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CLINICAL AND SOCIODEMOGRAPHIC ASPECTS OF HOUSEHOLD CONTACTS OF LEPROSY CASES

ASPECTOS CLÍNICOS E SOCIODEMOGRÁFICOS DOS CONTATOS DOMICILIARES DE CASOS DE HANSENÍASE

ASPECTOS CLÍNICOS Y SOCIODEMOGRÁFICOS DE LOS CONTACTOS DOMICILIARIOS DE CASOS DE HANSENIASIS

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ABSTRACT

Objective: to analyze the clinical and sociodemographic aspects of the household contacts of leprosy cases. ***Method:*** a quantitative, cross-sectional, descriptive and analytical study with 36 domiciliary cases of leprosy cases, based on data collected individually through the Open Data Kit collect program, exported, processed and analyzed in IBM® SPSS® Statistics v. 24 for Windows. ***Results:*** 58.3% of the participants were female. The age ranged from seven to 66 years, 63.9% reported being single, and 33.3% received less than one monthly minimum wage. 86.1% are multibacillary contacts. 5.6% had no BCG-ID scar (Bacilo Calmette-Guérin) and 33.3% presented one. At the time of the diagnosis of the case, 75% of the contacts with signs suggestive of the disease resided with that one and 25% were not examined. ***Conclusion:*** the results suggest a significant risk of illness among the household contacts, since they are contacts of multibacillary cases, and there is difficulty of the health services of the municipality in the accomplishment of the surveillance of the domiciliary contacts of cases of leprosy. ***Descriptors***: Leprosy; Epidemiological Surveillance; *Mycobacterium leprae*.

RESUMO

Objetivo*:** analisar os aspectos clínicos e sociodemográficos dos contatos domiciliares de casos de hanseníase. ***Método*:** estudo quantitativo, transversal, descritivo e analítico, com 36 contatos domiciliares de casos de hanseníase, realizado a partir de dados coletados individualmente por meio do programa *Open Data Kit collect*, exportados, tratados e analisados no *IBM® SPSS® Statistics v. 24 for Windows*. ***Resultados*:** dos participantes, 58,3% são do sexo feminino. A idade variou de sete a 66 anos, 63,9% referiram ser solteiros e 33,3% recebiam menos de um salário mínimo mensal. 86,1% são contatos de casos multibacilares. 5,6% não apresentaram cicatriz da vacina BCG-ID (Bacilo Calmette-Guérin) e 33,3% apresentaram uma. Na época do diagnóstico do caso, 75% dos contatos com sinais sugestivos da doença residiam com aquele e 25% não foram examinados. ***Conclusão: os resultados sugerem expressivo risco de adoecimento entre os contatos domiciliares, visto que são contatos de casos multibacilares, e há dificuldade dos serviços de saúde do município na realização da vigilância dos contatos domiciliares dos casos de hanseníase. ***Descritores*:** Hanseníase; Vigilância Epidemiológica; *Mycobacterium leprae*.

RESUMEN

Objetivo: analizar los aspectos clínicos y sociodemográficos de los contactos domiciliarios de casos de lepra. ***Método:*** el estudio cuantitativo, transversal, descriptivo y analítico, con 36 contactos domiciliarios de casos de lepra, realizado a partir de datos recolectados individualmente a través del programa Open Data Kit, exportados, tratados y analizados en el IBM® SPSS® Statistics v. 24 para Windows. ***Resultados:*** de los participantes, el 58.3% son del sexo femenino. La edad varía de siete a 66 años, el 63.9% dijo ser solteros y el 33.3% recibía menos de un salario mínimo mensual. El 86.1% son contactos de casos multibacilares. El 5.6% no presentó cicatriz de la vacuna BCG-ID (Bacilo Calmette-Guérin) y el 33.3% presentó una. En la época del diagnóstico del caso, el 75% de los contactos con signos sugestivos de la enfermedad residían con aquel y el 25% no fueron examinados. ***Conclusión:*** los resultados sugieren expresivo riesgo de enfermedad entre los contactos domiciliarios, ya que son contactos de casos multibacilares, y hay dificultad de los servicios de salud del municipio en la realización de la vigilancia de los contactos domiciliarios de los casos de lepra. ***Descriptores***: Lepra; Vigilancia Epidemiológica; *Mycobacterium leprae*.

