Lassa fever : An historical data analysis research

Abstract

Lassa fever is one of the major diseases of the century, It is an endemic disease in West part of Africa, where between 300,000 and 500,000 cases are reported per year.[1] Since it was discovered in a small village in Nigeria, several cases of this fever have been reported in places outside Africa, such as North America[2] and Europe[3].

However, we still do not have a plausible solution to this problem. This report aims to study the history of lassa fever outbreaks and also to study the problems associated with lassa fever, but only research is not enough. Better health systems are needed in countries where epidemics are more able to occur.

Only an intensive program of education together with the population attached to good public politics can help in the incidences decreases. However, we will approach didactics forms to prevent Lassa Fever using simple health-care ways to poverty areas.

To begin with, we will study the higher frequency of lassa fever outbreaks in a historical approach from 1970 - 2017[4].

From the data, we can see that the Sierra Leone and Nigeria regions from 1970 to 2017 had the highest incidence of this epidemic. We can better observe plotting on a map, as below:

[1] https://www.dw.com/pt-002/nig%C3%A9ria-enfrenta-novo-surto-de-febre-de-lassa/a-42548420

[2] Amorosa V, MacNeil A, McConnell R, Patel A, Dillon KE, Hamilton K, Erickson BR, Campbell S, Knust B, Cannon D, Miller D, Manning C, Rollin PE, Nichol ST. Imported Lassa fever, Pennsylvania, USA, 2010. Emerg Infect Dis. 2010;16(10):1598-600. **This article on PubMed**

[3] Kitching A, Addiman S, Cathcart S, Bishop L, Krahé D, Nicholas M, Coakley J, Lloyd G, Brooks T, Morgan D, Turbitt D. A fatal case of Lassa fever in London, January 2009. Euro Surveill. 2009 Feb 12;14(6). **This article on PubMed**

[4] Rory Gibb, Lina M. Moses, David W. Redding e Kate E. Jones (2017) Compreendendo a natureza enigmática da febre de Lassa na África Ocidental, Patógenos e Saúde Global, 111: 6, 276-288, DOI: 10.1080 / 20477724.2017. 1369643

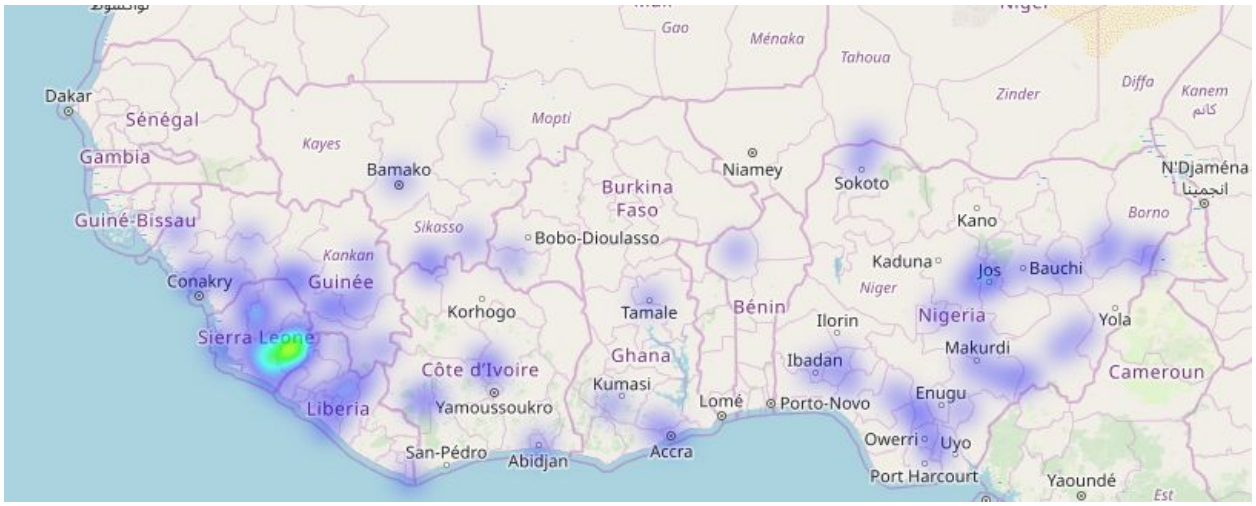


Fig 1.0. The frequency of outbreaks in the West Africa.

However, in this report we will study correlations between five issues: Region, Town, Year of start, Year of end and the number of cases.

