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Epidemiological Study of Patients Infected with Scabies in Aden, Yemen

Amer Bin Al-Zou[1], Asia Hassan Abdulla Saleh[2]

[1,2]Associate Professor, Department of Dermatology, Faculty of Medicine, University of Aden, Yemen

Corresponding Author: Amer Bin Al-Zou

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ABSTRACT

Background: Scabies is a highly contagious skin disease.
Objectives: To determine the occurrence of scabies among Yemeni patients and to identify the complication and treatment.
Materials and methods: This retrospective study was conducted at two private clinics in Aden, Yemen. We reviewed all medical files of the patients who diagnosed with scabies and treated in our clinics during the period January 2020 to December 2021.
The collected data were processed by the statistical software package SPSS version 22 and statistical analysis was done by estimating rates, means and standard deviations. Chi-square test was used and p-value < 0.05 was considered as statistically significant.
Results: The study patients were (59.8%) males and (40.2%) females. The mean age of all patients was 21.6 ± 16.8 years. The patients of the age ≤ 10 years were predominant (31.8%) followed by patients of the age group 11-20 years old with (21.5%). The affected students represented the higher number and percentage (34.6%). The second infected groups were the workers with (14.9%) and housewives with (14.7%) (p = 0.000).
The poor level of personal hygiene was predominant with (66.8%).
Impetigo complication represented (9.2%) followed by post inflammatory hyperpigmentation in (6.3%) patients, scabiophobia in (2.7%) patients and ecthyma in (1.6%) patients. 44% patients were treated with benzyl benzoate lotion and 32.1% with permethrin lotion and oral antibiotic.
Conclusion: The occurrence of scabies in the age group ≤ 10 years were predominant. Impetigo was the first complication. Most of the patients treated with benzyl benzoate lotion and permethrin lotion with oral antibiotic. Further studies are needed to determine the incidence and prevalence of scabies in Aden governorate.

Key words: Epidemiological study, scabies, Aden, Yemen.

INTRODUCTION

Scabies is a highly contagious skin disease that is on the increase and afflicts all races and social classes in every nation. The global prevalence has been conservatively estimated at around 300 million cases [1]. It is a skin infestation caused by the mite *Sarcoptes scabiei* that causes a pruritic skin eruption [2]. Scabies is one of the most important skin diseases worldwide particularly in developing countries [3,4].
Reports from various countries have described an increase in the incidence of scabies [4-6].
From Europe, available data shows an increasing trend in scabies infestations, particularly evident among populations with associated contributing factors, such as those who travel frequently, refugees, asylum seekers, those who regularly lack drinking water and appropriate hygiene, those who are of a younger age. This increase in observed cases in the last 10–20 years has been evidenced by research conducted in some European Countries [6-9].
For centuries, scabies has primarily been thought of as a disease that affects those

living in squalor and poverty; however, reports in recent times show that it has become more common in the general population. Generally, scabies has been thought to occur only sporadically, but in the last two decades, there has been an increase in published papers indicating that disease is occurring more frequently [6,9].

The most prominent clinical manifestation of scabies is severe itching, especially localized in abdominal circumference, hand and foot ankles and genital area. Although the history and clinical appearance often predispose to the diagnosis of the disease, direct microscopy, dermatoscopy, reflexive confocal microscopy and even biopsy help in difficult cases [10-12].

The aim of this study is to determine the occurrence of scabies among Yemeni patients, to determine the disease distribution related to sex and age groups, and to identify the associated diseases and the complication.

MATERIALS AND METHODS

This study designed as an observational and a retrospective study. The study was conducted at two private clinics in Aden, Yemen.

We reviewed all medical files of the patients who diagnosed with scabies and treated in our clinics during the period January 2020 to December 2021.

The collected study variables were incidence of scabies, sex, age, occupation, level of personal hygiene, treatment and complications.

The collected data were processed by the statistical software package SPSS version 22 and statistical analysis was done by estimating rates, means and standard deviations. Chi-square test was used and p-value < 0.05 was considered as statistically significant.

RESULTS

Table 1 and Figure 1 revealed the total study patients were 368 and they were 220 (59.8%) males and 148 (40.2%) females. The age of the study patients ranged between 0.25 – 70 years. The mean age of all patients was 21.6 ± 16.8 years. The mean age of males was 21.4 ± 16.2 years and females were 21.9 ± 17.6 years. The difference between means was not statistically significant ($p > 0.05$).

