Research Article

Socio-demographic factors, treatment-seeking behaviours and common clinical presentations of leprosy patients in Anuradhapura, Sri Lanka.

Hema Weerakoon[1], Hasantha Banduwardana[2], Ranthilaka Ranawaka[3], Palitha Bandara[1], Upali Shantha Kumara[4], Nimal Ariyarathna[4], Janith Warnasekara[2*]

[1]Provincial Director of Health Services Office, North Central Province, Anuradhapura, Sri Lanka.
[2]Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka.
[3]General Hospital, Kalutara, Sri Lanka.
[4]Regional Director of Health Services Office, Anuradhapura, Sri Lanka.

Abstract

Leprosy is eliminated from most of the countries while it remains a problem in Sri Lanka. This study was aimed to describe the epidemiology, associated factors, clinical presentation, and treatment-seeking behaviours of leprosy patients.

A descriptive cross-sectional study was carried out among leprosy patients diagnosed between 13th February 2019 to 12th February 2020 at the Dermatology Clinic of the Teaching Hospital, Anuradhapura. Each patient was interviewed using questionnaires prepared in the Sinhala language. Questionnaires were used to obtain data on the following variables; epidemiology, associated factors, treatment-seeking behaviour, and clinical aspects of the leprosy patients.

The study included 66 leprosy patients. Most of the patients (56%) were males, and most (50%) were in the age range of 30-50 years. Only a minority of the cases were childhood leprosy cases (10.6%). Most of the patients were housewives (26%), and 19% were farmers. More than one-third of patients (41%) had income less than 10,000 LKR per month. More than two-thirds of the patients (68%) had prior knowledge about leprosy, and most of them knew its aetiology before being diagnosed as leprosy patients. Approximately 27% of patients had previous contact with a leprosy patient. More than 50% of these patients were not timely referred for treatment due to delay in seeking medical attention, and they were referred one year after acquiring the disease, and 11(16%) patients warranted repeat treatment. Most patients (74%) had paucibacillary leprosy, and most (47%) presented with hypopigmented skin lesions.

Most of the leprosy patients in Anuradhapura share known preventable socio-demographic factors. Therefore, authorities should pay special attention to the prevention of leprosy in specified communities in Sri Lanka.

Keywords: Epidemiology, Associated factors, Treatment seeking behaviour, Leprosy

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*✉ **Correspondence:** jwarnasekara@yahoo.com https://orcid.org/0000-0002-6554-6851

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Introduction

Leprosy is a chronic, minimally contagious infection of the skin, nerves, and mucosa of the respiratory tract caused by *Mycobacterium leprae* infection. The source of infection is another infected leprosy patient, and the most probable route of infection is through the respiratory droplets (1). The disease has a long incubation period of up to 20 years, average being from 5 to 7 years (1). According to the world health organization (WHO), leprosy is diagnosed based on several cardinal signs; definitive loss of sensation in a hypopigmented or reddish skin patch, thickened or enlarged peripheral nerve with loss of sensation or weakness of the muscles supplied by that nerve (2). Even though 70% of these lesions have reduced sensation, in multibacillary (MB) leprosy, 30% of the lesions have preserved sensation (3, 4). The disease has two main types; Pauci-bacillary (PB) leprosy and multi-bacillary (MB) leprosy. Two types are differentiated by the number of poorly pigmented skin patches present, with PB having five or fewer lesions and MB having more than five lesions (2, 5). The global prevalence of leprosy has declined from 5.2 million in 1980 to 200,000 today because of multidrug therapy (6, 7, 8). WHO study group on chemotherapy of leprosy recommended using multidrug therapy as the standard treatment for leprosy (7). The number of countries reporting prevalence rate above one per 10,000 populations has reduced from 122 in 1985 to 9 at the beginning of 2004 because of multidrug therapy (8). Global elimination of leprosy as a public health problem was achieved in 2000 (2), achieving a prevalence of less than one case per 10,000 populations. Except for a few countries, Brazil, Africa, India, Sri Lanka, leprosy was eliminated from almost all countries at the end of 2015 (9). The world health organization (WHO) has set a target to interrupt the transmission of leprosy globally by 2020 (9). In 2016, WHO launched a "global leprosy strategy 2016-2020; Accelerating towards a leprosy free world" (10,11). Seventeen countries were responsible for 94.4% of the global detection figures in 2010 (12). The MB proportion varies from 40.9% in Brazil to 93.9% in the Philippines (1). The female proportion is less than 50% in almost all countries (1). In an epidemiological study done at Cebu, it was reported that the male to female ratio increased gradually over the past 11 years (13). The proportion of children with leprosy was very stable in most countries. It was above 10% in DR Congo, Indonesia, and Madagascar, denoting active and recent transmission (12).

