Clinical, Epidemiological, Laboratory and Therapeutic Investigation

Leprosy: underreported cases in Fortaleza – Ceará, Brazil[*]
Hanseníase: subnotificação de casos em Fortaleza – Ceará, Brasil[*]

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Abstract: BACKGROUND - To eliminate leprosy as a public health problem in Brazil, the Ministry of Health aims to achieve a prevalence rate of less than 1.0 case/10,000 inhabitants, encouraging diagnosis and treatment of patients and reducing dissemination of the disease. The National Disease Notification System (SINAN) is in charge of verify the elimination plan results.
OBJECTIVE - To verify the proportion of leprosy cases diagnosed and reported to SINAN by health centers of the city of Fortaleza, in Ceará, Northeastern region of Brazil.
METHODS - Comparison between cases registered in health centers and those reported to the Municipal Secretariat of Health of Fortaleza (HDF) from 2002 to 2004. Cases registered in health care centers but not in SINAN were considered underreported and retrieved.
RESULTS - Fifteen (64%) health care centers informed at least one case in the period. From them 411 cases were retrieved (17.5% of total informed). About 342 retrieved cases were reported to the SINAN data base in the health center, but not to the database at the Municipal Health Secretariat.
CONCLUSIONS - The surveillance system needs to be improved to prevent lack of information and to show the true frequency of diagnosed cases.
Keywords: Disease notification; Epidemiologic surveillance; Health system; Leprosy

Resumo: FUNDAMENTO – Visando à eliminação da hanseníase como problema de saúde pública no Brasil, o Ministério da Saúde tem como meta alcançar taxa de prevalência de menos de 1 caso/10.000 habitantes, estimulando o diagnóstico e tratamento dos casos e reduzindo a disseminação da doença. O Sistema de Informação de Agravos de Notificação (SINAN) foi designado para acompanhar o cumprimento dessa meta.
OBJETIVO – Verificar a proporção dos casos de hanseníase diagnosticados nas unidades de saúde do município de Fortaleza que foi notificada ao SINAN.
MÉTODOS – Foi feita a identificação dos casos diagnosticados e registrados nas unidades de saúde e notificados à Secretaria Municipal de Saúde de Fortaleza (SMSF) entre 2002 e 2004 por meio da comparação nominal entre os registros locais e os registros do SINAN.
RESULTADOS – Foram identificados e resgatados para o SINAN 411 casos que haviam sido diagnosticados e não notificados (17,5% do total informado) de 15 (64%) das unidades que informaram pelo menos um caso no período. Cerca 342 casos constavam nos livros e estavam notificados no banco de dados do SINAN das unidades de atendimento, mas não compunham o banco de dados do SINAN da SMSF.
CONCLUSÕES – Constatou-se subnotificação de 14,9% dos casos detectados, fato que precisa ser prevenido para que os indicadores reflitam a real freqüência dos casos no município.
Palavras-chave: Hanseníase; Vigilância epidemiológica; Notificação de doenças; Sistema de saúde

INTRODUCTION

From the point of view of public health, leprosy is considered eliminated as a public health problem when the prevalence rate is less than 1 case/10,000 inhabitants. To meet this objective it is necessary to increase awareness of the population regarding the importance of seeking medical assistance; to have a good diagnostic infrastructure, with professionals trained to suspect and confirm the disease; and an epidemiologic surveillance system capable of obtaining case notification that is used to determine the detection and prevalence rates. These rates are essential to evaluate the program and services, and to decide if strategies changes are necessary. The efficient use of resources is directly proportional to the quality of information.[1]

All countries, regions, states and municipalities need health information of good quality in order to perform surveillance, determine strategies, organize and evaluate programs and services. Quality of information will enable a more efficient and wiser allocation of resources through the improvement of procedures, programs and supervision. Quality will depend on regular data collection, extension of the area covered, accurate data as well as the capability of those using the information.[1]

Leprosy is an infectious disease caused by *Mycobacterium leprae* and affects mostly the skin and peripheral nerves. Diagnosis of leprosy is based on characteristic neurological and skin lesions. Neurological damages cause eventual sequelae.[2] Leprosy is an important public health problem in Brazil. In the beginning of 2004, leprosy was considered endemic (prevalence higher than 1 case/10,000 inhabitants) in nine countries. Despite all eradication efforts, Brazil still ranks second in the number of reported cases (79,908 cases) and first in prevalence rate (4.6 cases/10,000 inhabitants). In the last decades the prevalence rates have been falling year after year. In 1999, experts predicted that the disease would have been eliminated by 2005.[3,4,5] In 2004, the World Health Organization standard prevalence rate for leprosy in Brazil was 1.71 cases/10000 inhabitants.[6]

