RESEARCH ARTICLE

Knowledge about Cutaneous Leishmaniasis among the population in Baghdad, Iraq, 2021

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ABSTRACT

Introduction: Leishmaniasis is one of the most common zoonotic infectious diseases worldwide. It has been ranked second in mortality and fourth in morbidity among all tropical diseases. Leishmaniasis is endemic in Iraq, and Cutaneous Leishmaniasis (CL) is the most common form of the disease.

Objective: To assess the knowledge of the population in Baghdad regarding CL in the year 2021 and to investigate any potential relationships between participants' socio-demographic characteristics and their knowledge about CL.

Methods: A cross-sectional study design was utilised, and data was collected from 449 participants attending outpatient clinics at two teaching hospitals in Baghdad. A designed questionnaire was used for face-to-face interviews, and data were analysed using descriptive and analytical statistics.

Results: The average age of respondents was 39±14.6 years. Approximately 62% of respondents exhibited good knowledge of CL. The education level, employment status, age, and crowding index significantly influenced the respondents' knowledge of CL, with p-values = 0.0001, 0.0001, 0.001, and 0.004, respectively. In contrast, sex did not significantly affect knowledge level, with a p-value = 0.2. A history of prior information about CL or having the disease before was associated with higher current knowledge, with p values = 0.0001 for both.

Conclusion: This study revealed that the knowledge about CL was generally good among the participants. However, the findings highlight the need for targeted education and awareness campaigns to improve control measures related to CL in Baghdad.

Key words: knowledge, Cutaneous, Leishmaniasis, Baghdad boil, Baghdad, Iraq.

INTRODUCTION

Leishmaniasis is a significant zoonotic infectious disease that has been ranked second in mortality and fourth in morbidity among all tropical diseases;[1] it has various forms, including cutaneous leishmaniasis (CL), mucocutaneous leishmaniasis (MCL), and visceral leishmaniasis (VL).[2] The disease is caused by different species of intracellular protozoan parasites from the Leishmania genus. CL is the most common form and is characterised by skin sores or infections that can lead to permanent disfiguring scars.[3] The disease is prevalent in several regions, mainly in developing countries, and its increase is attributed to environmental changes, irregular urbanisation, and factors like poverty and malnutrition.[2,3] The World Health Organisation (WHO) estimates that around 350 million people worldwide are at risk of getting leishmaniasis, with CL accounting for 75% of cases. The disease is reported in 23

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countries across Latin America, Africa, Asia, and South Europe.[4]

Iraq, along with neighbouring countries like Iran, Syria, Saudi Arabia, and Turkey, is endemic for CL. In the Middle East, conflicts, violence, civil war, terrorism, and internal displacement contribute to the reemergence of leishmaniasis, making it a growing public health concern.[5]

Iraq has a long history with CL, being referred to by local names like" "Baghdad boil" and "Oriental sore" The disease in Iraq has two types: a zoonotic type caused by L. major and an anthroponotic type caused by L. tropica. The incidence rate of CL in Iraq varies significantly, ranging from 2.3 to 45.5 cases per 100,000, and it has shown fluctuations over time.[6] Exposure to wars, civil unrest, violence, terrorism, internal displacement, inadequate housing, and garbage accumulation has contributed to the increase in CL cases since 2003, as documented by the Iraqi Ministry of Health.[7]

Raising awareness and informing the population in CL-endemic areas are essential in promoting preventive measures, encouraging early help-seeking behaviour, timely diagnosis, and proper treatment.

Public health authorities and organisations must continue monitoring and addressing the factors contributing to the spread of leishmaniasis to control its impact on affected populations. Research and efforts toward better prevention, diagnosis, and treatment strategies can also help combat the disease's global burden.

