Journal of Tropical Diseases

Sori, J Trop Dis 2019, 7:2
DOI: 10.4172/2329-891X.1000297

Review Article Open Access

Review on the Burden of Leprosy in Ethiopia

Ermias Alemu Sori*

School of Public Health, Southern Medical University, Guangzhou, China

***Corresponding author:** Ermias Alemu Sori, School of Public Health, Southern Medical University, Guangzhou, China, E-mail: ermikur@yahoo.com

Received date: November 28, 2018; **Accepted date:** December 21, 2018; **Published date:** January 3, 2019

Abstract

Leprosy is one of the major neglected diseases in Ethiopia. The presence of the disease was detected several years ago, and the prevalence was decreased from its higher level (19.8% per 10,000 populations) in 1983 to its lower level (0.5% per 10,000 populations) in 2012 due to the introduction of the Multi-Drug Therapy (MDT) and the decentralization of the treatment centers. The prevalence has been seen with high disparity across the fourteen regions in the country, but the major contributors for the national prevalence were Oromiya, Amhara, and SNNP (Southern Nations Nationality and People) respectively. Even if, the prevalence in the country dropped to the lower stage and met the WHO goal (1case per 10,000 Populations) the occurrence of new cases remains a challenge.

Access to the recently published articles on the specific topic and the narrowed scope of the available published works were a challenge to this review. Further studies to indicate the epidemiological factors of the emerging cases, and cooperation between the national and regional governments for integrated surveillance and staffs training were suggested mainly for the betterment control and prevention of the diseases across the country.

Keywords: Leprosy; Prevalence; Multi-drug therapy; Neglected tropical disease; Ethiopia

Background

Leprosy or Hansen's disease is has got its name after Armauer Hansen, the Norwegian physician who first found the bacteria of the disease in the 1870's. It is a chronic contagious disease, caused by *Mycobacterium leprae*. It mainly spreads through droplets from nose to mouth. Its transmission is high during close and repeated contacts with untreated, infected individuals [1].

Leprosy is one of the oldest diseases that affected millions of people around the world mainly Asia, South America, and Africa. As said by WHO report, every year, between 500,000 and 750,000 new leprosy victims are detected throughout the world. In the year 2005, for example, over 500,000 new cases were recognized, that is over 1400 every day or close to 60 people every hour [2].

Leprosy is the major infectious cause of disability [3]. Prevalence has fallen to a large extent in the past 50 years [4], but new infection continues and leprosy remains a public health difficulty [5].

Globally, the new case detection rate for the disease remains high, with about 250 000 new cases being recorded each year. approximately 15 million people have been treated with multi-drug therapy, and an estimated 2 million people have been prevented from developing disabilities [6]. Although the leprosy prevalence values fell strikingly from 620,638 cases in 2002, to 213,036 in 2009 [7,8], this decrease is partly because of the prevalence values being halved by the period of treatment being reduced from 2 years to 1 year.

Prevalence is also influenced by operational factors, such as level of case finding activity and incorporation of leprosy services into primary-healthcare services in some nations so that the leprosy eradication targets would be attained. A huge amount of new cases keep on to be detected-249,000 were reported in 2008, of which 94% were in the 17 countries that had reported detecting more than 1000 new cases in that year [7-9]. A study done in Maharashtra, India, showed rates of three to nine cases per 10,000 populations, and that 30% of these newly diagnosed cases were in kids.

An agreement has been attained by WHO that strong disease surveillance for leprosy is crucial, and four indicators have been recommended: the number of new cases, the new case detection rate, the treatment achievement rate (or, when feasible, cure rate), and the rate of new cases with grade II disabilities [3]. A new goal was initiated that the number of new cases with grade II disability in 2015 ought to be 35% lesser than in 2010. Monitoring of the rate of new cases with a disability will pose challenges, in view of the doubts about the dependability of the data.

Leprosy is one of the serious public health problems in developing countries. It negatively influenced the socioeconomic status of the patient [10].

Leprosy related Researches have been done in Ethiopia since the entry of the disease into the country but they are much less than what ought to be and even the published journals were focused on specific geographical locality within the nation and could not provide nationwide information.

Therefore, reviewing the articles using the available databases would provide valuable information for decision-makers. Specifically, if it would be done on the epidemiological aspects of the disease, sounds more in addressing the disease control and prevention challenges.

Objective

The main objective of this review article was to provide all-inclusive information regarding the burden of Leprosy and the associated challenges in Ethiopia.

Methodology

A review of the literature was conducted through a database of international peer-reviewed journals. Articles Searches were done through Medline (PubMed.gov), a web of science and science direct databases. The searches result included 30 articles published in the English language. Publication period covers a wide range of duration from 2001-2017.

