
Original article**Frequency of *Sarcoptes scabiei* infestation in patients referred to the parasitology laboratory in Isfahan, Iran (1996-2002).****Rouhullah Deghani¹, Babak Vazirianzadeh², Seyed Hossien Hejazi³, Negien Jalayer⁴**¹Department of Environmental Health, School of Health, Kashan University of Medical Sciences, Kashan, Iran²Department of Medical Parasitology and Mycology, School of Medicine, and Infectious and Tropical Diseases Research Centre, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran³Department of Medical Parasitology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran⁴The Dr. Jalayer Parasitology Laboratory, Isfahan, Iran**Received:** April 2009**Accepted:** June 2009

Abstract

Scabies is a common world-wide parasitic contagious skin disorder and one of the most common itching dermatosis in the less developed countries among the poor populations. Scabies is considered as a major public health problem in Iran too. This descriptive study was conducted in the Dr. Jalayer parasitology lab, Isfahan, Iran between 1996-2003. The samplings were carried out on the patients with pruritic, nodules and popular rash. The mite infestation was distinguished using scraping test. The most frequency of scabies infestation was recorded in 1996 with 25% and the least one in 2002 with 5.6% of total infected population during the current study research. Finally, it is concluded that the rate of *Sarcoptes* infestation is depended on some factors, which is included: sex, age, social relation and sex age, overcrowding, and the weather conditions.

Keywords: Dermatitis, *Sarcoptes scabiei* infestation, Isfahan, Iran**Introduction**

Scabies is a common world-wide parasitic contagious skin disorder and one of the most common itching dermatitis in the less developed countries among the poor populations. Scabies is considered as a major public health problem in Iran too. An Acarina mite belonging to the Stigmata order, which is referred to *Sarcoptes scabiei* var. *hominis*, causing the scabies in human [1-4]. Scabies infestation is a contagious disease which is transmitted through a direct contact with an infected person specially

intercourse. However, it is rarely contagious via underwear and bed linen if they are used just a short time after being infected [1,4,5]. *S. scabiei* is an obligatory ectoparasite, which can survive from 3-10 days outside the host along with the other invasive stages, the larvae, and nymphs [2].

The female *S. scabiei* mite is 0.2-0.4mm long [2]. A female of *S. scabiei* can survive around 30 days in the host's body penetrating into the stratum corneum of the skin and laying eggs in the burrow. There is a direct association between low hygienic

condition and spreading of scabies in wars, floods, earthquakes and other natural and gregarious unfavorable events in the critical times. Nowadays, in spite of progressive decrease of the contamination rate, the epidemic risks, which have not been eliminated in prisons, encampments, garrisons and other dwellings are still stand and can easily spread because of low personal or environmental hygiene [1].

Scabies is traditionally diagnosed clinically and confirmed by microscopic examination of burrow skin scrapings, suspended in mineral oil or saline. Visualization of the mites, eggs or feces confirms the diagnosis. However the visualization exams should be in accordance with clinical signs: nocturnal pruritus, ink sign (lesions include burrows) and appearing papules and vesicles through the body of patients. However, handling and processing of scraping method in the laboratory is not always straightforward rapid and effective [6].

This mite includes several varieties with similar morphological characters and different physiologic varieties. Therefore, these varieties infect specific hosts among different Mammal species [7, 8]. The reason for this phenomenon is still unknown. However, it is suggested that it is due to the life requirements of the parasite and immunologic and non- immunologic factors in the hosts [9]. The existence of 10-15 mites in the body of infested people is very common. But scabies appears in another form which is called Norwegian scabies or crusted. There are thousands of mites in the body of the patient who suffer from it. It is common scabies among the people with immunologic disorders, immunosuppression and mental illness [1,10,11]. This kind of scabies and even the common form of it will be followed by bacterial infectious including *Streptococci* and *Staphylococci*, then finally may cause kidney and skin diseases and septicemia in the long term and massive scabies infestations [10].