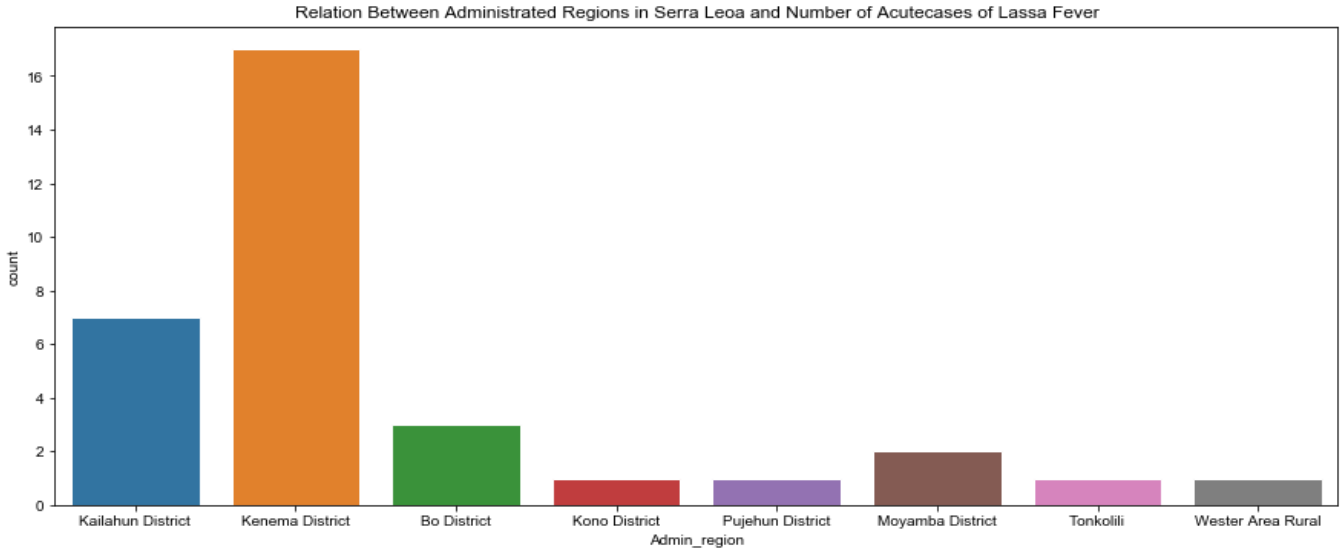
	ID	Country	Admin_region	Town	Latitude	Longitude	Year_start	Year_end	Rodent_or_human	Acutedisease_or_seroprevalence	Number_acutecases
0	1	Nigeria	Kaduna State	Rahama	10.4134	8.6904	1952	1952	Human	Acute	1
1	2	Liberia	Lofa County	Zorzor	7.7700	-9.4200	1969	1982	Human	Acute	38
2	3	Nigeria	Borno State	Lassa	10.6900	13.3100	1969	1969	Human	Acute	1
3	4	Nigeria	Plateau State	Jos	9.9200	8.9000	1969	1969	Human	Acute	2
4	5	Cote d'Ivoire	Beoumi Prefecture	Beoumi	7.6700	-5.5700	1970	1974	Human	Acute	1

SIERRA LEONE

In the whole data, we can observe that *Sierra Leone* has the most sum of cases comparing the others countries.

In the figure 1.2, we can see the relation between the sum of cases and the outbreaks in Serra Leone districts

Fig 1.2. Relation Between administrated regions and the number of acutecases



1.2 Relation Between Year of end x Year of start. What information we can get of result?

In the Fig 1.2, we can study the frequency of outbreaks growth in sierra leone. We can see that in the middle of 200 the outbreaks had a powerful growth, coinciding with imported cases of Lassa fever has been reported from the United Kingdom (UK), that mentioned above.

