

# Prevalence Of Cutaneous Leishmaniasis In Al-Najaf / Iraq

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**Abstract:** *Cutaneous leishmaniasis, is a diseases transmitted by sand-flies, which infect both genders and all age groups; the study was conducted in Al-Najaf /Iraq, during the period (September 2018 - April 2019). Data collected from four Hospitals (Al-Sadr Teaching Hospital, Al-Hakeem Teaching Hospital, Al-Forat Teaching Hospital and Al-Sajad Teaching Hospital). Data included 321 patients of both genders aged ( $\leq 10$ - $\geq 51$ ), from urban and rural areas and different occupations; infection was Clinically examined by a physician (skin specialist). The results recorded high rate of infection with cutaneous leishmaniasis during the period of the study, in January reaching to 26.7 % ,While it was less in April 7.7 %, with a statistical significance between months of the study, also results indicated that the highest infection was in age range (11-21 ) year old reach to 7.7 according to age groups. Also the results showed the high rate of infection in males reaching to 9.3 as compared in females, with statistical significance between age groups and gender. The results showed that the highest incidence was 33% on the patients' hands, multiple lesions more than single lesion, with significant differences between number and location of lesions on the patient's body. In the present study, the results state that leishmaniasis is prevalent in rural (54.3%) more than in urban areas (45.7 %.), also the military is more susceptible to infect with leishmaniasis .As compared with other occupations with significant differences between rural and urban areas as well as different occupations.*

**Keywords.** *Cutaneous leishmaniasis, Epidemiological, Iraq.*

## INTRODUCTION

Leishmaniasis is a dangerous disease which has significant public health impact, the main cause of this disease is poverty, Malnutrition, displacement, poor housing, illiteracy, gender difference, littleness of the immune system and lack of resources [1]. Leishmaniasis is spread in 88 countries where the overall prevalence is 12 million people are at risk, particularly in developing countries [2]. Iraq is one of the main endemic area in which the spread of leishmaniasis, So the disease is called a common name is he grain of Baghdad depending on the areas where the disease spreads [3] The disease is caused by Protozoan Parasites which belongs to the genus Leishmania and is transmitted mainly through the bite of sandflies Phlebotomus [1].

In the infective stage, the sand-fly insert Promastigote to the host's during feed it on blood . Subsequently the diagnostic begins, during which Promastigote phase transform into Amastigote phase and multiply themselves inside macrophages. To complete the cycle, the sand-fly injects infected macrophage again through a feed it on blood , injected Amastigote transform into Promastigote in the mid gut, they divide themselves and finally migrate to the anterior mid gut and foregut, The length of the parasite 5-14  $\mu\text{m}$  [4]. The burden of

Leishmaniasis is increasing due, disruption of health systems in endemic zones, migration and environmental changes [5]. It is epidemiologically diverse and distributed worldwide with marked regional differences in the vector and parasite species, transmission route, environment, reservoirs and clinical profile[6].Cutaneous Leishmaniasis the most prevalent species and is in the shape of skin infection. It produces destructive and disfiguring lesions of the face which may not disappear from the skin if leaves untreated for a long time [7]. Leishmania infection is transmitted to human by mean of the bite the sand fly [8]. The infection can rarely be transmitted by other wherewithal like blood transfer [9], syringes sharing [10], as well from mother to kid through pregnancy [11].

### Epidemiology

WHO considered Cutaneous Leishmaniasis as a large public health trouble [12]. The international rating of Cutaneous leishmaniasis showed that 70-75% of cases were in Syria, Afghanistan, Algeria Brazil, Colombia, Ethiopia, Costa Rica, North Sudan, Peru and Iran [13]. In Iraq, the stated cases of Cutaneous leishmaniasis were (1655) form 2004 to 2008 year, [13]. Cutaneous leishmaniasis is prevalent in Middle Eastern including Iraq and Syria, whereas, is declining in time in some countries such as Saudi Arabia [14].Epidemiology of Cutaneous leishmaniasis in Iraq is unbalanced, with large and random fluctuations in disease incidence and spread [15].