Parameters used to evaluate the endemic rates for leprosy are based on the prevalence and detection rate. A municipality with a prevalence rate of $\geq$ 15 cases/10,000 inhabitants is considered hyperendemic. Moreover, the prevalence rate are used to classified endemicity in municipalities as follows: very high: 10 – 14.9 cases/10000 inhabitants; high: 5 – 9.9 cases/10,000 inhabitants; medium 1 – 4.9 cases/10,000 inhabitants; low: < 1,0 case/10000 inhabitants. Regarding the detection rate, municipalities are classified as follows: hyperendemic $\geq$ 4 cases/10,000 inhabitants; very high: 2 – 3.9 cases/10,000 inhabitants; high 1 – 1.9 cases/10,000 inhabitants; medium 0.2 – 0.9 cases/10,000 inhabitants; low: < 0.2 cases/10,000 inhabitants.[3]

In the state of Ceará, leprosy rates increased in recent years. In 1992, detection rate was 2.7 cases/10000 inhabitants rising to 3.7 cases/10000 inhabitants in 2000,[7,8] yet, in the same period the prevalence rate declined from 8.3 to 5 cases/10000 inhabitants.[9] In September 2005, 1385 cases of leprosy had been reported. Cases had been diagnosed in 156 out of 184 municipalities in Ceará, between January and June of that year. Priority in disease control was given to seven municipalities, which combined reported 807 cases. In 2005, the capital city, Fortaleza, reported 456 cases.[10] In Fortaleza, 34 health centers reported at least one case of leprosy in this period. Among these, some stood out as good reporters: one health center accounted for 82.9% of notifications and combined with other five centers concentrated 98% of reported cases.[8] The capital city presented detection rates of more than 3,0 cases/10000 inhabitants and, therefore, from the endemic point of view, is classified as very high.[8] Thus, in order to control leprosy in Fortaleza, accurate data regarding the situation of leprosy in the city are essential. The aim of this study was to determine if all leprosy cases diagnosed at the health centers of the Fortaleza had been reported to the official national reporting system for disease surveillance (SINAN) used by the municipal health authorities.

MATERIAL AND METHODS

It is a descriptive study of secondary data using leprosy cases treated between 2002 and 2004. All cases had been reported to the official national reporting system for disease surveillance of the Secretariat of Health of Fortaleza (SINAN/SMSF). Cases were listed according to reporting health center, year and alphabetic order. The list contained the following information: registration number used by SINAN, name, age, date of diagnosis, clinical form, reporting health center, status of disease at the end of the study period.[11]

The list of cases reported to SINAN was compared to the registries in the clinical record books. Only one health center that treats leprosy reports clinical findings directly to SINAN, the others send clinical and investigation report sheets to the corresponding Regional Executive Secretary, where they are registered and consolidated. At this health center we also compared cases already reported to the official national reporting system for disease surveillance of the Secretariat of Health of Fortaleza (SINAN/SMSF) with

cases from the database of the local reporting system.

Cases that had been registered in the clinical record books but were not found in the list of reported cases were - in the beginning - considered non-reported. For each of these non-reported cases had the Leprosy Investigation Sheet of SINAN filled out. To rule out any possibility that these cases had been reported by another health center, Leprosy Investigation Sheets were compared to the general list with all cases of leprosy that had been reported by SINAN to the Secretariat of Health of Fortaleza. Cases that had only been registered at health centers but were not listed among the cases reported to SINAN at the Secretariat of Health of Fortaleza were considered underreported. These cases were retrieved and reported to SINAN. The proportion of underreported cases was assessed according to year and health center.

This study was approved by the Ethics Committee of the *Faculdade de Medicina da Universidade Federal do Ceará*.

RESULTS

Between 2002 and 2004, twenty-four health centers reported at least one case of leprosy, adding up to 2353 cases. We reviewed the registries of 15 health centers that combined reported 92.86% of cases. Of the reporting health centers, three – 5.21% of reports- keep no registry of cases treated at the walk-in clinic. We failed to retrieve the registries of other six health centers that combined reported 1.93% of cases.