Lack of knowledge among communities about sand flies, leishmaniasis, their relationship in causing infection, and its management emphasises the need for health education campaigns to create community awareness about the disease and its vector and management practices to minimise its incidence. Knowledge-based strategies should be strengthened and implemented consistently to raise awareness among the community.[8]

Wars, pervasive violence and internal displacement of populations had contributed to the resurgence of leishmaniasis, resulting in a notable increase in reported cases across the country. Literature from Iraq documents outbreaks occurring in various provinces; in 2008, an outbreak was recorded in Al-Diwaniya governorate, while another outbreak in 2009 occurred in Baghdad governorate, reaching a peak incidence of 45.5 cases per 100,000 population.[9,10]

Many studies have been established in different countries regarding KAP studies on leishmaniasis. A study in Colombia revealed a direct relationship between awareness of the population at risk and the adoption of preventive measures.[11] Studies in different regions, such as the Kingdom of Saudi Arabia, have highlighted low levels of knowledge and inadequate preventive behaviours among the populations at risk.[12] On the other hand, a study from Iraq reported the presence of a gap in knowledge about the ways in which the disease is transmitted.[8] However, studies from Iran,[13] Pakistan,[14] Egypt,[15] and the Syrian Arab Republic,[16] have reported significant gaps in knowledge about the vector of leishmaniasis and their control measures. Addressing the knowledge gaps toward leishmaniasis and its vectors is essential for Health policymakers to successfully implement preventive measures and control programs.

The objectives of this study are to assess the level of participants' knowledge about Cutaneous Leishmaniasis (CL) and to investigate any potential relationships between participants' socio-demographic characteristics and their knowledge about CL.

METHODS

Study design and setting: A cross-sectional study was conducted in outpatient clinics of two teaching hospitals in Baghdad, Iraq - Al Kadhimeen Teaching Hospital in Al-Karkh district and Al Kindy Teaching Hospital in Al-Russafa district December 2020 – April 2021.

Ethical consideration: Before the commencement of the study, the study protocol was reviewed and approved by the ethical committee of the Scientific Arabic Board of

Community Medicine. A written informed consent was obtained from participants before the start of data collection. The collected data were kept confidential and were not divulged except for the purpose of the study.

Case definition, inclusion and exclusion criteria: We included persons aged 20 years and above who were visiting the outpatient clinics in the two hospitals, whether they were patients with Cutaneous Leishmaniasis, their relatives or having diseases other than CL. People unwilling to participate in the interview were excluded from this study.

Sampling and sample size: Two major teaching hospitals in Baghdad, Al Kadhimeen Medical City and Al Kindy Teaching Hospital, were selected conveniently. The sampling method used to select study participants was systematic random sampling to ensure that the sample represented a cross-section of the population attending these hospitals. The total calculated sample size was 453 participants; approximated to 500. Fifty-one participants refused to participate for various reasons, and the final analysis was done on 449 with a response rate of 89.8%.

Tools of the study: Data collection involved direct interviews and questionnaires. Each chosen participant underwent a personal interview to gather the necessary information. The structured questionnaire provided insights into demographic and socioeconomic attributes. The questionnaire was adapted from previous studies on leishmaniasis knowledge within the community, with adjustments made based on findings from a pilot study involving 35 individuals. The questionnaire underwent review, revision, and approval by the supervisor and the scientific Arabic board of the community medicine committee. The Cronbach's coefficient Alpha for knowledge was 0.8. The structured questionnaire covered independent variables: age, gender, job categories, education level, crowding index, history of infection, and prior information.