Aim of study to identify the incidence of cutaneous leishmaniasis in Al-Najaf during the period ( September 2018-April 2019); and was to focus on the Epidemiological study of the disease based on statistics, Health guidelines function an substantial role in reducing disease prevalence to address the causes of the disease and make citizens aware .

## **MATERIALS AND METHODS**

### Data Collection

The study was conducted in Al-Najaf during period (September 2018 - April 2019). Data were collected from four Hospitals (Al-Sadr Teaching Hospital, Al-Hakeem Teaching Hospital, Al-Forat Teaching Hospital and Al-Sajad Teaching Hospital). This study was conducted on 321 patients with cutaneous leishmaniasis, (208 male and 113 females aged  $\leq 10 - \geq 51$ ).They were clinically examined by a physician (Skin specialist).

### Clinical Diagnosis

Cutaneous Leishmaniasis diagnosis depends on the clinical signs which start as ulcer in the place of sand-fly bite; on the uncovered parts of body. The ulcer increase in size and develop to node; and then ulcerates and crusts border of ulcer is raising. May be multiple lesions, when the patient has receive a den of sand-fly. The ulcer is painless unless there is bacterial or fungal infection .The incubation period is 2-8 weeks [16].

### Epidemiological and Clinical Information

The examination form included details the study of epidemiological such as age, gender, History of appearance of symptoms, residence and job, for Detection of endemic areas. Clinical data included (clinical examination), localization of the ulcer on the patient's body, number it.

### Statistical Analysis

Analysed Data with use Chi-X2 with  $P < 0.05$  to explain differences of statistical significance between months of year, age groups ,site of lesions and occupations, as well as data analysed

with using T-Table with  $P < 0.05$  to explain differences of statistical significance between genders (male and female), Number of lesions and residence.

## RESULTS AND DISCUSSIONS

### Prevalence of Cutaneous Leishmaniasis According to Months the Year

Data 366 patients with lesions were collected, Clinical diagnosis Showed that 321(95.5%) persons infected with Cutaneous Leishmaniasis (males and females) their ages range ( $\leq 10 - \geq 50$ ) years old, from rural and urban areas and different of occupations. The study was conducted within 8 months (September 2018- April 2019) in Al-Najaf /Iraq. Generally, results showed statistically significant difference in months of the study by use Chi-X2 ( $p < 0.05$ ) reached to 8.4 in January 2019, indicating that the disease is spreading in winter months more than summer in which the highest percentage with cutaneous leishmaniasis 26.1% in January whereas the lowest was 7.7 % in April (Table1). Seasonal differences are effect on the location of cutaneous leishmaniasis, vector host and the disease epidemicity [17].

The present study indicated the spread of cutaneous leishmaniasis in 8 months provinces as follow: January 88 (26.1%), December 4 (12.7%), November 37(11%), October and march 33 (9.8 %), February, September and April were 31(9.2%), 30(8.9%) and 26(7.7%) (Figure 1). I found that the disease is most common in cold months. Some studies confirmed same finding and showed the high spread of cutaneous leishmaniasis in cold months [18]. Activity of sand-flies in summer and incubation period of the disease till fall may account for this finding [19]. It's clear that the infected of cutaneous leishmaniasis in Iraq is due to highly distribution of sand flies. Distribution of sand flies is be based on local environmental agents (as precipitation and temperature), physical agents (as geographical barriers and resident availability), and biotic agents (as an abundance of vertebrate hosts). Both biotic and abiotic properties are highly correlated with altitudinal gradients, most obvious of which is climate. Climatic agents as rains, winds and temperature may be the most important agents effect the spread of sand fly species. The high and bioclimatic structure important in the spread of sand flies types [20]. The altitude can effect on the distribution of sand flies by the variety of habitat, relief and gradient on climate [21]. The relationship between the altitude and Leishmaniasis related to many agents like the appropriate temperature for the evaluation of Leishmaniasis in the sand fly [22].

