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A cross-sectional study on the prevalence of cutaneous leishmaniasis in Kabul, Afghanistan from 2020 to 2021

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Abstract

Background: Leishmaniasis is one of the most neglected diseases in several countries, but Kabul, the capital of Afghanistan, is the largest center of cutaneous leishmaniasis in the world. In the present study, we investigated the prevalence of Cutaneous leishmaniasis (CL) in Kabul during 2021 and 2022.

Methods: The present study was a descriptive-cross-sectional retrospective study. It was done based on the information of patients who visited the NMLCP from January, 21, 2021 to October 29, 2022, for the diagnosis of leishmaniasis. Required information including age, gender, type, number and location of the lesion, and date of the visit were extracted from the hospital database.

Results: The result of this study showed that the highest rate of CL was in 2021 and the lowest was in 2022. Most infected were children. Face lesion was the most common lesion in the patients and most of the infected patients had one lesion while others had more lesions.

Conclusion: In this study, we demonstrated that 12,292 people were infected with CL in Kabul in 2021 and 2022. The cutaneous leishmaniasis epidemicity in Afghanistan is mainly due to poverty, lack of access to health services, cultural and social barriers, lack of vector control, destruction of public health infrastructure, poor access to health services, and migration of people from non-endemic regions to endemic provinces.

Key words: Kabul, Cutaneous leishmaniasis, Poverty, Cultural barriers

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Introduction

Cutaneous leishmaniasis (CL) is a parasitic skin infection caused by different species of parasites of the genus *Leishmania*(1). The reservoirs of the parasite are different so in *Leishmania major*, wild rodents and rats and in *Leishmania Tropica*, humans and sometimes dogs (accidental hosts) are considered parasite reservoirs(2, 3). *Leishmania major* is the cause of rural CL (wet type) and *Leishmania tropica* is the cause of urban CL (dry type). Due to the long course of leishmaniasis disease (3 to 60 months in the urban type and 6 to 9 months in the rural type), it is also known as Salk(4). CL has an epidemiological and social essence. People infected with leishmaniasis often suffer from stigma and marginalization. This can affect their ability to have a healthy and acceptable life, especially when it exists in girls and young women(5). CL is a self-limiting disease that, after healing, leaves scars that affect the person's beauty forever. Also, the wounds resulting from both types of leishmaniasis may have secondary infections and this makes the treatment of the disease longer(4).

leishmaniasis is one of the most neglected diseases that exists in 98 countries (6, 7). Annual, more than 1.3 million new cases of infection occur and more than 350 million people are at risk of infection(8). It has been reported that annually 90% of cases of CL are reported from Brazil, Ethiopia, India, Bangladesh, Sudan, and South Sudan (9). Of all, Afghanistan with 36% of its population at risk of contracting CL and an annual incidence of 17.9 new cases per 10,000 residents in endemic areas (9) has the highest prevalence of cutaneous leishmaniasis (10, 11). Afghanistan is a developing country whose population is still suffering from various health problems. Health indicators in Afghanistan are still among the worst in the world and many preventable diseases such as typhoid fever, diarrhea, and measles commonly exist in different regions (5). In Afghanistan, *Leishmania tropica* and *Leishmania major* are the causative cause of CL (5, 10, 12, 13).

In Afghanistan, usually occurs in poor and deprived areas with limited access to health services. Many factors, including political instability, ongoing conflicts, lack of an efficient public health system, health infrastructure, and cultural and social barriers contribute to the increased incidence of CL. Currently, CL is found in 20 out of 34 provinces of Afghanistan(5). As it has been reported, 36% of the population of Afghanistan is at risk of contracting leishmaniasis (12). In Afghanistan Kabul (14), Herat (15), Balkh, Badakhshan, Kandahar, Parwan, and Kunduz, are the important foci of leishmaniasis provinces (14). Several years ago, Kabul (the capital of Afghanistan) is known as the largest center of cutaneous leishmaniasis in the world(16-18).

In the last 10 years, Afghanistan has seen a sharp increase in the number of leishmaniasis cases (5). The National Malaria and Leishmaniasis Control Program (NMLCP) in 2018 confirmed 11,390 new cases of CL in Kabul (out of 12,000 total cases) (5). As far as we know, there is no study on the prevalence of CL in 2020 and 2021 in Kabul. Therefore, the aim of this study is to investigate the prevalence of this infection in 2021 and 2022 in Kabul. Kabul, the capital of Afghanistan, has about 7 million people who live in 22 districts (19). About 82% of the population lives in 55 informal settlements (20). which make up more than two-thirds of the residential areas and account for about four-fifths of the city's population (21).