A wide range of clinical manifestations may be seen in scabies, from classic pruritic papules and burrows to secondary features such as impetigo. Pruritus, the main clinical manifestation, often is caused by the phenomenon of hypersensitivity to the debris, eggs and, feces. The primary lesions appear 3-10 days after exposure to the mite. These lesions include burrows, papules, vesicles, and pustules. Nocturnal pruritus is characteristic of scabies infestation. Main presenting features are rash and intense itching [2]. Scabies is more common in institutional crowded environments such as nursing homes prisons, schools, and residency halls [12-14]. This study was conducted to determine the frequency of *S. scabies* infestation and related factors in Isfahan.

Materials and methods

This descriptive study was conducted in the Dr. Jalayer parasitology lab, Isfahan, Iran between 1996-2002. The sampling was carried out from 2899 suspected persons to scabies infestation including: 1685 males and 1214 females. The samplings were carried out on the patients with pruritic, nodules, and popular rash. The mite infestation was distinguished using scraping test. A lesion is gently scraped to remove the topmost skin cells. The skin particles were boiled in the 5% potassium solution to clear the specimen or preserved in the 10% potassium solution. Finally, the specimens were mounted on the microscope slide. Sometimes lactophenol solution was used as the clearing solution. The skin particle samples including adult mites, their eggs, or feces were referred as positive samples. The negative samples were examined again one more time. All the information was recorded in a questionnaire to describe.

Results

The test results were positive for 817 persons including 74.6% and 25.4% in males and females respectively. The most frequency of scabies was recorded in 1996 with 25% and

the least in 2002 with 5.6% of total infested population during the current study research. The frequency of scabies between 1996-2002 summarized in the table 1. Overall results show that the most rates of scabies were seen between December to March. In contrast, the least rate of scabies was recorded over June and August. The overall monthly distribution is shown in the figure 1. The highest rate of scabies infestation was happened among the 15-39 year old people who were more active

than other ages with 54% of the cases. The ages between 0-15 year old contain 18% of the patients. The rest of scabies belonged to the ages higher than 39 year old. The youngest was two months old and the oldest one was 80 years old. Results of this study showed that 1.7% of the scabies contaminations were for the second times after treatment. The family infestation was recorded only in one family that included five persons.

Table 1: The frequencies of scabies between 1996-2002 Jalayer parasitology laboratory according to sex, Isfahan, Iran

Year	Scabies infestation		Total (%)
	Females (%)	Males (%)	
1996	24 (11.7)	58 (9.5)	82 (10)
1997	21 (10)	40 (6.5)	61 (9.5)
1998	39 (18.8)	111 (18.2)	150 (18.4)
1999	39 (18.8)	133 (21.8)	172 (21)
2000	52 (25)	153 (25.1)	205 (25.1)
2001	24 (11.7)	77 (12.6)	101 (12.4)
2002	8 (4)	38 (6.3)	46 (5.6)
Total	207	610	817

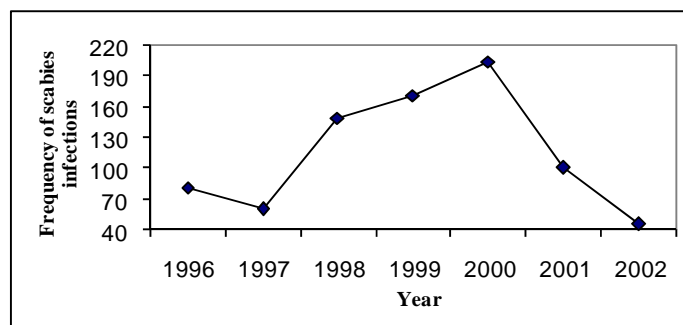


Fig. 1: Trend of frequencies scabies infestations between 1996-2002 Jalayer parasitology laboratory, Isfahan, Iran

Discussion

The results of this study revealed that 28.2% of cases were infested by *S. scabies*. The rate of scabies in men was three times larger than women in the current study. This is in accordance with the study of Jalayer *et al.* [15] in Isfahan. They explained that prevalence of scabies was 74% and 26% among the men and women in Isfahan during a three year study [15]. There are two in contrast sharp trends over the current study (Fig. 1). There is a dramatic increasing

in the rate of scabies between 1997-2000 ordering: 61, 150, 172 and 205 cases. However, there is a sharp dropping in the rate of scabies from 2000 to 2002. The reason for the increasing rate is unknown; however, the more health attention to prevent the infestation among the Isfahan population after the sharp increase could lead the health local authority to remove the scabies problem.