Table 1. Prevalence of cutaneous leishmaniasis according to months the year.

Months	No. total	Positive cases	Percentage %
September 2018	30	30	8.9
October	34	33	9.8
November	38	37	11
December	45	43	12.7
January 2019	94	88	26.1
February	27	31	9.2
March	33	33	9.8
April	35	26	7.7
Total	336	321	95.5
X <sup>2</sup> P < 0.05		8.4 Sign Jan 2019	

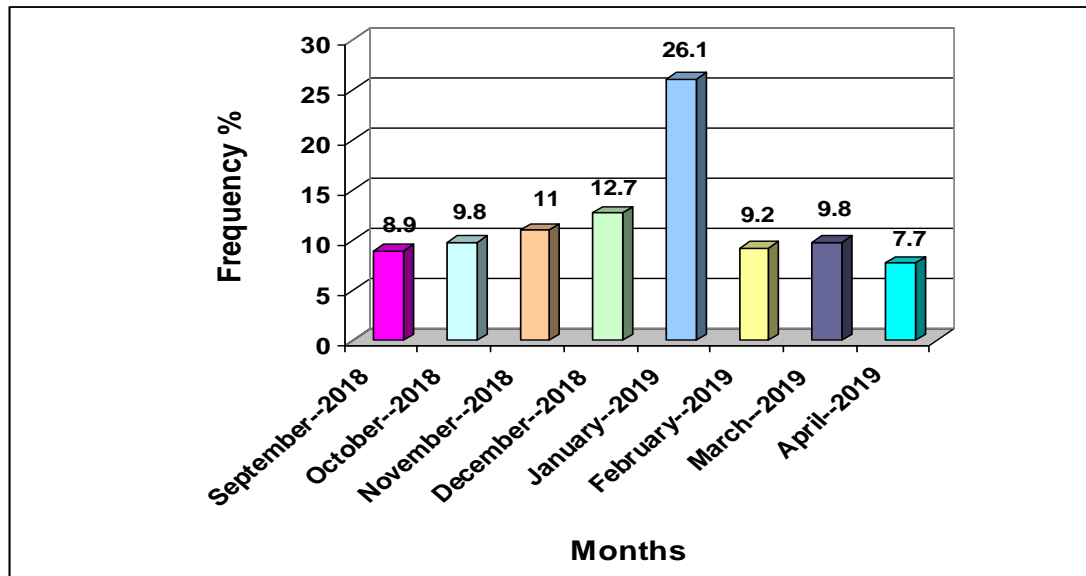


Figure 1. Prevalence of the cutaneous leishmaniasis according to months the year.

#### Prevalence of the Cutaneous Leishmaniasis According to Age Groups and Gender

Cutaneous leishmaniasis is a disease infect all the age groups male and female. The results indicate significant differences between males and females by use T-table ( $p < 0.05$ ) reaching to 9.3 in male; There are also statistically significant differences between age groups by use Chi-X2 ( $p < 0.05$ ) reached to 7.7 in age group 11-20 year old in both of genders (Table 2). The results of study indicated the disease spreading in all age groups. However, it is more prevalent in the age group 11-20 years old reached 21.5% also it is 20.2 % in age group 21-30 years old; this is like to results in other studies [23]; this results due to that people in this aged spend most of their time outdoors; moreover, their clothing make them susceptible to sand fly bites [24], Whereas the prevalence was less in age group 50 reached to 9.3% ,the cause little cutaneous leishmaniasis among older people associated to the fact that they were infected through early ages and so acquired immunity. As well as, that older people do not care to visit a hospital for the treatment of cutaneous leishmaniasis.