History of Leprosy in Ethiopia

Ethiopia is located in African. It is the largest nation and the tenth in Africa, holding 1,104,300 square kilometers and is the major part of the landmass called the Horn of Africa (Eastern Africa) (Figure 1). In 2017 the Ethiopian population is estimated to be around 104,345,316 up 2015's estimate of 98.9 million. The country is the second in Africa in its number of population. If the country continued with its current rate of growth, within the next 30 years its population will have a probability of reaching 210 [11]. In Ethiopia there are a number of endemic contagious diseases.

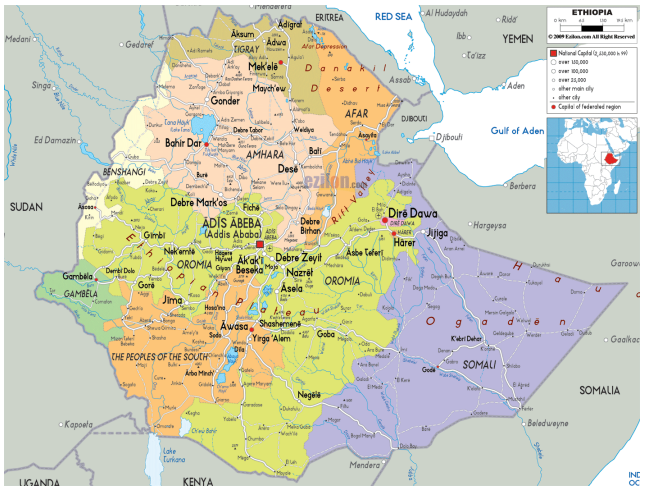

Figure 1: Map of Ethiopia.

Leprosy has a long record in Ethiopia. Historical data point out that the disease was in Ethiopia before the 16th century [12,13]. As said by the Portuguese diplomat, Chaplain Franciso Alves, had provided the earliest information about the disease in the country in 1520. The disease might have occurred in Ethiopia through the long-distance trade and other cultural relationships as indicated by Mesele [13].

However, medical therapy introduced in the country in 1950 [14]. But this does not signify the disease had not obtained any focus before this time. It had received much attention during the Menelik II and Hailesilase regime when different city-state and settlement areas were constructed in different parts of the country from 1900 to the beginning of the 1960's. The Multi-Drug Treatment (MDT) which is presently being used and comparatively successful type of treatment were also commenced in the country in 1983. Consequentially, remarkable decreases have been registered concerning the disease prevalence rate in the country [15].

Epidemiology of the Disease

In 2010, Ethiopia was one of the 17 nations reporting 1000 or more new cases per year. Between 2004 and 2010, 4000-4500 new cases were diagnosed at health facilities annually. Ethiopia is the second highest country in Sub Saharan Africa [7,16]. The total number of leprosy patients registered in the country was 5,303, and of these, 4,430 were new cases. Of the recorded new cases, 1,308 were female and 331 children. In the same year, 357 recurrent cases were recorded [17].

In Ethiopia, the prevalence of leprosy has dropped from 80,927 cases in 1982 to 2,944 cases in 2012 while the occurrence rates dropped from 6,243 to only 3,776 in the same period [18].

Although the World Health Organization (WHO) announced that Ethiopia reached the leprosy eradication target of 1 case/10,000 population in 1999, the incidence has not changed noticeably [19]. Additionally, there are compartment areas that report an appreciably high number of cases yearly. For example, the Kokosa district health bureau (West Arsi Zone) has reported 62 new leprosy cases in 2011/2012. More than 76% of the national leprosy cases were notified from Oromia and Amhara regional states in 2012 [20].

The country stood 7th among the 18 countries that account 93% of all new cases detected globally in 2009; the average number of new cases remained steady at around a mean of 4524 between 2001-2011. This translated to a drop in national case announcement rate of 0.8/10,000 to 0.6/10,000. An anonymous scale of unseen cases suggested among newly diagnosed children below 15 years of age with 7.8% proportion rate, and 9.8% prevalence rate of grade II disability. Regional disparity in case notification rate varied between 0.16/10,000 in SNNPR to 0.76/10,000 in Oromia [20].

Among regions, 2,046 leprosy cases (49%) were reported from Oromia followed by Amhara region with 1,409 cases (34%) and SNNPR region 348 cases (8%). These three main regions in Ethiopia constituted 91% of all the cases reported [20].

