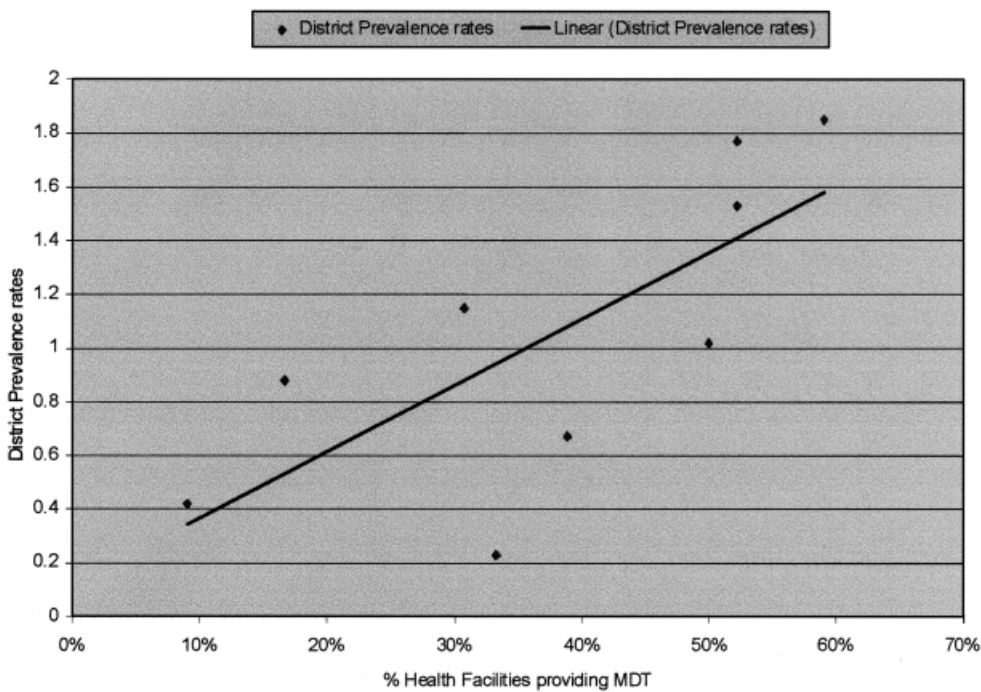


Figure 3. Correlation of District Prevalence Rate with proportion of facilities providing MDT in South Kivu (September 2000).

