

# Knowledge and Attitudes Linked to Black Fever among Samples of Citizens in Some Regions of Wassit Province

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## ABSTRACT

Black fever is a systemic disease caused by protozoan parasites of the genus *Leishmania*. It is a disease linked to deficiency and associated with malnutrition, displacement, poor housing conditions, weak immune system and lack of resources. Therefore, for the success of programs for the prevention and control of any disease, the most important assumption is the participation of the community. Therefore, this study aimed to assess the knowledge and attitudes among samples of citizens about black fever in the province of Wassit, in the Middle East of Iraq between Baghdad and Misan. In this study, a cross-sectional study of 101 random samples of citizens was conducted from July to October 2018. Knowledge and attitudes were assessed using a typical self-administered questionnaire. Descriptive analysis was used to express the results. A total of 101 participants answered the questionnaire. In general, participants demonstrated good knowledge and positive attitudes toward black fever based on 12 knowledge questions and seven attitude statements. Gaps have been identified in the knowledge of the incubation period of black fever (25.7%), a vehicle of black fever is the sand fly (50.5%) and the possibility of transmission of black fever by the carrier worms (23.8%). Most participants agreed that local communities should be actively involved in the fight against black fever (87.1%) and there has been obligation to treat infected people (94.1%). On the contrary, the majority of participants (79.2%) do not express any attitude with the possibility of controlling black fever through the participation of the community in their own region. The participants in this study had good knowledge and positive attitudes towards black fever, although the data are indicative of gaps in the knowledge of citizens in the province of Wassit.

**Keywords:** Black fever, Samples of citizens, Wassit province

## 1. INTRODUCTION

Black fever popularly known as *kala-azar* is one of the oldest diseases known to mankind. Black fever or visceral leishmaniasis (VL) is the most severe form of leishmaniasis caused by protozoan parasites of the genus *Leishmania* [1]. It is a chronic systemic disease characterized by fever, hepatic splenomegaly, lymphadenopathy, pancytopenia, weight loss, weakness and death, if left untreated [1]. The etiological agents belong to the complex *Leishmania donovani* (L.d), *L.d donovani*, *L.d infantum* and *L.d arachibaldi* in the Old World and *L.d chagasi* in the New World. The Old World species are transmitted by

species of the genus *Phlebotomus* (sandflies). It is known that human, wild and domestic animals act as hosts of the tank, the parasite enters the macrophages, where it multiplies and establishes the infection [2].

The disease is the second cause of death by parasites in the world after malaria, responsible for around 500,000 incidents worldwide every year. Along with Chagas disease and sleeping sickness, black fever is one of the most dangerous and forgotten tropical diseases. Currently, leishmaniasis occurs on four continents and is considered endemic in 88 countries, 72 of which are

developing countries [3]. Nineteen percent of all cases of visceral leishmaniasis occur in Bangladesh, Brazil, India, Nepal and Sudan [3-5]. Visceral leishmaniasis is often found in remote areas, with health facilities that are absent or underdeveloped, where the tools to assess and identify patients are inadequate and, above all, with little or little trained labor.

Due to the lack of updated information, even the most critical cases remain untreated or without information and may represent a standby of infection (especially in areas where transmission is from person to person) to relatives and neighbors [6]. For the success of prevention and control programs for any disease, the most important requirement is the participation of the community. The cooperation of the affected population is essential for the implementation and use of program activities. The creators of the program must understand the knowledge and attitudes of the community in relation to the disease, because these are the determinants of community participation [7].

Iraq is one of the countries in the Middle East that exhibited increased prevalence of VL in Wassit province a governorate located in the endemic area, middle-east of Iraq between Baghdad and Misan. Most cases occur in rural areas where deprived hygienic measurement and educational programs. And due to lacking of data regarding knowledge and attitude of citizens towards VL so, this study was conducted to assess the knowledge and attitudes towards black fever among samples of citizens in Wassit province in order to develop disease control programs that would help to minimize the occurrence of the disease cases in Iraq, particularly among citizens in Wassit province.

## 2. MATERIALS AND METHODS

### 2.1. Subjects and patients specimens

#### 2.1.A. Study design, site and participants

A descriptive and cross-sectional study was conducted from July to October 2018, among samples of citizens from the province of Wassit. Four different regions of Wassit province were chosen Al-Suwaira, Al-Aziziyah, Al-Doboni and Al-Kut. These examples include several experiences ranging from the inability to read and write to bachelors. The data was collected by an investigator and they were also responsible for providing explanations to the participants, if requested by a self-administered questionnaire that was distributed to eligible participants for their responses. The questionnaire was tested first. After a complete review of the validity of the contents, the initial draft was sent to three experts to give their opinion on relativity, simplicity and the importance of the content.