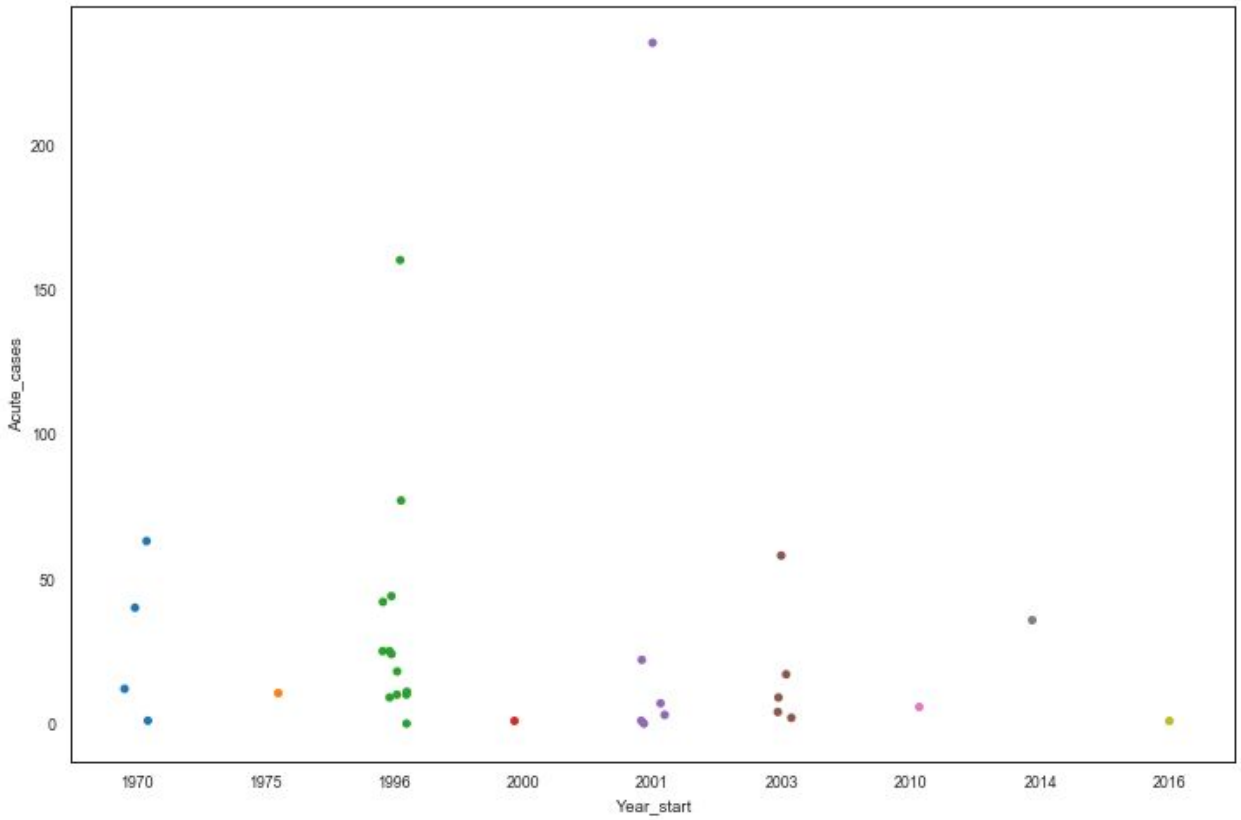


Fig 1.3 Relation Between acute cases and the year of start

How mentioned below, we saw that from 1996 and the middle of 2000 the growth of cases of had a powerful growth. In this scatter graphic, we can look that in 2001 had more than 200 cases, comparing aproximately 150 cases in 1996. In 1996-2003 we have more incidence of Lassa fever in *Sierra Leone.*