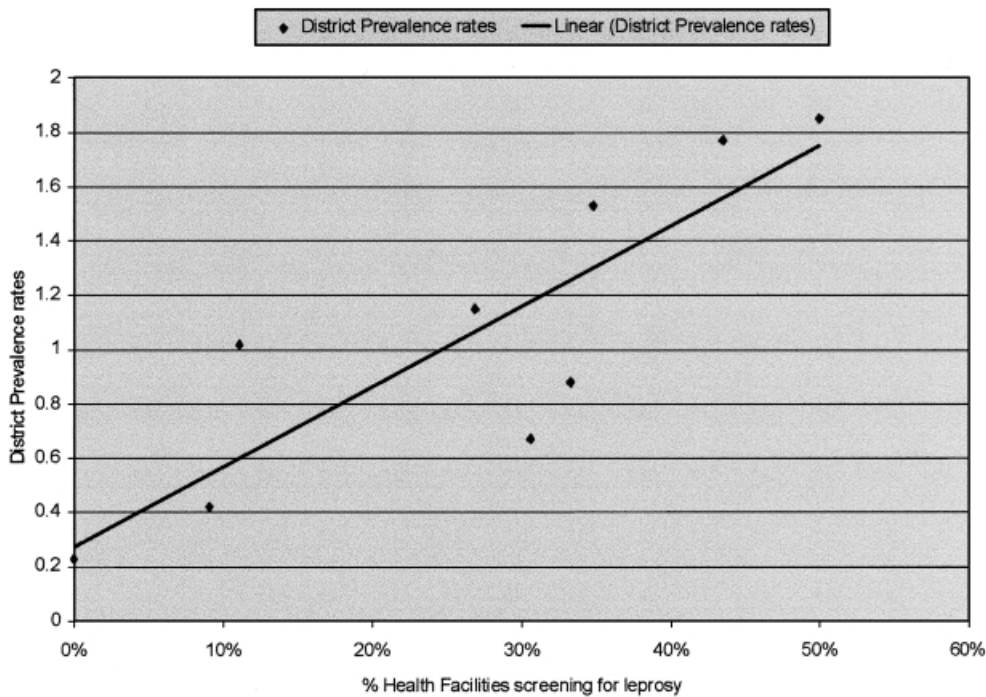


Figure 4. Correlation of District Prevalence Rate with proportion of health facilities carrying out dermatological screening for leprosy in South Kivu (September 2000).

of capacity the province has for successful integration would be considered inadequate, if the proportion of nurses trained or who can suspect leprosy in the entire study area is considered. However, the South Kivu programme in a civil war that has raged unabated since 1996 does not operate under normal or ordinary situations. It is rather remarkable that the levels of capacity and structural integration doubled when assessed by the total facilities reported by the supervisors. Nonetheless, the low integration level in the entire province is considered to be the effect of the security and accessibility problems associated with the ongoing war. A similar slow down of leprosy integration due to political unrest was reported in Togo.⁶

This review shows that, on the whole, facilities where nurses can diagnose leprosy were relative fewer than those with a trained nurse. Although there were some districts where the reverse was the case, this generally suggests, according to opinion of the supervisors, that some of the trained nurses could not still diagnose leprosy even after the training provided in preparation for integration. Also, it is remarkable that there is no significant relationship between training of nurses and their ability to detect a case of leprosy. These findings make us question the quality of the training in preparation for integration. Have the general health workers been adequately trained for the tasks they are expected to perform under the integrated set-up?

More health facilities were functionally integrated in the treatment related activities—drug dispensing and keeping records—than in other leprosy activities. The district supervisors have thus to a large extent effectively transferred treatment functions to the general health workers but have remained active in case finding and diagnostic activities. However, this partial integration indicates a significant progress made from the purely vertical provision

of all leprosy services by the programme 5 years earlier. This study identifies four levels of functional integration:

- *Fully functional, fully integrated*: when tasks are performed entirely by GHW.
- *Semi-functional*: when tasks are jointly performed by both the vertical leprosy staff and the GHW.
- *Semi-integrated*: when tasks are performed by vertical leprosy staff in general health facilities without the participation of GHW.
- *Not integrated*: when nobody performed leprosy activities in the general health facilities.

On this scale, 80% of facilities in the operationally feasible area had some degree of integration, while not integrated in 20%. In the integrated facilities, at least 79% of them were fully functionally integrated with regards to drug dispensing and records keeping. Thirty-seven percent were semi-functional and 48% semi-integrated in diagnosis of leprosy.

It appears that the more difficult tasks that require more technical skill are less functionally integrated. The significant relationship the presence of a trained nurse has with screening, diagnosis and record keeping indicates the benefit of training GHW to achieving higher functional integration, particularly of the more skill-intensive tasks or performed jointly with the district supervisors or case finding as a whole. Nevertheless, training made no difference to POD though it also requires specific skills. Thus the preparatory training of the GHW may also be inadequate in this aspect.

The correlation of facilities with a trained nurse with leprosy caseload suggests that the training focused on GHW in facilities and districts with registered cases, hence the relationship between prevalence rate and the level of structural integration. This is in line with the programme's prioritization of health facilities in endemic communities for integration.

In conclusion, persistent wars and civil conflicts pose as serious environmental threats militating against achieving full integration of leprosy into general health services in Africa. Successful integration would require adequate preparatory training of GHW and of such quality as would enable their full functional take over of all leprosy services from the leprosy supervisors. For a holistic and qualitative leprosy care provision, GHW training should concentrate on developing the skills the GHW need to effectively perform diagnostic and disability prevention activities in addition to the basic task of treating patients. The strategic integration of facilities that have leprosy cases invariably excludes facilities without leprosy cases from the integration process. If it continues, it could cause lower integration levels in such low endemic areas and prevent achievement of full integration of leprosy services in programmes such as South Kivu.

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