Materials and Methods

This is a descriptive-cross-sectional retrospective study. It was done in the world's largest leishmaniasis center (Kabul, Afghanistan) based on the information of patients who visited the NMLCP from January, 21,2021 to November, 1. 2022 for the diagnosis of leishmaniasis. Required information including age, gender, type, number, location of the lesion, and date of the visit was extracted from the hospital database. The diagnosis of cutaneous *leishmania* in NMLCP is based on clinical indicators and microscopic diagnosis of Leishman bodies (amastigotes)(13). Data collection was done according to hospital regulations. In this study, we used only information related to *Leishmania*. Personal information (name, personal image, and any personal information related to patients) is not included in the study. The required information was statistically analyzed using SPSS software version 26.

Results

The result of this study showed that a total of 12,292 people were infected with CL in Kabul during the 2021 and 2022, with the highest rate in 2021 (6,475 people) and the lowest in 2022 (5,807). The frequency of patients with CL in 2021 has been shown in Table 1. As can be seen, 3411 men and 3064 women were infected in 2021, and in 2021 a total of 5817 people including 2925 men and 2892 women were infected with CL.

Our findings indicate that in 2020 the highest rate of incidence of CL was in children aged 1 and 10 (43.2% boys and 47.2 girls) and the lowest rate of CL was in the age group of >70 years old (0.5% boys and 0.7% girls). Similarly, in 2021 the highest rate of incidence of CL was in the age group of 1-10 (68.6% boys and 71.4% girls) and the lowest rate of CL was in the age group of > 70 years (4.9% men and 7.2% women).

The results of the anatomical location of the lesion are shown in Table 3-3. According to the results, the face lesion is the most common lesion caused by CL in men and women in 2020 and 2021.

Our finding demonstrates that 2145 (62.9%) men and 1,965 (64.1 %) infected women in 2020 had only one lesion, while others had more lesions. in 2021 a total of 1,927 (65.9 %) men and 1,950 (67.4 %) women with CL had one lesion on their body, and other patients had two, three, or more than three lesions.

Discussion

Afghanistan has been suffering from leishmaniasis since the ninth century and nowadays the incidence of leishmaniasis shows an upward trend. Kabul, the capital of Afghanistan, has the highest rate of this disease in the world with an estimated share of 33.75%

of annual cases (22). In the present study, we investigated the prevalence of leishmaniasis in the world's largest center of CL. The results showed that a total of 12292 people were infected in 2020 and 2021 with CL. The highest rate of infection was observed in children 1 to 10 years old, and the lowest rate of infection was observed in patients>70 years old. Most of the infected patients had one lesion of CL in their bodies.

The highest percentage of patients had face lesions, while all women in Afghanistan are worried about leishmaniasis and its consequences, which have a very heavy negative impact on their social life. Another current result is the large number of lesions caused by the disease in the body of patients. Based on the obtained results, most of the patients in both genders had a wound caused by *Leishmania*. But other patients had more lesions(3). The cutaneous leishmaniasis epidemic in Afghanistan is caused by several factors, including poverty, lack of access to health services, cultural and social barriers (3), lack of vector control, destruction of public health infrastructure, poor access to health services, and migration of people from non-endemic regions to endemic provinces, play a critical role in increasing the incidence of this disease (12).
Meanwhile, poverty is one of the most important factors in the occurrence and expansion of leishmaniasis in Afghanistan. It has been shown that most of the patients who visit NMLCP have very low socio-economic status and poor living conditions, including some families who cannot afford two meals a day. Even some of them do not have the ability to pay for transportation (3).

Lack of knowledge and awareness about this disease, including its symptoms and transmission, is another big problem in female patients with leishmaniasis and their family members. The lack of female health service providers also plays an important role in the deployment of this disease. Based on the findings of previous studies, female patients with leishmaniasis seek health care very late. Sometimes, female patients come to the clinic when the lesion has already damaged their body tissue. Additionally, based on some cultural beliefs, men often do not allow women to see male healthcare providers. Therefore, women are often discouraged from seeking health care, and when they recourse to a clinic, there is a delay because it is too difficult to provide gynecological care in clinics for all female patients with leishmaniasis (3). Also, decades of war and social instability have led to the uncontrolled spread of cutaneous leishmaniasis to different regions of Afghanistan (23).