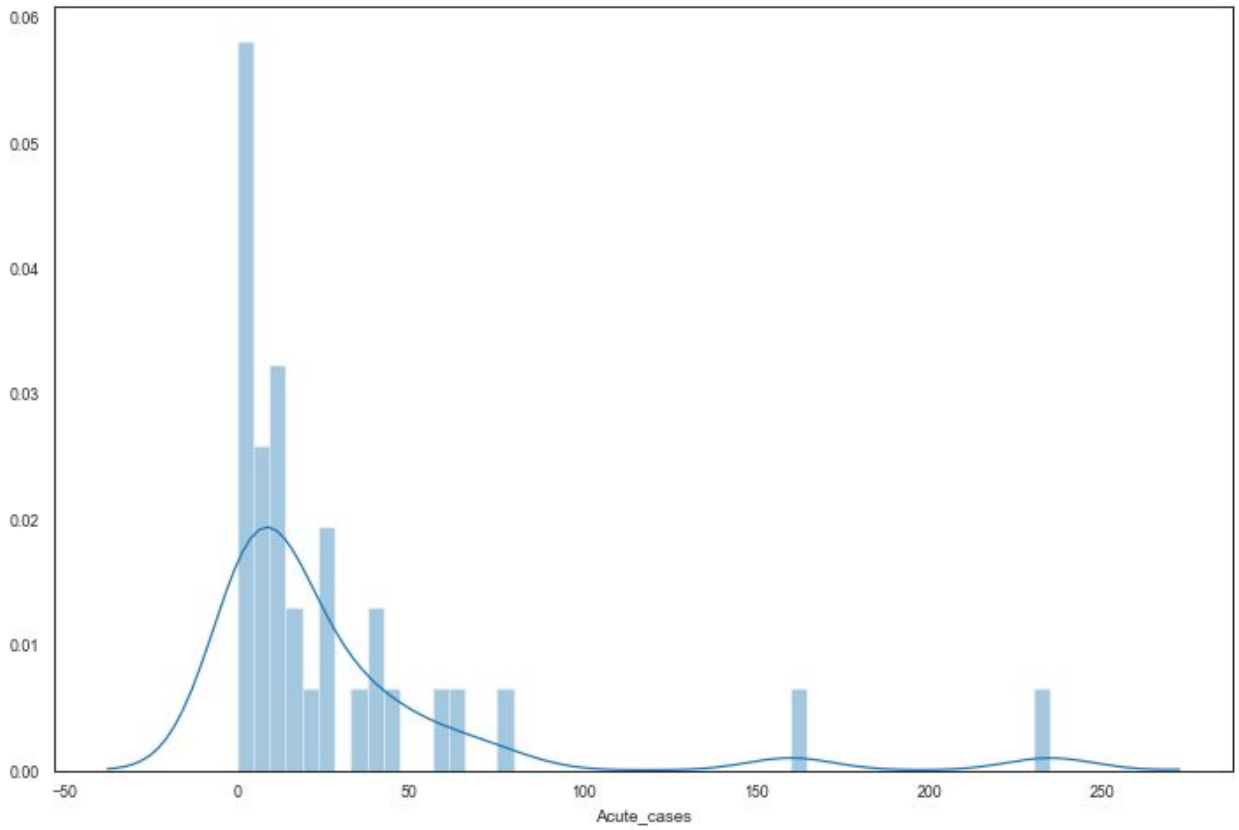
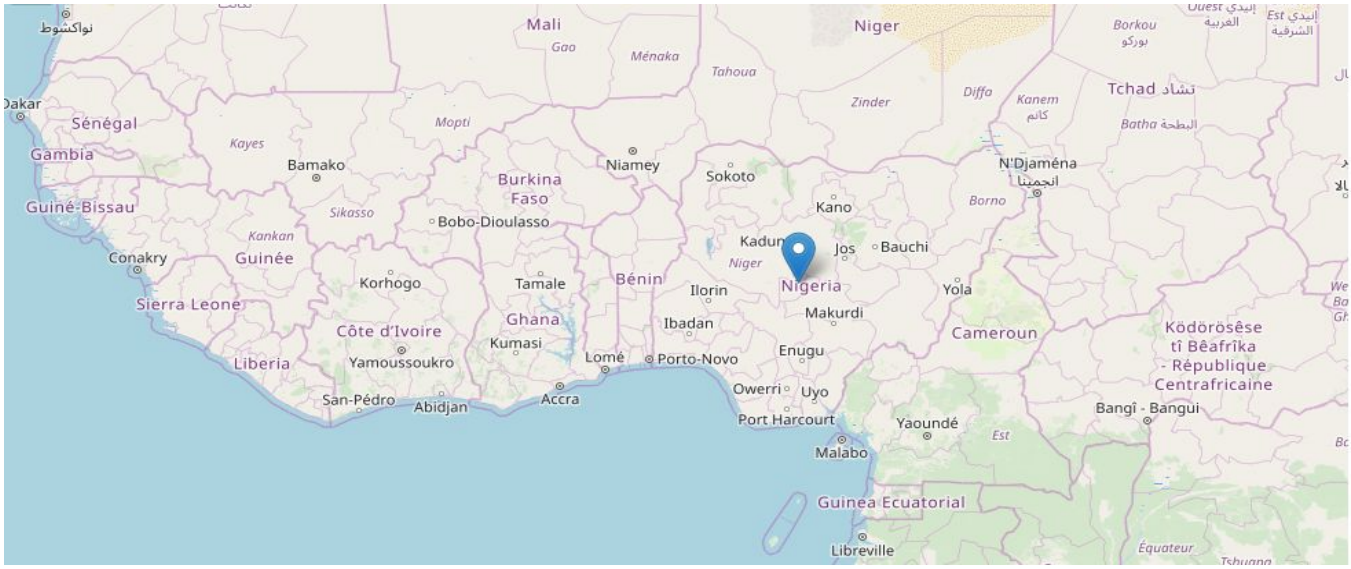


Fig 1.4

We can see the number of acute cases based on the frequency of outbreaks in cities of Serra Leone. At the top, we can see the norm distribution function that gives us the among average of the frequency of outbreaks.

NIGERIA


Mali
Gao
Ménaka
Niger
Tahoua
Zinder
Diffa
Borkou
Kanem
Tchad
Batha
Mopti
Kayes
Sénégal
Gambia
Bamako
Niamey
Sokoto
Burkina Faso
Guiné-Bissau
Sikasso
Bobo-Dioulasso
Kano
N'Djaména
Borno
Kankan
Guinée
Conakry
Korhogo
Tamale
Bénin
Kaduna
Niger
Jos
Bauchi
Nigeria
Ilorin
Yola
Sierra Leone
Ghana
Ibadan
Makurdi
Côte d'Ivoire
Kumasi
Cameroun
Liberia
Yamoussoukro
Lomé
Porto-Novo
Enugu
Köndörösêse tî Bêafrîka - République Centrafricaine
San-Pédro
Abidjan
Accra
Owerri
Uyo
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Yaoundé
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Équateur