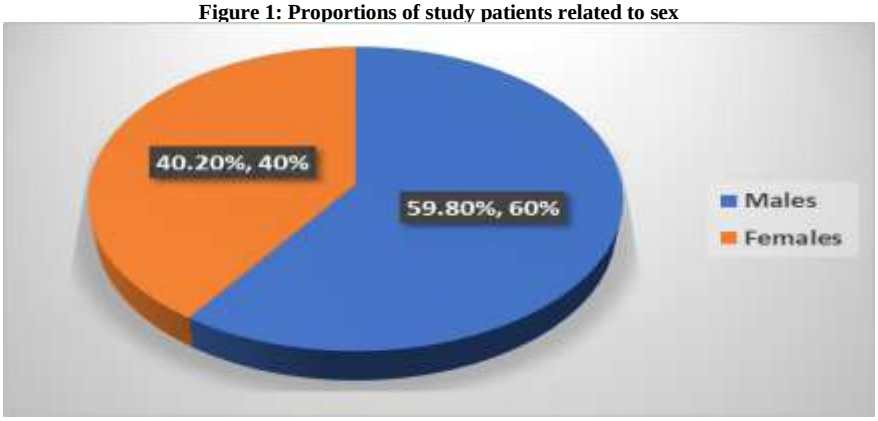
The patients of the age ≤ 10 years were predominant 117 (31.8%) followed by patients of the age group 11-20 years old with 79 (21.5%), and patients of the age group 21-30 years old with 77 (20.9%).

Table 1: Characteristic variables of patients with scabies (n = 368)

Variables	No	%
Sex:		
Males	220	59.8
Females	148	40.2
Age range (years):	0.25 – 70	
Mean Age (years):		
Age of all patients	21.6 ± 16.8	
Age of males	21.4 ± 16.2	
Age of females	21.9 ± 17.6	
P-value	P > 0.05	
Age groups (years):		
≤ 10	117	31.8
11-20	79	21.5
21-30	77	20.9
31-40	40	10.9
41-50	24	6.5
> 50	31	8.4

SD = standard deviation

Figure 1: Proportions of study patients related to sex



The results of existing study showed the infected patients with scabies related to sex and the levels of personal hygiene of the patients.

The affected students represented the higher number and percentage among the study population affected by scabies 127 (34.6%). The distribution of infected students was of primary school level 61 (16.6%) followed by students of secondary school level 31 (8.4%), intermediate school level 18 (4.9%) and level of undergraduate students 17 (4.6%).

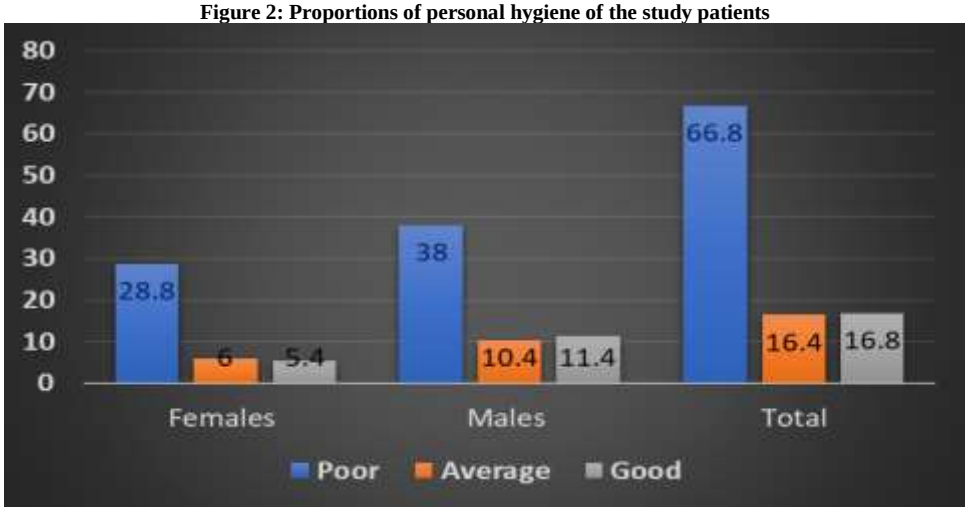
In addition, the second infected groups were the workers with 55 (14.9%), housewives with 54 (14.7%), children 46 (12.5%) and displaced individuals 26 (7%). The relation between the values showed statistically highly significant (p = 0.000). The poor level of personal hygiene was predominant with 246 (66.8%), (p > 0.05), as shown in Table 2 and Figure 2.

Table 2: Distribution of affected patients and the levels of personal hygiene related to sex of the patients.