The prevalence of leprosy has sharply declined from 19.8 per 10,000 populations in 1983 to 0.5 per 10,000 populations in 2012 following the introduction of Multi-Drug Therapy (MDT) since 1983. According to Ministry of Health data sources, after the introduction of MDT, a total of 126,592 new cases were detected and 149,592 patients were released from treatment. However, notifications of new leprosy cases have been consistent over the last ten years starting from 2001 (Figure 2) [21].

A retrospective study from 2007 to 2012 has shown that there was a wide variation in the disease prevalence among regions from 0.1 per 10,000 in Somali region to 2.2 per 10,000 in Gambella, while the national prevalence rate has dropped down (Figure 3) [14].

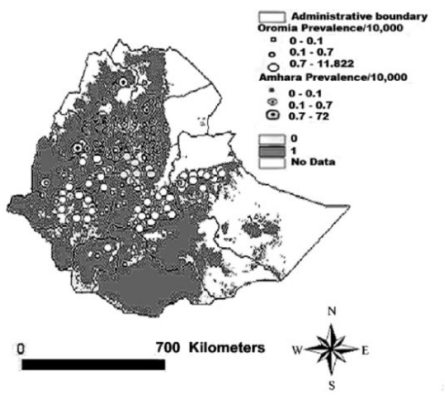

Figure 2: Leprosy distribution across Ethiopia [21].

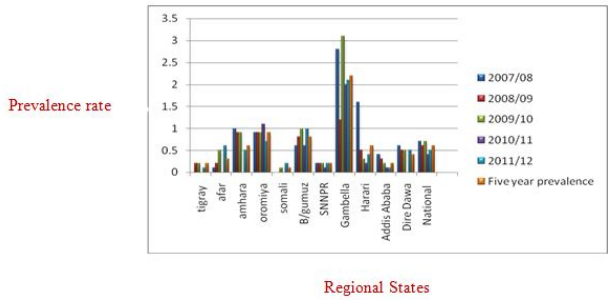

Figure 3: A Graph showing Leprosy prevalence per 10,000 populations over a five year period [14].

The most pertinent epidemiological determinant of a load of leprosy is the incidence of the disease, which corresponds to the people developing the disease within a limited period of time (mostly a year), in a specific population. Since the incidence of the disease is difficult to measure directly, the "New Case Detection Rate" (NCDR) is used as an alternative for incidence rate [21].

Countrywide, Leprosy is a public health concern and it is found all over the nine regional states and in the two city administration with prevalence disparity [20]. As can be understood from the prevalence and disease distribution across the country, the situation is very alarming that needs the collaboration of partners and stakeholders.

Diagnosis

The diagnosis of leprosy is easy but it needs the skill to distinguish skin lesions and be familiar with nerve involvement. Diagnosis based on an anesthetic patch is likely to fail to see about 30% of the MB cases [22]. Paramedical personnel need to be trained to recognize at least two key signs of leprosy: anaesthetic skin lesions and enlarged nerves. This involves training, supervising and monitoring junior healthcare staff as well as offering refresher training at some intervals.

Among communicable diseases, leprosy is the leading cause of permanent physical disability. High disability grade in a newly diagnosed leprosy patient represents a delay in diagnosis which [23] may be due to the patient presenting himself at the health facility late in the course of the disease or due to misdiagnosis at the health facility as a result of poor competence of health workers in recognizing the signs and symptoms of leprosy.

In Ethiopian health care system, leprosy was treated upright by leprosy dedicated personnel until 2001 at leprosy specialized hospitals. The leprosy control program has been fully incorporated into the general health services by the end of 2001 to guarantee that patients are diagnosed at an early stage and complete the Multi-Drug Treatment (MDT) without complementary disability [24].

The burden of the disease is heavy among children and adolescence that Multi-bacillary leprosy was the widespread type in both age groups, found in 95.5% of children and in 84.1% of adolescents. A significant number of children and adolescents had deformities of the hand, feet or eyes (grade II disabilities), identified during at the time of diagnosis and follow-up [25].

A retrospective study done from 2000 to 2016 showed that the proportion of new case diagnosed in children and adolescents was significantly higher than in adults. There were also significant disparities in the occurrence of lepromatous ulcers, leprosy response, and neuritis between these age groups. Have been seen more new diagnoses, leprosy reactions and neuritis, and fewer lepromatous ulcers, in children and adolescents compared with adults [26].

Treatment

In Ethiopia, Number of leprosy cases that have been released from treatment as cured since 1982 is 156, 500 [27]. There are major issues in the therapy of leprosy that needs extra studies and facts to guide policy-making. For illustration, a small fraction of patients have a significant bacterial load; they are almost certainly accountable for persisting infection in their society. Studies from India and Mali put forward that relapse rates are high among this group even after they took treatment with 2 years of multi-drug therapy [28]. Finding the most favourable technique of identifying these patients and providing the right treatment should be a priority.