According to the WHO recommendation, Sri Lanka reached the elimination level in the late 1990s (14). In 2001, the responsibility of diagnosing and managing patients with leprosy was handed over to Medical Officers of Health throughout the country (14).

The main associated factors for leprosy are living close in contact with patients who have untreated, active, MB leprosy. Anti-Leprosy Campaign in 2015 reported 163 patients (8.24%) and had more than one leprosy patient in a family (15). A hospital-based study done in Sri Lanka in 2011 reported that 33% of the index cases had positive contact within their household (16). BCG vaccination is known to have some protective effects against tuberculosis and leprosy (17,18). Unlike tuberculosis, there is no known evidence to suggest an association between HIV infection and leprosy (17). The annual incidence of leprosy in Anuradhapura is around 100 patients, and the prevalence is more than 1 per 10000 population (Epidemiology Unit, Ministry of health, Sri Lanka). Still, we continue to observe a similar number of leprosy patients attending the Dermatology Clinic in Anuradhapura. This study aimed to determine the epidemiology, associated factors, clinical presentation, and treatment-seeking behaviours of these patients.

Methods

A descriptive cross-sectional study was carried out among leprosy patients diagnosed between 13th February 2019 to 12th February 2020 at the Dermatology Clinic, Teaching Hospital, Anuradhapura. All the clinically diagnosed leprosy patients were subjected to histological confirmation and histologically confirmed patients were included in the study. After taking consent from the patient at their homes, each patient was interviewed using questionnaires prepared in Sinhala by the principal investigator and other investigators. Questionnaires were drawn to obtain data on the following groups of variables; epidemiology (sex, age, occupation, monthly income, and the habitat); social awareness on leprosy; variables related to the associated factors; variables related to treatment pattern (number of medical office visits before referral to the dermatology clinic and from whom treatment was taken); variables related to clinical aspects of the leprosy patients (symptoms and signs, duration of clinical features before the commencement of treatment, affected sites, number of affected sites). Data were analyzed by the beta version of excel. Ethical clearance for the study was granted by the ethics review committee of the faculty of

Medicine and Allied Sciences, Rajarata University of Sri Lanka.

Results

The study included 66 leprosy patients. The majority (56%) of the patients were males, and 50% were 30-50 years (Median age, 41 years; Interquartile range, 6-70 years). This included 7 (10.6%) patients who were less than 14 years old. Most of the patients (26%) were housewives, followed by farmers (19%). Thambuththegama medical officer of health (MOH) area was commonly affected with leprosy more than other MOH areas (19%, n=13). More than one-third of patients (40%) had a family monthly income of less than 10,000 Sri Lankan Rupees (Table 1).

Table 1: Socio-demographic factors of the participants

	N	%
Gender		
Male	37	56
Age distribution (Years)		
0-10	3	5
11-20	7	11
21-30	8	12
31-40	14	21
41-50	18	27
51-60	10	15
61-70	6	9
Occupation distribution		
Housewives	17	26
Farmers	13	20
School children	10	15
Labour	9	14
Teacher	3	5
Other	14	21
Monthly family income	**(LKR)**	
0-10000	27	41
10000-20000	15	23
20000-30000	10	15
30000-40000	7	11
40000-50000	5	8
>50000	2	3

Social awareness on leprosy

More than two-thirds (68%, n=45) of patients had heard about leprosy before being diagnosed with the disease. Most (67%, n=44) of the patients knew the causative agent of leprosy as a bacteria, and the majority of them (71%, n=47) knew the mode of transmission as respiratory droplets. In addition, 91% (n=60) of the patients knew that the skin was the most commonly affected organ.

Variables related to associated factors

Nearly 27% (n=18) had previous contact history of leprosy with one affected family member (Table 2).