Although they identify this disease, its disfiguring ulcer does not appear to worry them as much as it worry young. As well as, young people are more involved in outdoor activities which expose them more to the disease than older people [25] (Figure 2). Also the results indicated that diseas spreading in males and females, the incidence was higher in males (64.7%) than females (35.3%) (Fig.3), this agree with previously studies [26], but disagree with others [27]. From possible causes for the higher infections in males not wear their shirts at night, which makes them more susceptible to sand-fly bite. While females, they cover themselves to protect against sand-fly bite [28]. Also men are more active, they travel to endemic areas for different causes such as work, military etc. second, they are less covered than women [29](Figure 3).

Table 2. Prevalence of cutaneous leishmaniasis according to age groups and gender.

Age groups (years)	Positive cases		Male		Female	
	No.	Percentage%	N0.	Percentage %	N0.	Percentage %
<10	56	17.4	36	11.2	20	6.2
11 – 20	69	21.5	46	14.3	23	7.2
21 – 30	65	20.2	45	14	20	6.2

31 – 40	51	15.9	32	10	19	5.9
41 – 50	50	15.7	32	10	18	5.6
> 51	30	9.3	17	5.3	13	4.1
Total	321	100	208	64.8	113	35.2
X <sup>2</sup> P< 0.05	7.7 Sign 11 – 20		5.4 Sign 11 - 20		8.1 Sign 11 – 20	
T P< 0.05			9.3 Sign male			

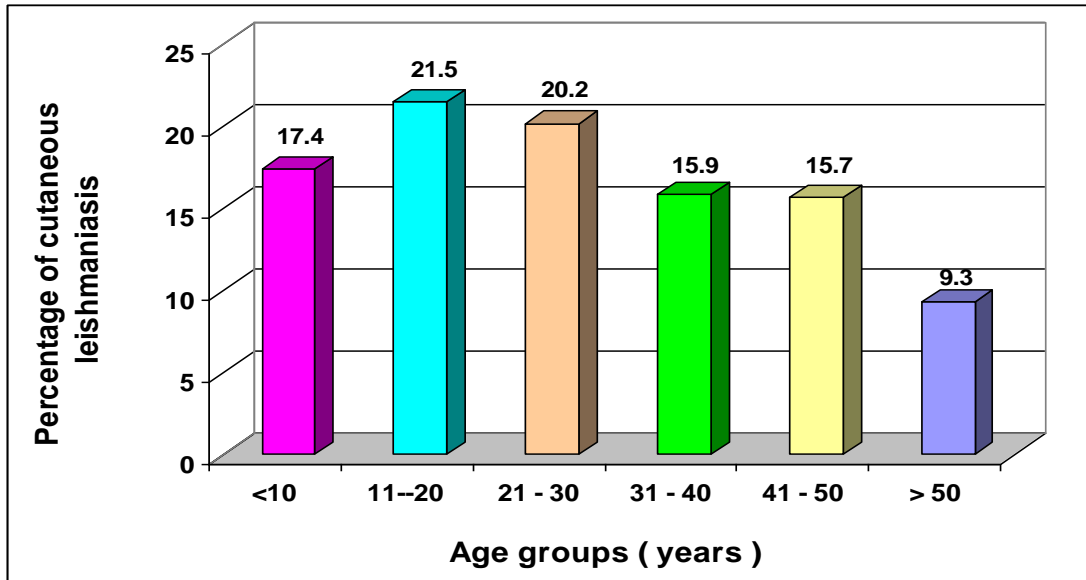


Figure 2. Prevalence of cutaneous leishmaniasis according to age groups (year)