On the other hand, the close relationship between the distribution of leishmaniasis and weather conditions may be used to predict the epidemic of leishmaniasis in Afghanistan. Previous studies have shown that the *Leishmania* parasite is sensitive to climate variables such as temperature, rainfall, relative humidity, and wind speed, which can be used to explain the increased occurrence of the parasite in the region. The observed strong association between leishmaniasis and climatic changes is supported by environmental factors related to the distribution of cutaneous leishmaniasis in western Afghanistan (22).

Conclusions

A total of 12,292 people were infected with CL in Kabul during the 2021 and 2022, with the highest rate in 2021 and the lowest in 2022. Most of the infected patients were 1 to 10 years old. Face lesion was the most common lesion caused by CL, and most of the patients had at least one lesion in their bodies.

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Conflict of interest

We declare that we have no conflict of interest.

Data availability statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Author Contributions

Shekiba Madadi: Designed the study and co-wrote the paper. Shamim Arif: co-wrote the paper. Mustafa Ansari: co-wrote the paper and collected the data. Ziaulhaq Kaihan: co-wrote the paper. Ghulam Yahya Amiry: co-wrote the paper. Murtaza Haidary: Formal analysis and designed the study experiments and co-wrote the paper.

Table 1. Age distribution of patients with cutaneous leishmaniasis based on age in 2021

	1-10	11-20	21-30	31-40	41-50	51-60	61-70	>70
Male (3411)	1474 (43.2)	830 (24.3)	412 (12.1)	219 (6.4)	211 (6.2)	160 (4.7)	87 (2.6)	18 (0.5)
Female (3064)	1447 (47.2)	659 (21.5)	356 (11.6)	232 (7.6)	186 (6.1)	108 (3.5)	55 (1.8)	21 (0.7)

Table 2. Frequency of lesion site caused by cutaneous leishmaniasis in men in 2021

	1-10 (n =1474)	11-20 (n= 830)	21-30 (n= 412)	31-40 (n= 219)	41-50 (n= 211)	51-60 (n= 160)	61-70 (n= 87)	>70 (n= 18)
Face	701 (47.6)	356 (42.9)	174 (42.2)	105 (47.9)	113 (53.6)	73 (45.6)	35 (40.2)	7 (38.9)
Hand	409 (27.7)	248 (29.9)	138 (33.5)	60 (27.4)	49 (23.2)	53 (33.1)	30 (34.5)	7 (38.9)
Foot	177 (12.0)	100 (12.0)	52 (12.6)	28 (12.8)	27 (12.8)	17 (10.6)	11 (12.6)	3 (16.7)
Widespread	187 (12.7)	126 (15.2)	48 (11.7)	26 (11.9)	22 (10.5)	17 (10.6)	11 (12.6)	1 (5.6)

Table 3. Frequency of lesion site caused by cutaneous leishmaniasis in women in 2021

	1-10 (n= 1447)	11-20 (n=659)	21-30 (n= 356)	31-40 (n= 232)	41-50 (n= 186)	51-60 (n= 108)	61-70 (n= 55)	>70 (n= 21)
Face	672 (46.4)	300 (45.5)	177 (49.7)	110 (47.4)	92 (49.5)	55 (50.9)	27 (49.1)	7 (33.3)
Hand	440 (30.4)	197 (29.9)	95 (26.7)	68 (29.3)	54 (29.0)	32 (29.6)	16 (29.1)	9 (42.9)
Foot	160 (11.1)	71 (10.8)	36 (101.)	34 (14.7)	18 (9.7)	9 (8.3)	8 (14.5)	1 (4.8)
widespread	175 (12.1)	91 (13.8)	48 (13.5)	20 (8.6)	22 (11.8)	12 (11.1)	4 (7.3)	4 (19.0)

Table 4. The frequency of the number of wounds in patients with cutaneous leishmaniasis in 2021