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INTRODUCTION

Leprosy persists as a public health problem in Brazil that, in spite of establishing strategies that favor the elimination of its prevalence, in 2016 was responsible, together with India and Indonesia, for 82.6% of the new cases in the world. In recent years, Brazil reduced the number of new cases from 39,125 in 2007 to 25,218 in 2016. However, this decrease was not sufficient to achieve the elimination of the disease.[1]

Since the consolidation of polychemotherapy (PCT) by the World Health Organization (WHO) and recommendation by the Ministry of Health (MOH), the prevalence of the disease has been reduced, although the discovery of new cases remains high.[1] Furthermore, the hidden prevalence, the new cases expected that are not being detected or that are diagnosed late.[2-3]

One of the strategies adopted for the control of leprosy in Brazil is to ensure that the actions are carried out in the basic care network of the Unified Health System and also to maintain care in specialized outpatient and hospital care due to the incapacitating power of the disease[4], associated with the timely treatment of diagnosed cases, early diagnosis, prevention and treatment of disabilities and contact surveillance.[5]

Contact surveillance aims to discover new cases of leprosy among those who live or have lived with the disease carrier for a prolonged period[5] and are justified by the fact that they are at higher risk of becoming ill.[6-7]

Any person residing or residing with the case diagnosed with leprosy at the time of diagnosis is considered a household contact.[5]

OBJECTIVE

- To analyze the clinical and sociodemographic aspects of the household contacts of cases of leprosy.

METHOD

A quantitative, cross-sectional, descriptive and analytical study carried out in a municipality in the Zona da Mata Mineira, using data referring to the years 2011 to 2016, based on the Notification of Injury Information System (SINAN), the State Sanitary Dermatology Coordination Office of Health of Minas Gerais (CEDS / SES / MG) and in the data collected in the reference services of the municipality. The municipality in question was chosen because it was the one that most counted cases of leprosy during the study period.

The study population consisted of 36 household contacts concerning 22 cases of leprosy diagnosed in the aforementioned period and living in the urban area of the municipality, older than seven years and not previously diagnosed with leprosy.

It was decided to restrict the study population to individuals over seven years of age due to the long incubation period of the Hansen bacillus[8] and to the low number of cases diagnosed in children under seven years[9], as well as the ease of performing the dermatoneurological examination. The option to work with residents of the urban area of the municipality of choice is due to the operational issue because of the difficulty of access to the rural area.

Home visits were made, in which the dermatoneurological examination was performed and a questionnaire was applied to the participants. The questionnaire consisted of questions regarding sociodemographic conditions, housing, characteristics of contact with leprosy, presence of dermatoneurological signs and symptoms, and BCG-ID vaccine scar. Initially, the case of leprosy was addressed and, after authorization, their respective household contacts were invited to participate in the research.

Data collection was performed between August and October 2016 by three researchers trained on approach, questionnaire application and dermatoneurological examination. The household contacts with suspicion of leprosy were directed and sent to the health service of the municipality for diagnostic confirmation.

The database was organized in the Open Data Kit Collect (ODKCollect) package. The data were exported and analyzed in the SPSS software for Windows 24. Descriptive analysis of the data was performed by checking the relationship of the dependent variable (presence of signs and symptoms of leprosy) with the independent variables (sociodemographic, housing conditions, leprosy contact characteristics and BCG-ID vaccine scar), excluding those that did not show statistical significance. Fisher's Exact Test was used for bivariate analysis. The level of statistical significance was 5% ($p < 0.05$).

Participants who agreed to participate freely in the research signed the Free and Informed Consent Term (FICT). The research complied with the determinations of Resolution 466/2012, of the National Health Council, which establishes directives and norms regulating research involving human beings. It was submitted and approved by the

Ethics Committee of the Federal University of Juiz de Fora under opinion No. 1,744,517.

RESULTS

Regarding the sociodemographic characterization of the study population, among the 36 household contacts examined, 58.3% were female. Age ranged from seven to 66 years, with a median of 33 years. 63.9% reported being single and 33.3% received less than one monthly minimum wage. Only 5.6% of the contacts resided in households with one dormitory. It was possible to verify that 33.3% of the participants did not present consanguineous relationship with the case.

The majority of the participants are household contacts of cases classified as multibacillary (MB) (86.1%). It was verified that 5.6% of the contacts did not present a vaccine scar and that 33.3% had only one scar; 25% were not examined by the local health service at the time of diagnosis and 91.7% lived with the case at the time of diagnosis, and 27.8% were sleeping in the same room as the case of leprosy.