Table 2: Possible associated factors

Associated factor	No. affected	%
Affected family member (contact)	18	27
Affected neighbour	12	18
No BCG scar	13	20

Treatment-seeking behaviour and clinical presentation

Half of the patients were referred for treatment after being seen by one medical personnel, and 16% of patients warranted repeated visits. More than 50% of the patients were not timely referred for treatment because of the delay in seeking medical advice, and they were referred after one year of developing clinical features. The majority (74%, n=49) of the patients had less than five affected sites giving rise to PB leprosy and 26% of MB leprosy with a small number. Many patients (47%) presented with hypopigmented skin patches. The majority (77%, n=51) had sensory impairment over the lesions. Twelve patients (18%) had other diseases, especially non-communicable diseases, and no one had other dermatological conditions or identified nutritional problems. (Table 3)

Discussion

Although leprosy control activities were started in the Dutch colonial era, Sri Lanka still reports more than 2000 leprosy cases per year during the last two decades, including Anuradhapura district. The present study explored an undertouched area of work in a rural Sri Lankan setting and revealed that most of the associated factors are preventable, and proper health education can minimize the disease burden. Sri Lanka remains an endemic country of leprosy as 95% of leprosy cases have been detected in 16 endemic countries, including Sri Lanka (19).

Table 3: Variables related to treatment-seeking behaviour and clinical presentation

	N	%
Number of consultations before diagnosis made		
1	33	50
2	4	6
3	3	5
4	4	6
Direct referral from outpatient department to the clinic	22	33
Type of medical officer of consultation		
Medical officer in a local hospital	24	36
Ayurveda medical officer	4	6
Consultant	7	11
General practitioner	7	11
Direct referral	19	29
Multiple consultations	5	8
Duration before the presentation (months)		
1-3	9	14
4-6	13	20
7-9	3	5
10-12	4	6
>12	36	55
Affected site		
Upper limb	26	39
Lower limb	6	9
Face	6	9
Trunk	11	17
Multiple sites	17	26
Symptoms		
Hypopigmented skin patch	31	47
Skin nodule	5	8
Brownish skin patches	14	21
Nerve thickness	3	5
Multiple symptoms	10	15

In our study multi bacillary leprosy patients were reduced, and childhood leprosy patients were increased. The new case detection rate of leprosy and new cases among children remains high, indicating ongoing

transmission (20). Also, leprosy among children reflects the disease transmission in the community and the efficiency of control programs (20). Leprosy annual incidence in our study was 0.7/10,000 population, and it showed new case detection rate has reduced than early studies (21). Our study showed male predominance over females. Most of the other studies showed similar results (14, 22, 23). The incidence of childhood leprosy in high endemic areas varies from 10%-40%, and the peak incidence was in the age group of 10-14 years (24, 25). Our study showed a childhood leprosy rate of 10.6%, and it was less than another study done at Anuradhapura, which showed a childhood leprosy rate of 12.1% (26). Our study sample had satisfactory knowledge of leprosy. It was compatible with the previously reported numbers (27). One study done in Sri Lanka showed that positive contact within the household was 33%, and our study was lower than that (16). Another study conducted in a similar study setting for childhood leprosy showed 45.4% of contact history (26). Leprosy transmission within the household had been identified in several studies (28,29). Good case finding and treatment with multidrug therapy with good coverage of BCG immunization in neonates would lead to a diminution of leprosy transmission and a decline in the incidence of leprosy. One-fifth of leprosy patients who had no BCG scar in our study may indicate the protection from BCG vaccination.

MB type indicating high risk of transmission (20). Less number of multi Bacillary cases in our study showed that ongoing transmission of leprosy seemed to be reduced. Similar results were reported from another study (14). Sixteen per cent of the patients warranting repeated consultation by medical officers may be due to a lack of knowledge among the medical officers. The diagnosis of leprosy has been missed on several occasions. In other studies, done in Sri Lanka, medical officers have missed the diagnosis of leprosy patients on a considerable number of events (14). A similar deficiency of knowledge was observed among the public healthcare workers in municipal council Colombo, Sri Lanka (30).

Conclusions and Recommendation

The high childhood leprosy rate showed still high leprosy transmission in Anuradhapura during this period. Other than that, more than one-fourth of a family member has a contact history showing that it was still spreading. Therefore, we need to trace leprosy contacts to reduce further incidence, and contact management should be an essential component of leprosy control. Other than that, medical officers should be given training on the diagnosis and management of leprosy.

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