

# The assessment of epidemiologic aspects of scabies in Iran's Army during 2004 to 2010

Seyed Javad Hosseini-Shokouh<sup>1</sup> MD, Shahram Rahimi-Dehgolan<sup>2</sup> MD-MPH  
Mahtab Noorifard<sup>1</sup> MD, Arasb Dabbagh-Moghaddam<sup>3</sup> DVM, Mohammad Barati<sup>1</sup> PhD  
Elnaz Tabibian<sup>2</sup> MD-MPH

<sup>1</sup> Infectious Diseases Research Center, AJA University of Medical Sciences, Tehran, Iran.

<sup>2</sup> Researcher, Tehran University of Medical Sciences, Tehran, Iran.

<sup>3</sup> Department of Preventive Medicine, AJA University of Medical Sciences, Tehran, Iran.

## ABSTRACT

**Purpose:** Scabies is a parasitic disease with nocturnal itching and cutaneous lesions. It spreads by physical contact and it occurs mostly in crowded places. Because of their occupation, military personnel have to live in garrisons and camps. So the prevalence of scabies is higher in military systems. Hence, this study evaluated the epidemiology of scabies in Iran's Army.

**Materials and Methods:** This retrospective research studied the cumulative incidence rate of scabies in Iran's Army during years 2004-2010. The data were gathered from Preventive Medicine Department of AJA University of Medical Sciences. Any military person with confirmed diagnosis of scabies by the center physician was included in the study.

**Results:** In this 7-year study total number of reported scabies was 5277 cases. Most of them had occurred in spring and summer. More than 50% were from Hormozgan province. Guilan and Mazandaran provinces were in the second and third stand. The least were from Lorestan, Hamedan, West Azerbaijan and Zanjan provinces. About 62% of cases belonged to Navy.

**Conclusion:** Although the overall trend of scabies in Iran's Army has been declining in recent years, it is still a common problem in warm and humid provinces and among Navy personnel. Since scabies is a reliable indicator of public health status, it seems that there is a need for more healthcare facilities and more resource allocation particularly in warm seasons of the year to reduce this disease among the military personnel.

**Keywords:** Army, Iran, epidemiology, scabies, *Sarcoptes scabiei*.

AMHSR 2014;12:163-167  
www.journals.ajau.ac.ir

## INTRODUCTION

Scabies is a parasitic disease caused by *Sarcoptes scabiei* var *hominis*. Nocturnal itching and cutaneous lesions, including burrows and vesiculopapular damages on the dorsal surface of hands, feet, genital and axillary areas are features of this disease. Its root of transmission is close physical contact and use of common bed. Its latency period is several days up to two weeks. It occurs mostly in crowded places including social keeping centers, dormitories, prisons, hospices of welfare, military environments, etc.<sup>1,2</sup> 300 million people get scabies all over the world each year. Scabies is a public

health problem in some developing countries such as South American countries and Bangladesh in which its prevalence is about 100%.<sup>3</sup>

Studies in Iran indicate that scabies is a social parasitic disease and its prevalence is different according to climate of each province. It has an association with level of literacy, number of family members, taking fewer baths and low level of personal hygiene.<sup>1,4-7</sup> Military personnel, because of their specific occupational situation, living in garrisons and camps, sweating profusely, inability to consider personal hygiene at all times, using common clothing and baths, etc., have a higher prevalence of

scabies.<sup>8-12</sup> The burden of cutaneous diseases in United States in 2006 has been three million people a day and it is a great loss for human resources in any organization, whether military or not.<sup>13</sup>

In a previous study in a non-training military center in Iran the incidence of cutaneous diseases has been reported 26.2%. In another center between 1994-1996 the incidence of scabies on the police units has been more than 49%, mostly from Mazandaran and Guilan provinces.<sup>12,9</sup> Since to the authors' knowledge, no comprehensive study had assessed the epidemiology of scabies in Iran's Army, this study set out to evaluate the epidemiological aspects of this disease in Iran's Army in order to plan to reduce its burden on military forces.