Group of patients and p hygiene	Females n = 148(40.2%)		Males n = 220(59.8%)		Total n = 368(100%)		p-value
Infected students:							
Primary level	12	(3.3)	49	(13.3)	61	(16.6)	
Intermediate level	7	(1.9)	11	(3.0)	18	(4.9)	
Secondary level	15	(4.1)	16	(4.3)	31	(8.4)	
Undergraduate level	6	(1.6)	11	(3.0)	17	(4.6)	
Subtotal	40	(10.9)	87	(23.7)	*127*	*(34.6*	
Workers	2	(0.5)	53	(14.4)	55	(14.9)	P = 0.000
Housewives	54	(14.7)	0	(0.0)	54	(14.7)	
Children	22	(6.0)	24	(6.5)	46	(12.5)	
Displaced	13	(3.5)	13	(3.5)	26	(7.0)	
Infants	10	(2.7)	12	(3.3)	22	(6.0)	
Solders	0	(0.0)	17	(4.6)	17	(4.6)	
Refugees	7	(1.9)	6	(1.6)	13	(3.5)	
Prisons	0	(0.0)	5	(1.4)	5	(1.4)	
Homeless	0	(0.0)	3	(0.8)	3	(0.8)	
Personal hygiene:							
Poor	106	(28.8)	140	(38.0)	246	(66.8)	P > 0.05
Average	22	(6.0)	38	(10.4)	60	(16.4)	
Good	20	(5.4)	42	(11.4)	62	(16.8)	

P hygiene = personal hygiene

Figure 2: Proportions of personal hygiene of the study patients



The associated diseases were as follows: pediculosis capitis 15 (4.1%), diabetes mellitus 11 (3%), eczema 3 (0.8%), cerebrovascular accident 2 (0.5%), paralysis 2 (0.5%) and hypertension 1 (0.3%) as shown in Table 3. Additionally, the table 3 illustrated the complications of scabies among the study patients.

Impetigo complications represented 34 (9.2%) followed by post inflammatory hyperpigmentation in 23 (6.3%) patients, scabiophobia in 10 (2.7%) patients and ecthyma in 6 (1.6%) patients.

Table 3 also summarized the treatment of patients infected by scabies. One hundred and sixty-two (44%) patients were treated with benzyl benzoate lotion, 118 (32.1%) patients with permethrin lotion and oral antibiotic, 42 (11.4%) patients with permethrin cream and oral antibiotic, 39 (10.6%) patients with sulfur ointment, 4 (1.1%) patients with Ivermectin and 3 (0.8%) patients with benzyl benzoate lotion and oral antibiotics.

Table 3: Distribution of the variables among the study patients (n = 368)

Variables	Frequency	%
Associated diseases:		
Pediculosis capitis	15	4.1
Diabetes mellitus	11	3.0
Eczema	3	0.8
Cerebrovascular accident	2	0.5
Paralysis	2	0.5
Hypertension	1	0.3
None	334	90.8
Complications:		
Impetigo	34	9.2
Post inflammatory hyperpigmentation	23	6.3
Scabiophobia	10	2.7
Ecthyma	6	1.6
None	295	80.2
Treatment:		
Benzyl benzoate lotion	162	44.0
Permethrin lotion and oral antibiotic	118	32.1
Permethrin cream and oral antibiotic	42	11.4
Sulphur ointment	39	10.6
Ivermectin	4	1.1
Benzyl benzoate lotion and oral antibiotics	3	0.8

DISCUSSION

Scabies is an itchy skin disease caused by an ectoparasite, sarcoptes scabies var hominis. It has been known for 2500 years and affects 300 million people a year worldwide. It is more common in people with low income. This parasite has a life cycle of human compulsory; it can live up to only 2-3 days outside of human skin [10-12].

Scabies has been reported more frequently in the pediatric age group, and in terms of sex, some studies have found male patients to be more frequent in contrast to some others [13,14]. Epidemiologically, scabies is considered a disease of those who live in poor socioeconomic conditions, yet the disease affects individuals of any socioeconomic status [15].

Furthermore, recent data have confirmed a correlation between scabies incidence and population movements, meaning that population movements lead to a higher incidence in the general population [16]. According to study results, among refugee and asylum seeker populations, scabies is one of the three most frequently reported infectious diseases [17].

According to the current study, scabies infestation is higher in males 220 (59.8%) than females 148 (40.2%).

These are similar to the published studies conducted in Ethiopia and Cameroon [18,19]. Our findings were contradicting the findings in Iran [20].

Dehghani et al [21] reported that the incidence of scabies in males to be three times more than that of females.

Golchai et al [22] reported in their study that the occurrence of the disease does not depend on sex; however, some studies have reported higher infestation rates in females and some in males and this difference is related to the social and cultural conditions of the community.