The dependent variable was knowledge, which was assessed using questions related to the disease, skin manifestations of CL, treatment, vectors, and breeding sites.The crowding index was calculated by dividing the number of family members by the number of rooms apart from the kitchen and bathrooms. The crowding index was divided into four classes: high social class, middle-high social class, middle-low social class, and low social class, using quartiles to determine the cutoff values.[17]

Scoring: The knowledge level Score on CL disease among the studied group was scaled from 0 to 22. We allocated 0 mark for "No" answers, 1 mark for "I don't know" and 2 marks

Table 1 | Socio-demographic characteristic among participants

Variables	N	%
Age		
20-29	120	26.3
30-39	126	28.1
40-49	73	16.3
50-59	86	12.2
> 60	46	10.2
Sex		
Male	193	43
Female	256	57
Crowding index		
High social class	12	4.2
Middle-high social class	8	1.8
Middle-low social class	123	27.4
Low social class	299	66.6
Employment Status		
Employed	267	59.4
Self-employed	82	20.3
Unemployed	100	22.3
Educational level		
Illiterate	125	27.8
Read & write	84	20.7
Primary school	80	17.8
Secondary school	88	12.6
High education	72	16.1
Prior information about CL		
Yes	294	65
No	155	35
Prior infection with CL		
Yes	207	46
No	242	54
Total	449	100

Table 2 | Assessment of knowledge regarding CL among participants

Statement / Questions	No		Don't know		Yes	
	N	%	N	%	N	%
CL is a deadly disease	279	62.1	121	26.9	49	10
The patient with CL suffers from a skin lesion	51	11.4	73	16.2	325	72.4
Exposed areas of the body are most commonly affected by CL	49	10.9	100	22.3	300	66.8
Presence of skin lesion/deformity (Blister/ Papule/ ulcer) is seen on the bodie's affected part.	76	16.9	70	15.6	303	67.5
Skin disfiguring and scars may be CL's medical complications.	42	9.4	54	12.0	353	78.6
CL is a treatable disease	55	12.2	167	37.2	227	50.6
The causative agent of the disease is the Leishmania parasite.	79	17.6	126	28.1	244	54.3
CL is transmitted by biting a tiny flying insect (Sandfly).	66	14.7	44	9.8	339	75.5
The insect's activity time is usually at night.	0	0	104	23.2	345	76.8
Breeding places of the causative vector may be dirty places and wastes.	114	25.4	73	16.3	262	58.4
Breeding places of the vector may be caves, animal burrows, cracked walls, and tree-holes.	138	30.7	41	9.1	270	60.1

In our questions for th eparticipants, we used also the local name Baghdad boil to refer to the Cutaneous Leishmaniasis (CL)

for "Yes". The result of the knowledge was dichotomised to a good (≥ 60%) and a poor (< 60%) of the scores.

Data Management: Before the data entry and analysis, the questionnaire forms were checked to ensure they were filled out correctly and contained no errors or missing information. This step is crucial to maintain the quality and integrity of the data.

Data entry: After the data checking, the information from the questionnaire forms was entered into a computer-supported database and statistical software programs. This step is essential to digitise the data and make it accessible for further analysis. Once the data was entered, it was extracted from the database, and the relevant variables were collated and coded appropriately. This step involves organising the data in a way that it is ready for analysis.

Statistical analysis: The data was analysed using the Statistical Package for the Social Sciences (SPSS) version 24. The Pearson chi-square test was used to test the association between dependent and independent variables. A P-value equal to or less than 0.05 is considered statistically significant.

RESULTS

This study enrolled 449 participants, with a mean age of 39±14.6 years, ranging from 20 to 71 years. The gender distribution revealed 256 females (57%) and 123 males (43%), resulting in a female-to-male ratio of 0.7:1. For other sample characteristics, see Table 1.

Of the participants, 325 (72.4%) acknowledged that individuals afflicted with Cutaneous Leishmaniasis (CL) could manifest skin lesions. Furthermore, 300(66.8%) participants indicated that this ailment primarily affects the body's most exposed areas. Three hundred and three (67.5%) of the surveyed persons recognised that skin lesions could be blisters, papules, and ulcers commonly appear on the affected body parts. A substantial majority, specifically 353 (78.6%) of the respondents, were aware that CL can result in skin disfigurement and scarring as potential medical complications. However, only 227 (50.6%) participants knew that CL is a treatable condition. Alarmingly, a mere 49 (10%) of the respondents were aware of the life-threatening nature of CL. Table 2 shows the details of all assessments of knowledge regarding CL among participants.