Mehrabi Tavana [16] has reported a high incidence of scabies among the Iranian

soldiers over the war between Iran and Iraq. The increasing rate of the scabies infestation in the current study during 1997-2000 agrees with the results of Hydar Pour *et al.* [17]. They have recorded an increasing rate in scabies consecutive three years (1985-1986 and 1987) among Iranian man fighters. The results of the current study and the study of Hydar Pour *et al.* [17] are similar in the increasing rate of the scabies year followed by year. This explains that the scabies is a very contagious skin disease in the different condition and geographical regions.

Results of the current study showed that the 74% of scabies infestation belonging to the 0-39 year old: 18% belonged to 0-15 year old and 54% to 15-39 year old. The rest of 26% belonged to the older than 39. It means that the scabies is an age dependent phenomenon which involves the younger people [2,18]. However, the proportion of the scabies was three times greater in the 15-39 year old people than in 0-15 year old. Scabies can be transmitted from person to person through the direct contacts special intercourse and contacts between nurses and the children in the nurseries, [19]. This means that the 15-39 year old ages is involved more likely intercourse that patients involved 0-15 year olds. In the present study, the rate of scabies among the 15-39 year old people was three times greater than in 0-15 year old.

The rate of scabies was 1.3% in the other study conducted by Golchai *et al.* [20] among the primary schools in Somea-Sara in 2000-2001. The different rate of scabies infestation is related to the different examined population. On the other hand, the rate of scabies in both studies was low among the children in comparison to the older ages over the total population. Therefore, it is concluded that this phenomenon is an age dependent but interaction between the age factor and social relations factors, especially sexual relations in the higher ages can lead to the greater rates of scabies. Results of studies of Sharief *et al.* [21] showed 2.09% scabies among the

primary school students and it is in accordance with the both above studies.

Arjomandzadeh *et al.* [22] and Ciftci *et al.* [23] in the different studies in Bushehr and Turkey have obtained similar data among the children schools which are a supports for the current conclusion. Sharief *et al.* [21] Arjomandzadeh *et al.* [22] and Ciftci *et al.* [23] have come to the same conclusions that there were no significant differences among the girl and boy student population related to the *Sarcoptes* infestation. Therefore, the different levels related to the suffering patients from scabies infestation among males and females were due to the sexual age in the current study because of males are probably more engaged in intercourse than females in Iran.

Poudat and Nasirian [1] indicated 57% scabies among the prisoners in Bandar Abbas from different units of prison. Terry *et al.* [18] in a study, which was conducted in the Sierra Leone, indicated a high rate of *Sarcoptes* infestation (67%) among the children in the displacement camps. Both studies indicated that the overcrowding as another factor which is very effective in increasing rate of *Sarcoptes* infestation. In the children camps, even the mean of age was low but the rate of infestation was high. It means that in the overcrowding area and residency places the *Sarcoptes* infestation can be transmitted easily by person to person direct contacts.

Results of the current study, which was conducted in Isfahan, indicated that the highest rate of scabies infestation incidence was recorded in the cold months and over the winter. The more cloths, more and nearer contacts are suggested as the reasons for the higher rate of *Sarcoptes* infestation during the winter and colder months [24]. The mentioned conditions provide the easier way to transmit the scabies. In contrast, the lowest rate of scabies infestations have taken placed over the warm months and summer. Results of this study indicate that 1.7% of the scabies contaminations were for the second times after treatment. This represents

a risk factor for re-infestation among the people whom were suffered sometime from the disease. Therefore, hygienic factors should be done to control infestation promotion.

Conclusion

Finally, it is concluded that the rate of *Sarcoptes* infestation is depended on the following factors: sex, age, social relation and sexual contact, overcrowding, and the weather conditions. However, there are other factors, which were not studied over this research. They are: jobs, education and financial status that should be considered in the similar further studies. Consideration all of those factors will help the communities to overcome on *Sarcoptes* infestation.

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