It was divided into three sections. The first section examined the demographic information of the participants, such as gender, age, employment status, qualification, marital status and residence. The second

section included 12 questions that evaluated the knowledge of these samples in the province of Wassit about black fever. Knowledge questions were used to assess participants' general knowledge about black fever and its components. It evaluated the information as causes, signs and symptoms, transmission, incubation period and its prevention. In the last section, attitudes were evaluated based on seven statements.

### 2.1. B. Data analysis

The responses of participants were analyzed by using SPSS v.20. Descriptive analysis was used to express the demographic information in frequencies and percentages. The knowledge questions consisted of Yes, No and I don't know response categories. The responses of participants over attitudes statement were measured on three points of agreement consisted of agree, disagree, and I don't know.

## 3. RESULTS AND DISCUSSION

### 3.1. Demographic information of the participants.

A total of 101 participants responded to the questionnaire. Majority of participants were aged < 30 years (n = 89, 88.1%), while lowest participants were aged between (n= 30-40, 2.97%). In addition, female had the highest participation (71,70.3%), while male had the lowest (30, 29.7%). With regard to qualifications, the majority of participants had Bachelor's degree (n = 66, 65.3%), while lowest of participants had primary school education and unable to read and write as (n = 5, 4.95%). But when take into consideration occupational status, students (n = 54, 53.5%) were the major respondents in this study. The number of married respondents (n = 26, 25.7%) were lower than the single participants (n = 75, 74.3%). The numbers of respondents from rural areas (n = 19, 18.8%) and urban areas were (n = 82, 81.2%) (Table 1).

It is known that visceral leishmaniasis has an undetermined prevalence in several areas of Iraq. The uniqueness of this study is that it has recognized an area where there is not much information available. However, it is important to bear in mind that the results of this study have limitations, although the study was carried out in four areas of the Wassit province, the results may not be generalized to other areas. In addition, the woman represented most of the participants, so it is useful to review a large sample size in different areas to clarify this problem. Despite the limitations identified, our results have important consequences for the prevention of black fever and future research. The results of this study could have important implications for the development of future approaches to education about black fever and the delivery of data to people to increase their knowledge and attitudes towards the control and prevention of black fever to improve health public against this disease.

Table 1. Demographic information of the participants.			
Demographic information		Number	(%)Percent
Age Groups	< 30	89	88.1 %
	(30 - 40)	3	2.97%
	(41 - 50)	4	3.96 %
	> 50	4	3.96 %
	Total	101	100 %
Gender	Male	30	29.7%
	Female	71	70.3%
	Total	101	100 %
Qualifications	Unable to read and write	5	4.95%
	Primary school	5	4.95%
	Secondary school	25	24.8 %
	Bachelor's	66	65.3 %
	Total	101	100 %
Occupation Status	Farmer	5	4.95%
	Government employee	27	26.7%
	Student	54	53.5 %
	House wife	12	11.9%
	Others	3	2.97%
	Total	101	100 %
Marital Status	Married	26	25.7 %
	Unmarried	75	74.3%
	Total	101	100 %
Residence	Rural	19	18.8%
	Urban	82	81.2%
	Total	101	100 %

### 3.2. Knowledge of participants towards black fever.

The knowledge of participants about black fever (based on 12 knowledge questions). Overall, 100 % (n = 101) participants exhibited good knowledge of black fever. 66.3 % of the participants (n = 67) correctly answered that black fever is a parasitic disease. The participants

were highly knowledgeable about the role of preventative measures against black fever (n = 87, 86.1%). Majority participants knew about the importance of treatment the patients with black fever (n = 84, 83.2%). On the contrary, participants were least knowledgeable about the incubation period of black

fever (n = 26, 25.7%). Likewise, (n = 51, 50.5 %) participants incorrectly answered that vehicle of black fever is sand fly. Moreover, vast majority of participants (n = 77, 76.2%) incorrectly responded that black fever

is spread by the carriers' worms. The description of knowledge of participants about black fever is summarized in (Table 2).