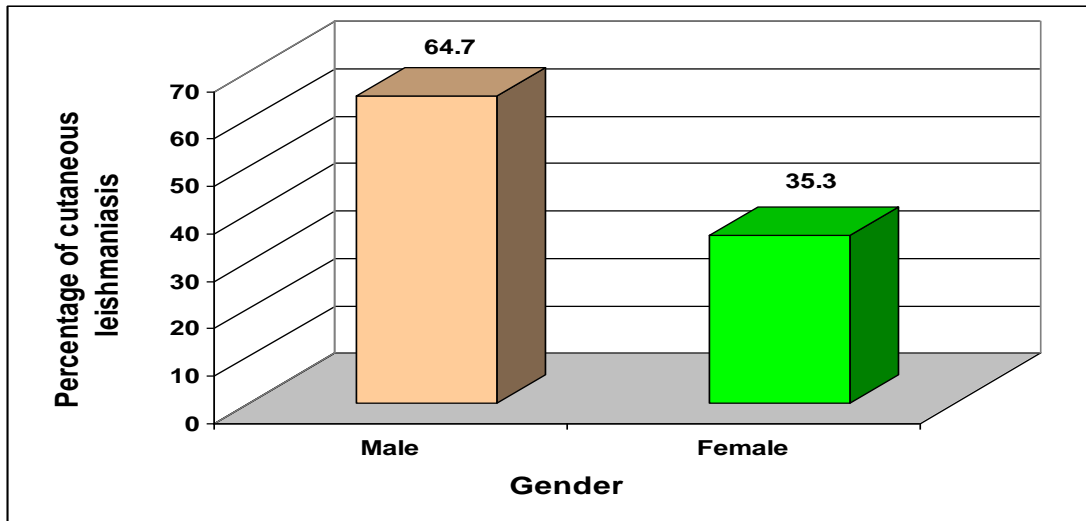


Figure 3. Prevalence of cutaneous leishmaniasis according to gender.

Prevalence of Cutaneous Leishmaniasis According to Sites of Lesions on the Parts of Body. In this study, lesions were mostly seen on uncovered parts of body respectively (hand 33%, foot 29.8 %, face 20.8% and other locations 16.4 %.) According to collected data, there is statistically significant differences between sites of lesions on parts body, using Chi-X2 (p<0.05) which is 7.2 in hand (Table 3&Fig.4). Most of lesions were shown on hands and feet of the patients, which is in similar with the results of Abbasi's study in Gorgan. Due to covering other parts of body [30]. The lesions location depends on many elements including the kind of sand-fly, social and cultural conduct of people and climate that the body areas

which are uncovered are more exposed to bites of sand-flies. May be the lesions to in high extremities, face, head, neck, and hands [31].

Table 3. Prevalence of cutaneous leishmaniasis according to sites of lesions on the parts of body.

Sites of lesions	No.	Percentage %
Hand	111	33
Face	70	20.8
Foot	100	29.8
Other location	55	16.4
Total	336	100
$X^2 P < 0.05$		7.2 Sign hand

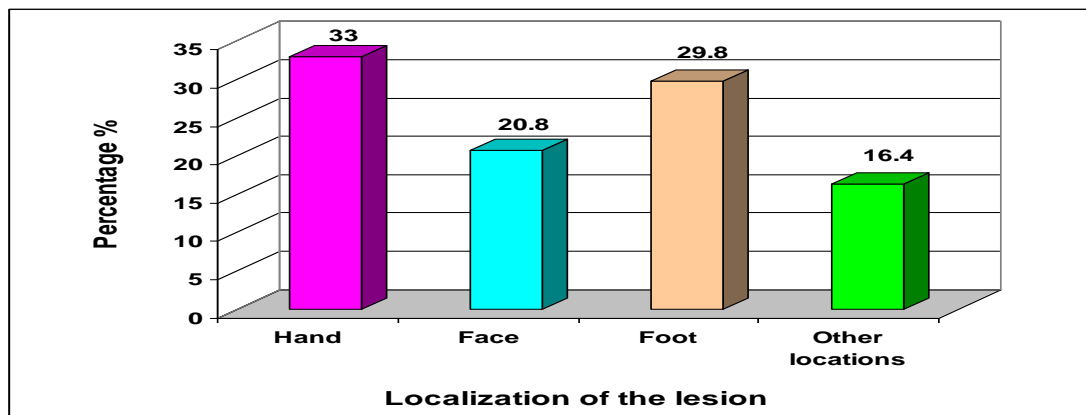


Figure 3. Prevalence of cutaneous leishmaniasis according to sites of lesions on the parts of body.