Of the 36 household contacts evaluated, only 2.8% presented alteration in left eye (visual acuity diminished) and no contact had alteration in the right eye. Regarding the evaluation of the muscular strength of the eyelids, there was no change. Only 2.8% of the contacts had any changes in the nose (wound).

Among the parameters evaluated in the dermatoneurological examination, 8.3% of the 36 participants had a visible spot on the body surface; 8.3%, two; 2.8%, three and the same proportion (2.8%) presented four spots. Of these eight participants who presented some spot, only one (12.5%) had a spot with sensitivity alteration and the same household contact had spot, nodule and infiltrations through the body.

Considering the evaluation of the nerves of the upper limbs, 5.6% of the contacts presented nerve thickening. Regarding the evaluation of muscle strength, all the participants presented muscular strength of the abductor of the thumb and of the extensor of the preserved fist, of strong classification, and 8.3% presented diminished muscular force in abductor of the fifth finger.

As for the nerves of the lower limbs, 8.3% of the contacts had thickened nerves and 97.2% presented muscular strength in the extensor of the strong hallux. In the evaluation of the muscle extensor strength of the fingers, tibial and anterior tibial strength, 2.8% of the contacts showed a change in strength showing decreased strength.

In the aesthesiometry, it was possible to identify that some household contacts presented sensitivity to monofilaments red 4g, orange 10g and rose 300g. Regarding the left foot, the sensitivity to red monofilament was 2.8% in the hallux, upper plantar region and middle plantar region, 5.6% in the third toe and 11.1% in the calcaneus, whereas the foot right presented a sensitivity to red monofilament in 2.8% in the fifth toe and 13.9% in the calcaneus. In addition, the left calcaneus (2.8% and 8.3%) and right (2.8% and 11.1%) also showed sensitivity for orange and pink monofilaments, respectively.

Household contacts with suspicion of leprosy, which corresponds to 11.1% of the total number of patients examined, were referred to one of the reference services of the municipality in September 2016, and until November 2016, no return was obtained for confirmation of the diagnosis and implementation of PCT.

Bivariate analysis of the factors associated with the presence of signs and symptoms of leprosy shows that 75% of the contacts with signs suggestive of the disease resided with the leprosy case at the time of diagnosis; 100% were multibacillary (MB) case contacts; 75% did not sleep in the same room as the index case and 25% had no BCG-ID scars. However, the differences were not significant (Table 1).

Table 1. Bivariate analysis of the factors associated with the presence of signs and symptoms characteristic of leprosy. Municipality of Zona da Mata, MG, Brazil, 2016..

Variables	Signs and symptoms of leprosy				*p**
	Yes (N=4)		No (N=32)		
	N	%	n	%	
Resided at the time of diagnosis					
Yes	03	75.0	30	93.8	0.305
No	01	25.0	02	6.3	
Operational classification					
PB	0	0.0	05	15.6	0.534
MB	04	100.0	27	84.4	
Sleep in the same room as the case					
Yes	01	25.0	09	28.1	0.695
No	03	75.0	23	71.9	
Presence of BCG-ID vaccine scar					
No scar	01	25.0	01	3.1	0.562
A scar	0	0.0	12	37.5	
Two scars	03	75.0	19	59.4	

Subtitle:
* p = P-value based on Fisher's Exact Test

DISCUSSION

This study made it possible to identify the operational difficulty of the health services of the municipality under study to carry out the surveillance of the household contacts of leprosy cases diagnosed in the period from 2011 to 2016, since 25% of the participants reported not having been examined by a health professional during the diagnosis of the leprosy case. This factor raises concern given that household contacts are considered to be at high risk of becoming ill.[6-7]

In addition, 38.9% did not present the number of vaccine scars advocated by the Ministry of Health, and the recommendation of the MOH is that all contacts be examined and even BCG-ID be given to those who do not have specific signs of leprosy and/or who do not have two vaccine scars.[5,10] The limitation in the study, however, is that there is no way to assert that the number of vaccine scars of household contacts has been updated during surveillance at the time of diagnosis or if there was really no action by the health services.