Questions	Correct answer (%)	Incorrect answer (%)
Black fever is a parasitic disease	67 (66.3)	34 (33.7)
Black fever is a very serious disease	71 (70.3)	30 (29.7)
Incubation period of Black fever is 2 weeks- several years	26 (25.7)	52 (74.3)
In a number of cases symptoms appear during 2-6 months	53 (52.5)	48 (47.4)
Traveling to an area that is experienced with black fever is a risk factor for the disease	79 (78.2)	22 (21.8)
Black fever is spread by sand fly	50 (49.5)	51 (50.5)
Black fever is spread through malaria mosquitoes	37 (36.6)	64 (63.4)
Black fever is spread by the carriers' worms	24 (23.8)	77 (76.2)
Symptoms of the disease are high fever, abdominal swelling and muscle fatigue	78 (77.2)	23 (22.8)
Black fever can affect all ages	76 (75.2)	25 (24.8)
It is highly recommended to take preventive measures against this disease	87 (86.1)	14 (13.9)
Black fever is a life-threatening disease in the absence of treatment	84 (83.2)	17 (16.8)

The result of our study showed that most of the respondents (83.2%) have saw that kala-azar is life threatening in case of untreated, as well as most of them were knowledgeable. Our result is lower than that from a study conducted in Ethiopia reported that 96.7% of the participants have considered kala-azar as life threatening lead to death [7]. The variability between the studies could be due to the lack of community health education, community awareness, the socioeconomic status of the different areas and the fact that kala-azar is a newly established disease in the regions of Wassit.

Our results revealed that 49.5% (n=50) of participants provided correct answers about the mode of transmission of the parasite via sand fly whereas 50.5% (n=51) provided incorrect answers about the mode of transmission. This result is lower than that found in Ethiopia [7] where 68% of the participants provided correct answers that the causative agent of the disease was transmitted through sand fly . On the other hand, our result was higher than that found in Sudan [8], where only 6% indicated that the disease is transmitted by sand fly. The likely reason of this discrepancy could be the fact that the recurrence of the disease and their emergence continuously in the cities of Wassit province helped the community to get more information and

educational about the disease and its transmission to man.

The results of this study showed that people's knowledge about the symptoms of the disease is high (77.2%) which is nearly similar to Ethiopian results found that more than half of the respondents (62%) knew at least two signs and symptoms of the disease. This might be due to an increased attention towards leishmaniasis after the onset of numerous cases and/or role of health extensions in teaching the community currently. On the other hand, the results revealed that 22.8% (n=23) of the respondents had no idea of the sign and symptoms of the disease. This result is higher than the results reported that 17% and 16.1% of the respondents had no idea of the signs and symptoms of the disease in Ethiopia [7] and India [9], respectively.

The results showed that more than two third of the respondents (86.1%) were highly recommended to take preventive measures against this disease, only 6.9% of the respondents said that the disease could not be prevented and the rest (6.9%) did not know whether it could be prevented or not. These results are in accordance with the results obtained in Ethiopia reported that (81.2%) of the respondents were recommended to implement preventative measures

against this disease, whereas only 5.3% of the respondents said that the disease could not be prevented and the rest (13.5%) did not know whether it could be prevented or not. People's knowledge about the preventability of the disease is high. This might be due to the fact that as people recognizes about the unavailability of extra parasitic diseases (the fact that most are vector-borne diseases), they would conclude that leishmaniasis can also be prevented.

### 3.3. Attitudes of participants towards black fever.

The attitude of participants towards black fever (based on seven attitude statements). Overall, vast majority of the participants showed positive attitudes regarding black fever. A large proportion of respondents (n = 68, 67.3%) were agreed that black fever induce health problem in the local communities. Majority of

respondents believed that local communities should be actively involved in the fight against the black fever (n = 88, 87.1%). Similarly, participants believed that infected people with black fever should be treated (n = 95, 94.1%). Low percentage of participants (n = 5, 4.9%) believed that there should be complete cure of the disease, while (n = 5, 4.9%) did not believe that. However, 35.6% (n = 36) of the participants not believed that they are exposed to the seriousness of the disease. Contrary, 33.7% (n = 34) of the participants responded that black fever is not represented a severe problem in our area. Furthermore, 79.2% (n= 80) of the participants did not express any attitude with the possibility to control black fever disease through community participation in their region. The description of attitudes of the participants about black fever is presented in (Table 3).