Although the prevalence rate of the disease has been decreased after MDT begins in the country, the number of newly detected leprosy cases has remained constant over the past 20 years [29].

New case detection rate might be complemented through after interrupted treatment was taken for a long period with MDT medicine and people engaged in labor works that provoked disability overwhelmingly [22].

In addition, there might be several cases that were not identified mainly in rural areas, where there is limited basic health care service. On the other way, due to the low level of understanding about the causes, transmission, and treatment of Leprosy, people might not go to the health centers even if the health services are accessible to the community.

Preventing Disability

Patient disability and deformity will result because of the persistent nerve damage and this is a lifetime problem and need to be prevented. Patients with anesthesia and muscle weakness ought to be taught how to care for their hands and feet: they should examine their limbs daily and attend to any injuries without delay. Dedicated footwear needs to be provided for patients with deformities of their feet to avoid ulceration. Ulcer management forms a large part of any leprosy

service. Personnel needs to work with patients to prevent ulceration from recurring by identifying the cause of the initial injury. Preventing disability is critical to the success of a programme. The routes cause need to be understood that lead to disability [28].

Leprosy and Stigma

Socioeconomic rehabilitation is another important component of caring for patients. Many patients are marginalized by their community after being diagnosed. Stigmatization continues and it needs to be combated using community-based approaches [30].

Delay in diagnosis and treatment can have adverse physical, psychological, economic and social effects. The incidence of deformity is the most important concern, since the social response to those suffering of leprosy-related deformity and their families are often tragic, hash, and uncaring accompanied with offense, banishment and even the deliberate killing of the victims. This leads to stigma with a negative effect on the dignity and behavior of those affected by leprosy. As a result, those affected will develop anger, distress, dread, aggression and show an inclination for living someplace where no one knows of their background [31].

Although there are global and nationwide lawful provisions for the full involvement of all disabled people counting leprosy victims, the deep-rooted attitudes forbidden the victims from the realization of all of the social and economic benefits.

Currently, more than ten thousands of leprosy-affected societies with their families and relatives live in leprosy settlements. Among the newly diagnosed cases, thousands are adding up every year with 7-14% of disability rate. As a result, significant numbers of people have become disabled and are forced to live in Stigma and follow-on socio-economic complications [21].

Leprosy is considered as hereditary and a curse of God. Even marriage with leprosy-affected people was forbidden lawfully in the previous Ethiopian family law [22]. On the other hand, according to a recent four years study in ALERT hospital, showed that the prevalence of disability was found to be 65.9% from all categories of patients (40.2% Grade I and 25.7% Grade II). The predominance of disability, both Grade I and II, was very high. Disability was associated with age, duration of symptom, sensory loss, signs of nerve damage and reversal reaction [32].

Leprosy has become a big concern to the country and nowadays there are about 40 settlements for leprosy victims [33]. The major ones are Gebre Kiristos in Addis Ababa, Addis Hiwot, Tesfa Hiwot and Kuyera Settlements in Oromiya regions [34] (Figure 4).

Figure 4: Disabled individuals due to leprosy.

Conclusion

The prevalence of leprosy in Ethiopia has declined across time but the emerging of new cases is still challenged the national health sector. The most vulnerable age group to the diseases are children and adolescents. The disease has a socio-economic impact on the victims. The prevalence of the disease varied among regions and The epidemiological factors contributed to the emerging new cases should be investigated by integrated Surveillance at the regional and national level.

It is particularly serious to give due attention to children and adolescents that are affected by leprosy and further research in Leprosy should be a priority agenda. Community-based awareness and staff training about early detection and treatment of cases are highly recommended, especially to the high-risk population.

Due to the limited number of published journals on the specific epidemiological trends of the disease, and also the majority of articles were done before five years, provided that the review might have a limitation.