Table 3 shows the association between the level of knowledge and some variables. Age, crowding index, employment status, educational level, presence of previous knowledge about CL, and prior history of CL showed a statistically significant association

Table 3 | The association of respondents' knowledge about CL with socio-demographic characteristics.

Variables	Good Knowledge		Poor knowledge		
	N	%	N	%	X^2, df, P-Value
Age					17, 4, 0.001
20-29	64	54.2	54	45.8	
30-39	76	60.3	50	39.7	
40-49	38	52.1	35	47.9	
50-59	64	74.4	22	25.6	
> 60	36	78.3	10	21.7	
Sex					5, 1, 0.2
Male	108	56.0	85	44.0	
Female	170	66.4	86	33.6	
Crowding index					13, 3, 0.004
High social class	15	78.9	4	21.1	
Middle-high social class	7	87.5	1	12.5	
Middle-low social class	88	71.5	35	28.5	
Low social class	168	56.2	131	43.8	
Employment Status					24, 2, 0.0001
Employed	200	67.2	87	32.6	
Self-employed	31	37.8	51	52.2	
Unemployed	67	67	33	33	
Educational level					53, 4, 0.0001
Illiterate	66	52.8	59	47.2	
Read & write	39	46.4	45	53.6	
Primary school	39	48.8	41	51.2	
Secondary school	69	78.4	12	21.6	
High education	65	90.3	7	9.7	
Prior information about CL					13, 1, 0.0001
Yes	232	78.9	62	21.1	
No	46	29.7	109	70.3	
Prior infection with CL					13, 1, 0.0001
Yes	147	71.0	60	29%	
No	131	54.1	111	45.9	
Total	278	100	171		

with the participants' level of knowledge, with a p-value of 0.001 for the age group, 0.004 for the crowing index and 0.0001 for others.

DISCUSSION

Leishmaniasis is a zoonotic infectious disease that ranks second in mortality and fourth in morbidity among all tropical diseases.[1] Cutaneous leishmaniasis (CL) is an emerging and reemerging disease, posing a significant public health problem in some regions, particularly developing countries. The prevalence of leishmaniasis has been increasing worldwide, including in Iraq, due to various factors, including environmental changes, irregular urbanisation, increased garbage in the cities, internal displacement, conflicts, poverty, and malnutrition.[2-4,6]

Knowledge-based strategies have a significant effect of strengthening and consistently implementing to raise awareness among the community for better uptake of preventive measures, lower risk behaviour, and earlier help-seeking for diagnosis and treatment.[8]

In the current study, the age of respondents was 39 ± 14.6 years; it was similar to that reported in the Iranian study [13] but higher than that previously reported in the Syrian Arab Republic, which was 32.3± 12.4 years,[16] and Iraq which was 21.64 ± 16.9 years.[18] The rate of females 256 (57%) was higher than that reported in Iran 65 (27.5 %) [13] and Ethiopia 167 (42.6 %).[20] It is in agreement with a study from Syrian Arab Republic 41(59%).[16]

In the current study, respondents with good knowledge about CL were 278 (62%). This finding is higher than in Egypt, which was 11 (55%),[15] and in Iran, which was 194 (47.9%).[19] Still, it is lower than that in households of endemic areas in Colombia, 212 (85%)[11] and residents of endemic areas in South Ethiopia, 265(67.6%).[20] The variations might be attributed to a good background among people on the disease in endemic areas.

In the current study, 169 (37.6 %) respondents obtained their earlier information about CL from health workers. This finding disagrees with that reported in KSA, where the media and the internet were predominant sources for 916 (76.3%) participants.[12] Others showed that families, friends, or neighbours were 135 (57%).[21] The difference might be attributed to the variation in the culture and the difference in the epidemiology of CL. The high prevalence of the disease leads to the dissemination of a lot of information on CL to the people.