Table 3. Attitudes of participants towards black fever.			
Questions	Participant's responses N (%)		
	Agree	Disagree	I don't know
Black fever induce health problem in the Local communities	68 (67.3)	21 (20.7)	12 (11.9)
The problem of black fever is severe in your area	8 (7.9)	34 (33.7)	39 (38.6)
Local communities should be actively involved in the fight against black fever	88 (87.1)	5 (4.9)	8 (7.9)
Treatability of the disease	95 (94.1)	3 (2.9)	3 (2.9)
There should be full cure of the disease	5 (4.9)	5 (4.9)	91 (90.1)
I am exposed to the seriousness of the black fever disease	31 (30.6)	36 (35.6)	34 (33.7)
It is possible to control the black fever disease through community participation	12 (11.9)	9 (8.9)	80 (79.2)

Overall, vast majority of the participants showed positive attitudes regarding black fever. The current study sheds light on the attitudes of participants towards the health problem induced by black fever in the local communities. The results showed that (67.3%) of the participants were agree that black fever was induce health problem in the local communities, whereas 20.7% of the participants were disagree towards this opinion and 11.9% did not know about the impact of the disease on public health. This finding is in agreement with Ethiopian results reported that 53.1% of the participants agree that black fever induces health problem in the local communities, whereas 43.6% of the participants disagree towards this opinion and 3.3% did not know about the health problem associated with the disease [7].

A percentage of 87.1 of the respondents believed that local communities should be actively involved in the fight against the black fever, whereas 4.9% of the respondents did not believe. This in accordance with Ethiopian results reported that approximately 80% of the respondents believed that communities should be

actively involved in the fight against kala-azar, whereas 7.6% of the respondents did not believe that [7].

The majority of the respondents (94.1%) were aware that the disease can be treated, while only 2.9 % believed that it cannot be treated at all. This result is in accordance with Ethiopian results reported that the vast majority of the respondents (95.7%) were aware that the disease can be treated, while only 2.6% believed that it cannot be treated at all. On the other hand, this result is higher than that of a study conducted in rural areas of Nepal, where 78.9% and 48.8% of the respondents were aware that the condition can be treated, while less than 2% believed that it cannot be treated at all [10]. This might be due to the outbreak in 2005 [11], the Addis Zemen health center and Medicines sans frontiers-Greece gives special attention to diagnosis and treatment of kala-azar, allowing people to know about the treatability of the disease, or can be due to difference in the settings (Addis Zemen is an urban area while the study in Nepal was conducted in rural areas) and the time between the two studies.

A very low percentage (4.9%) of the respondents believed that a complete cure of the disease is possible, and only (4.9%) believed that it cannot be cured completely. While majority of respondents (90.1%) did not know about the possibility of complete cure of the disease. Therefore, people's attitude about the complete cure of the disease is low. This finding is mismatched with Ethiopian results [7], found that the majority (86.4%) of the respondents believed that a complete cure of the disease is possible, and only 7.3% believed that it cannot be cured completely. The variation in the people's attitude towards complete cure of the disease might be due to dissimilar reasons like community consciousness, and the people's practice to ask patients, which helps to know more about the disease.

The current study also sheds light on the attitudes of participants towards control of black fever through community participation, the people's attitude towards control of the disease through community participation were low by which (11.9%) believed that black fever could be controlled through community participation, whereas (8.9%) of the respondents did not believe that. This finding is opposite to Ethiopian results reported that (78.9%) of respondents believed that black fever could be controlled through community participation, whereas (7.6%) of the respondents did not believe that [7]. The variation might be attributed to the outbreak in 2005 [11], the Addis Zemen health center that gives special attention to control of black fever, permitting people to see about the inhibition and control of the disease, or can be due to difference in the geographical area (Addis Zemen is an urban area while most cases in our study occur in rural areas).

The results of this study could have significant implications for the development of future strategies for education about black fever and the provision of information to people in rural and urban areas in general, to improve their knowledge and attitudes towards black fever. In addition, this study highlights the need for more research in areas that reduce the gap in the implementation of their knowledge through continuous communication of behavioral changes and activities related to social use.

#### 4. CONCLUSION

Based on data obtained from this study, it can be concluded that the majority of participants were aged < 30 years (n = 89, 88.1%), and had Bachelor's degree (n = 66, 65.3%). As well as, the participants showed good knowledge and positive attitudes towards treatment and preventative measures against black fever. Generally, 100 % (n = 101) participants exhibited good knowledge of black fever. Overall, vast majority of the

participants showed positive attitudes regarding black fever. However, there are some improvements in some areas of knowledge of the mechanical vector of black fever and the possibility of controlling the attitudes of the disease; the results may not be generalizable to other environments. Therefore, more studies should be conducted to validate the results of this study. We strongly recommend conducting a large group study by recruiting a large number of participants to support the results of the ongoing study that could lead to a better understanding of this problem. In addition, the regular educational program for the prevention and control of visceral leishmaniasis is recommended.

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