Our study results showed the age of the study patients ranged between 0.25 – 70 years. The mean age of all patients was 21.6 ± 16.8 years. The mean age of males was 21.4 ± 16.2 years and females was 21.9 ± 17.6 years. The difference between means was not statistically significant ($p > 0.05$). In addition, we found the patients of the age ≤ 10 years were predominant (31.8%) followed by patients of the age group 11-20 years old with (21.5%), and patients of the age group 21-30 years old with (20.9%).

Similar to our findings were reported in a previous study [23] conducted in Aden which reported that 90 cases (3.4%) suspected scabies. Of this total (57.8%) were males and (42.2%) were females, no statistically significant relation between the sex of the patients and the positive finding of scabies was exist ($P > 0.05$), the age was ranged from 2-70 years old with mean 21.5 ± 15.9 years old. Age group 8–15-year-old was the most prevalent group (27.8%).

Amro et al [24] reported in their study that approximately half of the cases (48%) were under 20 years of age. Disease occurrence was significantly higher among children aged ≤10 years (27%) compared to the other age groups in the study.

In 2003, Golchai et al [22] reported that the disease is more common in 9-year-olds with a frequency of 45% among students of primary schools in Somea-Sara, North of Iran.

In Iran, Rahdar et al [25] estimated that the highest occurrence of scabies occurs in children under 10 years old.

Epidemiological studies have shown that the prevalence of scabies infestations is not influenced by race, age, or sex and the main contributing factors are poor hygiene, poverty, and overcrowded living conditions [26].

Kalantari et al [27] found in their study, that the prevalence of infestation in males was slightly higher than that in females and they mentioned that the most important factors to getting disease could be sex, race, age, direct contact with each other, and the level of hygiene undoubtedly. Living in crowded places with a low level of hygiene raises the risk of infestation, and health care officials should consider the health education of the people.

In our present study, we found the complications of scabies among the study patients were as follows: impetigo complications represented (9.2%) followed by post inflammatory hyperpigmentation in (6.3%) patients, scabiophobia in (2.7%) patients and ecthyma in (1.6%) patients.

The most common complication of scabies is bacterial infection of the excoriations with Streptococcus pyogenes and Staphylococcus aureus, leading to contagious impetigo, ecthyma, erysipelas, furuncles, abscesses, lymphadenitis, and even bacteremia and sepsis [28,29]. Scabies mites predispose to bacterial infection by inhibiting the three pathways of the complement system [30] as well as by inducing scratching of the skin, leading to damage of the epithelial barrier [31].

In the current study we found (44%) patients were treated with benzyl benzoate lotion, (32.1%) patients with permethrin lotion and oral antibiotic, (11.4%) patients with permethrin cream and oral antibiotic, (10.6%) patients with sulfur ointment, (1.1%) patient with Ivermectin and (0.8%) patients with benzyl benzoate lotion and oral antibiotics.

Marks et al [32] reported that scabies is a rising major public health issue worldwide and has recently been designated as a neglected tropical disease by the World Health Organization.

Current guidelines propose a range of different treatment regimens taking into account topical permethrin, benzyl benzoate, sulfur, malathion, crotamiton, synergized pyrethrins and topical or oral ivermectin as the only systemic therapeutic option [33]. Although their availability differs among European countries, topical 5% permethrin together with oral ivermectin is one of the most widely prescribed first-line scabicidal therapy [34].

Similar to our findings were reported by Yuwnate et al [35] that, of 120 patients with scabies, (43.3%) patients took benzyl benzoate lotion, (40%) patients received permethrin cream, and (16.7%) patients received ivermectin. They added that all patients were followed up for 2 weeks. After the initiation of treatment, patients were seen every week to assess their response. After 2 weeks, cured rate (efficacy) was evaluated.

Benzyl benzoate, an ester of benzyl alcohol and benzoic acid, is a very effective anti-scabietic treatment with excellent cure rates and has been used in many countries, including in Europe and Australia [36].

Arora et al [37] mentioned that the type of scabies, patient age, reported efficacy of various treatments, and side effect profile all determine the choice of treatment. Permethrin 5% cream is the first-line topical medication in the United Kingdom and the United States [36].

Permethrin is the first-line topical treatment in western countries and is preferred over

other topical treatments. It is highly effective after a single application due to the adulticidal and ovicidal against the scabies mite [36].

CONCLUSION

Our study revealed that the occurrence of scabies among the patients of the age ≤ 10 years were predominant and the percentage of poor personal hygiene represented 66.8% of the total infected patients. Impetigo was the first complication followed by post inflammatory hyperpigmentation. Most of the infected patients were treated with benzyl benzoate lotion and permethrin lotion and oral antibiotic. Further studies are needed to determine the incidence and prevalence of scabies in Aden governorate.

Declaration by Authors

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