We retrieved 411 cases (17.5% of the total num-ber of cases reported during the study period) (Table 1). The number of cases rescued increased during the three years of the study. Of the 362 cases retrieved at health center # 1, 342 (84.5%) had already been reported to the SINAN database of the health center, but were not found in the SINAN database of the Secretariat of Health of Fortaleza. These cases were immediately recorded on a computer disk and registered at the Secretariat of Health of Fortaleza. For the remaining 49 cases investigation sheets were filled out and would later be used to register the cases at SINAN.

DISCUSSION

We determined that 14.9% of leprosy cases were underreported. Similar results have been reported for tuberculosis cases in the city of Fortaleza.[11] The number of reported cases is essential for assessing indicators used to monitor the leprosy program and the eradication goals. Therefore, in order to make the necessary adjustments, more attention should be paid to the quality of reporting during this phase.

The possible explanations for the lack of information on the cases registered at the SINAN of the health center, but not found in the database of the official national reporting system for disease surveillance of the Secretariat of Health of Fortaleza (SINAN/SMSF) include problems concerning the flow of information between the health centers where cases are diagnosed and the places where information is consolidated into the database, and shortco-

TABLE 1: Cases registered in SINAN and cases retrieved in registries by reporting unit and year treatment was initiated – Fortaleza, 2002-2004*

Health Unit	2002		2003		2004		TOTAL	
	SINAN	Retrieval	SINAN	Retrieval	SINAN	Retrieval	SINAN	Retrieval
1	937	50	995	78	250	234	2.182	362
2	44	4	24	1	1	0	69	5
3	22	0	14	0	0	3	36	3
4	21	1	0	2	0	0	21	3
5	7	6	5	2	2	4	14	12
6	3	1	5	4	0	1	8	6
7	0	0	5	1	0	0	5	1
8	3	0	1	0	0	0	4	0
9	3	2	1	1	0	3	4	6
10	0	0	3	3	0	1	3	4
11	1	2	1	2	1	2	3	6
12	0	0	1	1	0	0	1	1
13	0	0	1	0	0	2	1	2
14	0	0	1	0	0	0	1	0
15	0	0	1	0	0	0	1	0
Total	**1,041**	**66**	**1,058**	**95**	**254**	**250**	**2,0353**	**411**

* Cases registered in SINAN up to January 2005

mings in the flow of information receipt at the SINAN/SMSF. Another explanation that has to be considered is that errors might have occurred during data transfer. This might have happened during the several changes of version of SINAN since it was first implemented in Fortaleza, in 1995. This could explain why cases registered at the SINAN at the health center are not found in the SINAN of the Secretariat of Health of Fortaleza. Not filling out the investigation sheets at the health centers might also account for the non-reporting of some cases. In 2004, we observed a significant increase in underreporting both at the municipal level and at health center 1, which is responsible for more than 90% of reports. This health center is undergoing a decentralization process that determines when a case is diagnosed the patient is referred to the health center closest to his/her residence. It is possible that, because of this, cases have not been reported at this health center. Decentralization might be responsible for the significant drop in the number of reported cases in 2004. The patient might have failed to go to the health center he/she was referred to, or the case was not registered in the clinical report books, since non-reporting at other health centers do not explain the considerable decrease in the total number of cases.

One of the limitations of this study is the impossibility of verifying the registries of some health centers that treated leprosy cases during this period. Access to this information could have increased the detection of underreported cases. Patient name was the main parameter used to search reported cases in the registry books. Misspelling or typing errors when entering the name in the book or investigation sheets could also have contributed to the non-identification of underreported cases.

Due to the importance of a database in the decision making process to eradicate leprosy as a public health problem, we suggest to check the internal flow of reporting and feedback at least every three months. With this periodic check, health centers could verify if data reported on investigation sheets have been definitely registered in the database.

CONCLUSION

Approximately 14.9% of leprosy cases, treated and registered at the health centers in Fortaleza, have not been reported in the official national reporting system for disease surveillance of the Secretariat of Health of Fortaleza (SINAN/SMSF). Underreporting could cause a false impression that leprosy decreased in Fortaleza.   ❏

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