References

1. Naafis B. "Leprosy: Nerve damage in leprosy" University of Amsterdam, Department of Dermatology.
2. WHO (2007) Disease information. Accessed March 2008.
3. United Nations (2009) The Millennium Development Goals (MDGs) and Disability.
4. Merle CS, Unha SS, Rodrigues LC (2010) BCG vaccination and leprosy protection: review of current evidence and status of BCG in leprosy control. Expert Rev Vaccines 9: 209-222.
5. WHO (2005) Enhanced global strategy for further reducing the disease burden due to leprosy (plan period: 2011-2015). New Delhi: World Health Organization Regional Office for South-East Asia.
6. Scollard DM, Adams LB, Gillis TP, Krahenbuhl JL, Truman RW, et al. The continuing challenges of leprosy. Clin Microbiol Rev 19: 338-381.
7. Anon (2008) Global leprosy situation, beginning of 2008. Wkly Epidemiol Rec 83: 293-300.
8. Anon (2009) Global leprosy situation, Wkly Epidemiol Rec 2009 84: 333-340.
9. Anon (2008) Global leprosy situation (additional information). Wkly Epidemiol Rec 83: 459.
10. Menberu A, Addisalem T, Hana N, Ayele (2001) Baseline study on persons affected by leprosy and their family members in Addis Ababa.
11. UN (2017) Ethiopia population-2017-World population.
12. Duff (2005) Exploring grassroots leprosy organizations: Is social inclusion and empowerment possible for members? Case studies in Ethiopian and China, Massey University New Zealand.
13. Messele Terecha Kebede (2005) Leprosy, leprosaria and society in Ethiopia: A Historical Study of selected sites 1901-2001 The Armauer Hansen Research Institute, Addis Ababa (MA).
14. ENAPAL (2000) The pioneers work on Leprosy Gendeferonharar, Ethiopia: A century fight against leprosy. The Truth 31-34.
15. FDRE-MOH (2001) Gender perspective checklist for program/project planning in Ethiopia MEDaC/WAO Addis Ababa, Ethiopia.
16. WHO (2011) Leprosy update. Wkly Epidemiol Rec 86: 389-400.
17. World Health Organization (WHO) (2013) Weekly epidemiological record. 35: 365-380.
18. World Health Organization (2005) Global strategy for further reducing the leprosy burden and sustaining leprosy control activities: Plan period 2006-2010. Geneva.

19. Mohammed A (2014) Tuberculosis and Leprosy prevention and control in Ethiopia. German Leprosy Relief Association (GLRA). Annual Master Report, Addis Ababa, Ethiopia.
20. FMoH (2012) Presentation at the National Leprosy Workshop at AHRI.
21. ENAPAL (2014) Baseline survey report: On persons affected by leprosy and their families in Addis-TesfaHiwot leprosy settlement.
22. International Leprosy Association (2002) Report of the International Leprosy Association Technical Forum: Diagnosis and classification of leprosy. Lepr Rev 73 Suppl: S24.
23. Desalegn Terecha (2014) The pleasing unspoken voices Ethiopian National Associations of persons affected by Leprosy (ENAPAL) Addis Ababa.
24. Feenstra P, Visschedijk J (2012) Leprosy controls through general health services-revisiting the concept of integration. Lepr Rev 73: 111-122.
25. Ramos JM, Reyes F, Lemma D, Tesfamariam A, Belinchón I, et al. (2014) The burden of leprosy in children and adolescents in rural southern Ethiopia. Paediatr Int Child Health 34: 24-28.
26. Ramos JM,Ortiz-MartÃnez S, Lemma D, Petros MM, Carmen OM, et al., (2017) Epidemiological and clinical characteristics of children and adolescents with leprosy admitted over 16 years at a rural hospital in Ethiopia: A retrospective analysis. J Trop Pediatr 64: 195-201.
27. Shumet T, Demissie M, Bekele Y (2015) Prevalence of disability and associated factors among registered leprosy patients in all Africa TB and Leprosy Rehabilitation and Training Centre (ALERT), Addis Ababa, Ethiopia. Ethiop J Health Sci 25: 313-320.
28. GLRI Ethiopia (2012) German leprosy and TB Relief Association Ethiopia 1957-2012/bulletin/ Addis Ababa.
29. Girdhar BK, Girdhar A, Kumar A (2000) Relapses in multibacillary leprosy patients: Effect of length of therapy. Lepr Rev 71: 144-153.
30. ENAPAL (2006) Socio-economic baseline survey report on persons affected by leprosy and families residing in Kuyera/Shashamane leprosy settlement.
31. Tirusew Tefera (2005) Disability in Ethiopia: Issues, insights, and implications. Addis Ababa University, Addis Ababa University press.
32. Kaur H, Van Brakel W (2002) Dehabilitation of leprosy-affected people -a study on leprosy-affected beggars. Lepr Rev 73: 346-355.
33. Krishnamurthy P (2004) Hidden Leprosy-who is hiding from whom? Lepr Rev 75: 303-305.
34. ENAPAL (2014) Baseline survey report: On persons affected by leprosy and their families in Addis Tesfa Hiwot leprosy settlement.