#### Prevalence of Cutaneous Leishmaniasis According to Number of Lesions on the Parts of Body

The present results revealed that the multiple lesions more common than single lesions, this indicates statistically significant differences between numbers of lesions on the patient's body by use T-Table ( $P < 0.05$ ) reached to 3.3 multiple lesions, multiple lesions can product from infected sand fly bites at different periods [32]. Cutaneous leishmaniasis have effects on shape and overall health, this necessitate more efficient measures to control and prevent of the disease [33].

Table 4. Prevalence of cutaneous leishmaniasis according to number of lesions on the parts of body.

Number of lesion	Number of patient	Percentage %
Single	143	44.5
Multiple	178	55.5
Total	321	
$t P < 0.05$		3.3 Sign multiple

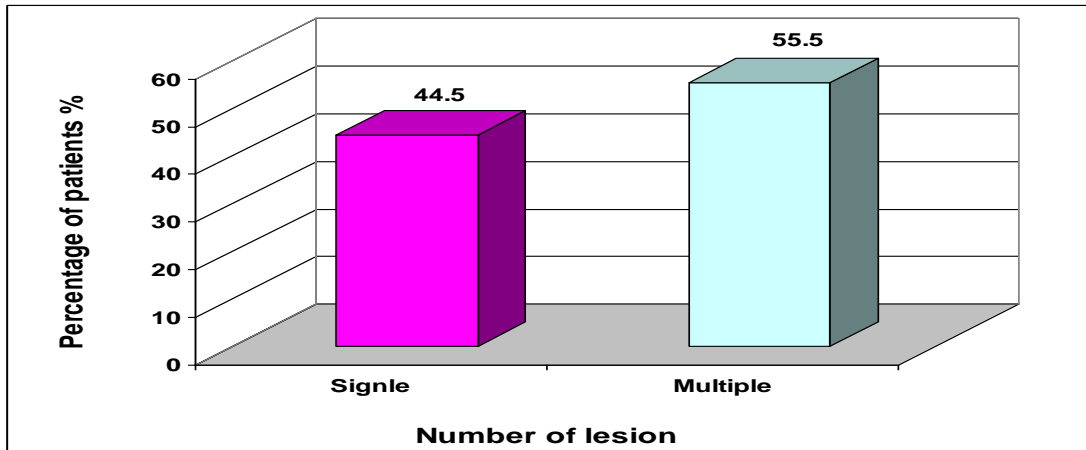


Figure 4. Prevalence of cutaneous leishmaniasis according to number of lesions on the parts of body

**Prevalence of Cutaneous Leishmaniasis According to Residence of Patients**

In this study, infection was high in rural regions (54.3%) as compared with urban areas(45.7%) , with statistically significant differences between rural and urban areas reached to 3.1 in rural areas using T-Table ( $p < 0.05$ ) (Table 5 & Figure 6). This is similar to the study conducted in Khorasan Razavi and Larestan regions which found that the spread of cutaneous leishmaniasis in rural areas was significantly higher than in urban regions [34]. It may be because of presence old buildings made of clay and hay, livestock and agricultural work and untreated diseases in rural regions.

Table 5. Prevalence of cutaneous leishmaniasis according to residence of patients.

Place of residence	Number of patient	Percentage %
Urban	147	45.7
Rural	174	54.3
Total	321	
t P < 0.05		3.1 Sign Rural