In our series, 325 (72.4 %) knew that a patient with CL suffers from a skin lesion. This rate is nearly similar to that reported by a study from KSA, 833 (69.4 %),[12] but it is higher than that reported from Paraguay, 246 (55%).[22] Also, in our study, 353 (78.6%) respondents knew that skin scarring and disfigurement might complicate CL; the rate was higher than that reported from South Ethiopia, which was 225 (57.4%).[20] These variations might be attributed to different cultural and social backgrounds towards the disease. A CL lesion and disfigurement of the skin on the face is well known for residents in Baghdad and may negatively impact beauty standards, making Iraqi people aware of it.

About two-thirds of the respondents, 299 (66.8 %) in our study, knew that skin lesions of CL involve exposed areas of the body, higher than that reported from KSA, 413 (34.4%).[12] About half of the participants in our sample, 227 (50.6 %), stated that CL could be treated, nearly similar to the rate reported from Iran 227 (50.6 %), but higher than that reported from South Ethiopia 137(34.9%).[20]

Only 45 (10%) Participants in our sample stated that CL is a deadly disease compared to about half of the sample from KSA, 599 (49.9 %).[12] Disseminating false information in the communities might cause these differences in rates. About half of the participants in our series, 244 (54.3 %), knew the causative agent of CL compared to only 77(6.4%) from KSA.[12] Similarly, 339(75.5%) participants in our sample knew that sand fly is the vector for CL; the rate is much higher than that reported from Colombia, 87 (35%),[11] Pakistan, 40 (16%),[14] and Egypt, 7(5%).[15] endemicity of Baghdad with CL might make people in Baghdad more aware of the causative agent and the vector of CL.

Regarding the breeding places of the sand fly, 262 (58.4 %) of our participants knew that it breeds in dirty places and waste, supporting nearly similar rates from Iran, 283 (66.7%).[13]

In the present study, 270 (60.1%) participants stated that breeding places of the causative vector may be caves, animal burrows, cracked walls, and tree holes; a finding is higher than that reported in KAS 97 (8.1 %).[12]

Sandflies, the vector of CL, are mainly active at night. In our sample, 345 participants (76.8%) were aware of this fact compared to only 312 participants (26%) from KSA.[12] Differences in the prevalence of CL between Iraq and KSA and the impact of educational campaigns might explain this disparity.

Our study revealed that age significantly affects the participants' knowledge level about CL with a p-value of 0.001). This finding contradicts what was reported by a study in the Syrian Arab Republic.[16] Sex was not significantly associated with respondents' knowledge level of CL, with a p-value of 0.2, similar to that reported by a study from the Syrian Arab Republic.[16] Furthermore, the crowding index significantly influenced the respondents' knowledge (P=0.004). This finding is in line with the study from Bolivia.[23]

The current study revealed that the participant's education level significantly influenced CL knowledge level, with a p-value of 0.0001). This finding is similar to that in Palestine.[24] However, this contrasts with what was reported from the Syrian Arab Republic[16] and Northwest Ethiopia.[25] This difference might be attributed to differences in the country's educational curriculum. In the present study, employment status and earlier information of respondents about CL significantly influenced their knowledge level about the disease, with a p-value of 0.0001 for both. This finding is similar to that reported in Nigeria.[26]

CONCLUSION

The knowledge about CL was generally good among the participants surveyed in our study. However, the findings highlight the need for targeted education and awareness campaigns to improve control measures related to CL. Further analysis and qualitative research may be needed to design appropriate strategies to improve the overall management of CL.

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Abbreviations list: Cutaneous leishmaniasis (CL), Kingdom of Saudi Arabia (KSA), Mucocutaneous leishmaniasis (MCL), Statistical Package for the Social Sciences (SPSS), Visceral leishmaniasis (VL), World Health Organisation (WHO).

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