BCG-ID vaccination provides protection against the disease, being higher among contacts close to leprosy cases, and has better effect when associated with other preventive strategies such as chemoprophylaxis, [12-3] which could contribute to the interruption of the disease transmission chain.[14]

Regarding the referral of the participating household contacts, who presented some dermatological or neurological alterations, to the health service of the municipality, none were examined until the end of the research, and the delay in diagnosis can contribute to the maintenance of the leprosy transmission chain. This situation leads to the reflection that the prevalence of the disease is higher in comparison with what is registered.[2-3,11]

This result is also evidenced in other studies carried out in Brazil[15] and in Bangladesh[16] that point out that the household contacts that presented some suspected leprosy trait and that were referred to the health service due to the diagnostic hypothesis were not evaluated until the collection of data. It is suggested, therefore, that health services are not carrying out contact surveillance as advocated by MOH.

The health services present difficulties in meeting the demands related to leprosy, evidencing a repressed demand (in which the symptomatic ones seek the service, but they are not taken care of) [2], shortage in trained human resources and deficits in the knowledge and clinical recognition.[17] These difficulties can favor transmission and physical disabilities.[6]

In view of the results obtained in the research, it was observed that the majority of participants were MB cases (86.1%), and therefore the risk of falling ill among household contacts was very significant, since case contacts with classification MB are more exposed and prone to *M. leprae* infection[18] and, therefore, are at higher risk of becoming ill, compared to contacts of paucibacillary (PB) cases.[19]

Other factors that may interfere with the development of leprosy, such as the characteristics of coexistence and the exposure of the contact with the case within the home, may be the reason for the greater risk of getting sick from the contacts who lived at the time of diagnosis.[6]

The contacts participating in the research were probably exposed to *M. leprae* because more than 90% of them lived with the case at the time of diagnosis and most of them were MB case contacts.

Related to the analysis of the factors associated with the presence of signs and symptoms of leprosy, 75% of the contacts with signs suggestive of the disease resided with the case at the time of diagnosis; 100% were contacts of MB cases and 75% did not sleep in the same room, despite having some characteristic of leprosy. In addition, 75% of the participating contacts had two BCG-ID scars. Although they had immunoprophylaxis according to what MS recommends,[5] some type of signal and specific symptom of leprosy could be observed.

Although the percentage of referrals (11.1%) is low, one can not think that there is a low prevalence of household contacts with some type of sign and characteristic symptom of the disease in the municipality related to the period of the research. This is because leprosy is a disease of low pathogenicity and high infectivity, besides having a long incubation period of two to seven years for the appearance of the signs and symptoms characteristic of the disease.[8] Thus, over the years, household contacts may present some sign or symptom characteristic of leprosy.[6]

The operational capacity of the health services of a municipality directly influences the coefficients of detection and prevalence of leprosy. The quality of the health service provided, the socioeconomic level of the population and the living conditions influence the epidemiological behavior of the disease in society.[2] Therefore, some factors, such as late diagnosis, treatment abandonment and the low proportion of control of the communicants, may be influencing the existence of leprosy in Brazilian municipalities.

Not having the participation of all the household contacts is a limitation of the research. It is believed that stigma may have contributed to the fact that some cases did not authorize the approach of their household contacts and the household contacts refused to participate. Therefore, it is probable that there is a lack of information on leprosy, facilitating the late diagnosis, besides contributing to the growth of the endemic disease in the municipality.

CONCLUSION

The research allowed us to analyze both the characteristic signs and symptoms of leprosy and also the factors that may be associated with those in the household contacts of the cases diagnosed in the period from 2011 to 2016 residing in the study municipality.

It was possible to determine the socioeconomic conditions, the association between the signs suggestive of leprosy and the presence of the BCG-ID vaccine scar, the characteristics of living with the case, the operational classification of the case, the age group, the marital status, the sex and the kinship of the contact with the case. Among the factors analyzed, none was able to explain, with statistical significance, the difference between the household contacts that presented signs and symptoms characteristic of leprosy of those who did not present.

There was an operational difficulty of the health services in carrying out surveillance of the household contacts of cases of leprosy. Such a situation may contribute to the late diagnosis and consequent maintenance of the transmission chain of leprosy and stigma in society.

It is important to emphasize the importance and the need to intensify the actions of active search and to ensure the fulfillment of spontaneous demand. In addition to investing in the training of health professionals to be able to effectively act in the control and elimination of leprosy as a public health problem.

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