	One	Two	Three	> Three
Male (n= 3411)	2145 (62.9)	711 (20.8)	318 (9.3)	237 (6.9)
Female (n= 3064)	1965 (64.1)	623 (20.3)	269 (8.8)	207 (6.8)

Table 5. Age distribution of patients with cutaneous leishmaniasis based on age in 2022

	1-10	11-20	21-30	31-40	41-50	51-60	61-70	>70
Male (n= 2925)	2006 (68.6)	116 (4.0)	148 (5.1)	109 (3.7)	267 (9.1)	49 (1.7)	86 (2.9)	144 (4.9)
Female (n= 2892)	2056 (71.4)	88 (3.0)	104 (3.6)	119 (4.1)	189 (6.5)	76 (2.6)	44 (1.5)	207 (7.2)

Table 6. Frequency of lesion site caused by cutaneous leishmaniasis in men in 2022

Male	1-10 (n = 2006)	11-20 (n= 116)	21-30 (n= 148)	31-40 (n= 109)	41-50 (n= 267)	51-60 (n= 49)	61-70 (n= 86)	>70 (n= 144)
Face	1163 (58.0)	40 (34.5)	37 (25.0)	26 (23.9)	169 (63.3)	13 (26.5)	24 (31.6)	34 (23.6)
Hand	413 (20.6)	42 (36.2)	48 (32.4)	50 (45.9)	49 (18.4)	22 (44.9)	44 (51.2)	66 (45.8)
Foot	226 (11.3)	18 (15.5)	37 (25.0)	21 (19.3)	27 (10.1)	7 (14.3)	9 (10.5)	25 (17.4)
widespread	204 (102)	16 (13.8)	26 (17.6)	12 (11.0)	22 (8.2)	7 (14.3)	9 (10.5)	19 (13.2)

Table 7. Frequency of lesion site caused by cutaneous leishmaniasis in women in 2022

Female	1-10 (n= 2065)	11-20 (n=88)	21-30 (n= 104)	31-40 (n= 119)	41-50 (n= 189)	51-60 (n= 76)	61-70 (n= 44)	>70 (n= 207)
Face	1118 (54.1)	26 (29.5)	29 (27.9)	31 (26.1)	95 (50.3)	24 (31.6)	15 (34.1)	83 (40.1)
Hand	501 (24.3)	54 (61.4)	53 (51.0)	50 (42.0)	54 (28.6)	30 (39.5)	18 (40.9)	80 (38.6)
Foot	207 (10.0)	3 (3.4)	11 (10.6)	18 (15.1)	18 (9.5)	14 (18.4)	5 (11.4)	18 (8.7)
widespread	239 (11.9)	5 (5.7)	11 (10.6)	20 (16.8)	22 (11.6)	8 (10.5)	6 (13.6)	26 (12.6)

Table 8. The frequency of the number of wounds in patients with cutaneous leishmaniasis in 2021

	One	Two	Three	> Three
Male (n= 2925)	1927 (65.9)	562 (19.2)	269 (9.2)	167 (5.7)
Female (n= 2892)	1950 (67.4)	501 (17.3)	268 (9.3)	173 (6.0)