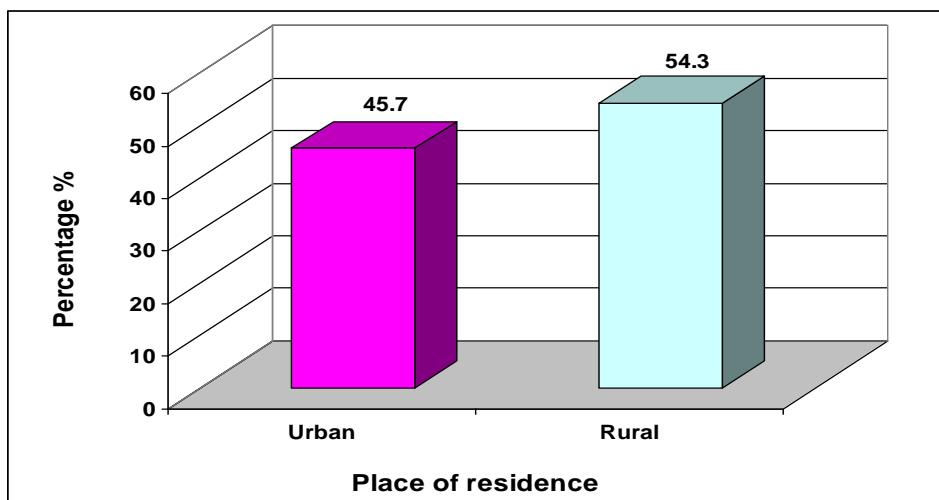


Figure 5. Prevalence of cutaneous leishmaniasis according to residence of patients.

**Prevalence of Cutaneous Leishmaniasis According to Occupations of Patients**

In the present study, the highest prevalence of cutaneous leishmaniasis was identified among military 19.3% according to occupations ,with statistically significant differences between occupations reaching to 6.1 in military using Chi- X2 (p<0.05) (Table 6 & Figure 7). Because the military is more mobile between areas where the disease is spreading. Also the highest prevalence of cutaneous leishmaniasis was among self-employed, (Housewife and child), and students reaching to 16.8%, (15.2%) and 14.6 %respectively .They are less aware of how the disease is transmitted and prevented [24].

Table 6. Prevalence of cutaneous leishmaniasis according to occupations of patients.

Job title	Number of patient	Percentage %
Self – employed	54	16.8
Housewife	49	15.2
Students	47	14.6
Military	62	19.3
Child	49	15.2
Employee	27	8.4
Farmers	16	4.9
Lawyer	17	5.2
Total	321	100
X <sup>2</sup> P< 0.05		6.1 Sign military

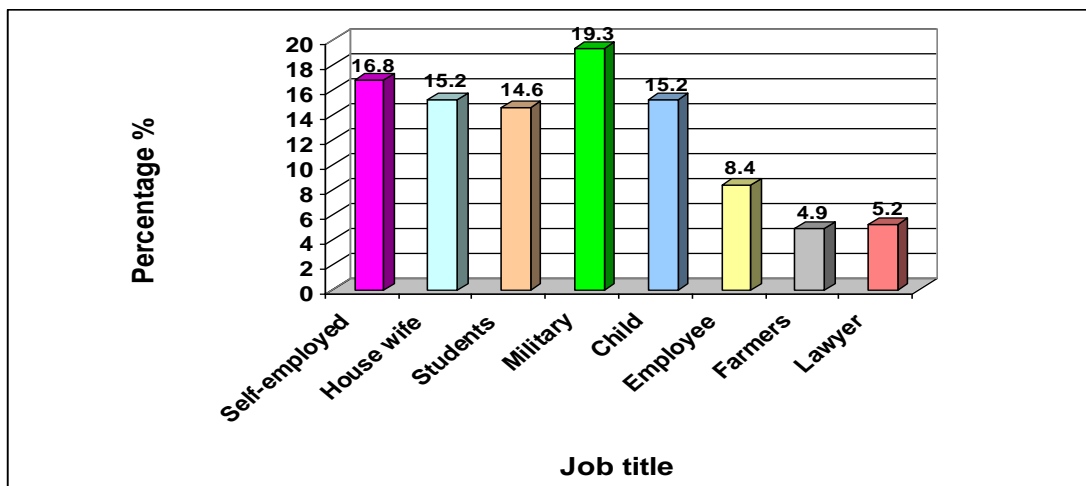


Figure 6. Prevalence of cutaneous leishmaniasis according to occupations of patients



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