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References

1. Reithinger R, Dujardin J-C, Louzir H, Pirmez C, Alexander B, Brooker S. Cutaneous leishmaniasis. The Lancet infectious diseases. 2007;7(9):581-96.
2. Khan SJ, Muneeb S. Cutaneous leishmaniasis in Pakistan. Dermatology Online Journal. 2005;11(1).
3. Alemayehu B, Alemayehu M. Leishmaniasis: a review on parasite, vector and reservoir host. Health Science Journal. 2017;11(4):0-.
4. Aronson N, Herwaldt BL, Libman M, Pearson R, Lopez-Velez R, Weina P, et al. Diagnosis and treatment of leishmaniasis: clinical practice guidelines by the Infectious Diseases Society of America (IDSA) and the American Society of Tropical Medicine and Hygiene (ASTMH). Clinical infectious diseases. 2016;63(12):e202-e64.
5. Hamdam P. Why does leishmaniasis result in life-long scars for women in Afghanistan? Public Health. 2020;185:196-8.
6. Steverding D. The history of leishmaniasis. Parasites & vectors. 2017;10(1):1-10.
7. Mosawi SH, Zarei Z, Shams M, Mohammadi K, Sajjadi SA. Environmental health and leishmaniasis by indication on afghanistan: a review. Encyclopedia of environmental health. 2019:458-65.
8. Herrera G, Barragán N, Luna N, Martínez D, De Martino F, Medina J, et al. An interactive database of Leishmania species distribution in the Americas. Scientific data. 2020;7(1):1-7.
9. Hernández-Bojorge SE, Blass-Alfaro GG, Rickloff MA, Gómez-Guerrero MJ, Izurieta R. Epidemiology of cutaneous and mucocutaneous leishmaniasis in Nicaragua. Parasite Epidemiology and Control. 2020;11:e00192.
10. Aerts C, Vink M, Pashtoon SJ, Nahzat S, Picado A, Cruz I, et al. Cost effectiveness of new diagnostic tools for cutaneous leishmaniasis in Afghanistan. Applied health economics and health policy. 2019;17(2):213-30.
11. Stahl H-C, Ahmadi F, Nahzat SM, Dong H-J, Stahl K-W, Sauerborn R. Health economic evaluation of moist wound care in chronic cutaneous leishmaniasis ulcers in Afghanistan. Infectious diseases of poverty. 2018;7(01):63-78.
12. Vink MM, Nahzat SM, Rahimi H, Buhler C, Ahmadi BA, Nader M, et al. Evaluation of point-of-care tests for cutaneous leishmaniasis diagnosis in Kabul, Afghanistan. EBioMedicine. 2018;37:453-60.
13. Fakhar M, Karamian M, Ghatee MA, Taylor WR, Ghohe HP, Rasooli SA. Distribution pattern of anthroponotic cutaneous leishmaniasis caused by Leishmania tropica in Western Afghanistan during 2013-2014. Acta Tropica. 2017;176:22-8.
14. Ghatee MA, Taylor WR, Karamian M. The geographical distribution of cutaneous leishmaniasis causative agents in Iran and its neighboring countries, a review. Frontiers in public health. 2020;8:11.
15. Mosawi S, Dalimi A. Molecular detection of Leishmania spp. isolated from cutaneous lesions of patients referred to Herat regional hospital, Afghanistan. East Mediterr Health J. 2015;21(878-84):12.878.
16. Cardona-Arias JA, Vélez ID, Lopez-Carvajal L. Efficacy of thermotherapy to treat cutaneous leishmaniasis: a meta-analysis of controlled clinical trials. PLoS One. 2015;10(5):e0122569.
17. Plourde M, Coelho A, Keynan Y, Larios OE, Ndao M, Ruest A, et al. Genetic polymorphisms and drug susceptibility in four isolates of Leishmania tropica obtained from Canadian soldiers returning from Afghanistan. PLoS neglected tropical diseases. 2012;6(1):e1463.
18. Khan W, Khan I, Ullah H, Zain S, Panhwar W, Mehmood S, et al. Cutaneous leishmaniasis–Awareness, knowledge and practices among general population in rural and urban areas in Malakand region, Pakistan. Brazilian Journal of Biology. 2021;82.
19. Roien R, Mousavi SH, Ozaki A, Baqeri SA, Hosseini SMR, Ahmad S, et al. Assessment of knowledge, attitude, and practice of health-care workers towards hepatitis B virus prevention in Kabul, Afghanistan. Journal of Multidisciplinary Healthcare. 2021;14:3177.
20. Shahraki SZ, Hosseini A, Sauri D, Hussaini F. Fringe more than context: Perceived quality of life in informal settlements in a developing country: The case of Kabul, Afghanistan. Sustainable Cities and Society. 2020;63:102494.
21. Collier P, Manwaring P, Blake M. Policy options for Kabul's informal settlements. IGC Growth brief, International Growth Centre, London. 2018.
22. Adegboye OA, McBryde ES, Eisen DP. Epidemiological analysis of association between lagged meteorological variables and pneumonia in wet-dry tropical North Australia, 2006–2016. Journal of Exposure Science & Environmental Epidemiology. 2020;30(3):448-58.
23. Fakhar M, Ghohe HP, Rasooli SA, Karamian M, Mohib AS, Hezarjaribi HZ, et al. Genetic diversity of Leishmania tropica strains isolated from clinical forms of cutaneous leishmaniasis in rural districts of Herat province, Western Afghanistan, based on ITS1-rDNA. Infection, Genetics and Evolution. 2016;41:120-7.