### MATERIALS AND METHODS

This retrospective research studied the cumulative incidence rate of scabies in Iran's Army during years 2004-2010. The data were gathered from Preventive Medicine Department of AJA University of Medical Sciences.

Among other important diseases, reporting this disease is necessary in Iran's Army. So, exact reports of all cases of scabies are reported monthly. The cumulative incidence was calculated for each unit and province by having the population of each center and number of the cases individually. Any military person with confirmed diagnosis of scabies by the center physician was included in the study. Diagnosis was mainly based on clinical picture of the lesion. Sampling of borrows of the patient by scraping test methods were used only in suspected cases. The data were analyzed by the Statistical Package for Social Sciences (SPSS) Software version 20. They were presented by descriptive statistics and analytical methods, i.e. chi square for qualitative variables and analysis of variance and *t*-test for quantitative variables. Significance level was considered as  $P < .01$  for having more accurate results.

### RESULTS

In a 7-year study (2004 to 2010), total number of reported cases of scabies was 5277 cases (Figure 1). Assuming that the total study population has not been changing much during this time, which is somehow correct, the overall trend of scabies incidence has been declining since 2004 ( $P < .01$ ). The highest decline was in 2004 itself in which the number of cases reduced from 1915 to 980 cases per year.

Most scabies had occurred in spring and summer. Generally, the disease incidence reduced during the year

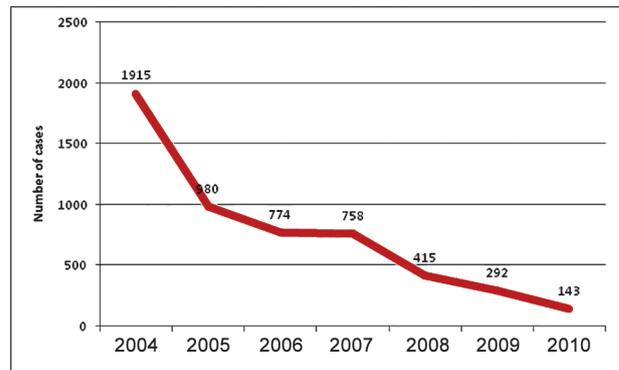


Figure 1. Distribution of scabies cases in seven years (2004-2010).

so that the minimum incidence was in winter (Figure 2). However, the association between season and scabies was not significant ( $P = .42$ ).

Considering geographical distribution, more than 50% of the cases (2661 person, 50.4%) were from Hormozgan province. Geographical map for provincial distribution of this disease is shown in Figure 3. There was a broad variation among cumulative incidence rate in different provinces which may be due to different climates of these areas (more than 8 per 1000 persons per year in Hormozgan and Guilan compared to about 0.5 per 1000 persons per year in Lorestan, Hamedan, West Azerbaijan and Zanzan provinces). The lowest cumulative incidence was seen in west of the country with cold and dry climates.

Distribution of scabies among the Ground Force, Air Force and Navy is shown in Table 1. More than 60% of cases belonged to Navy while in terms of population, Navy of Iran's Army had less human resources compared to the other forces. So cumulative incidence rate of scabies in this force has been greater than the other forces which is statistically significant ( $P < .01$ ).

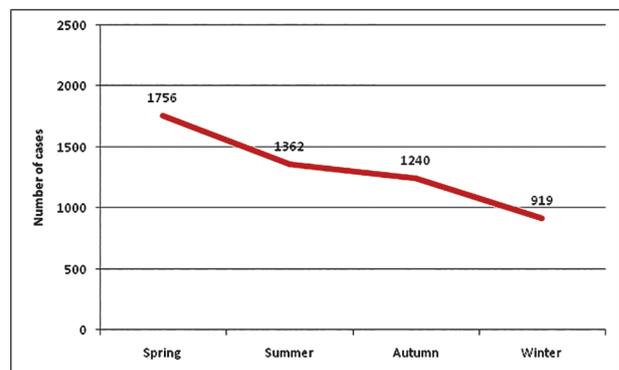
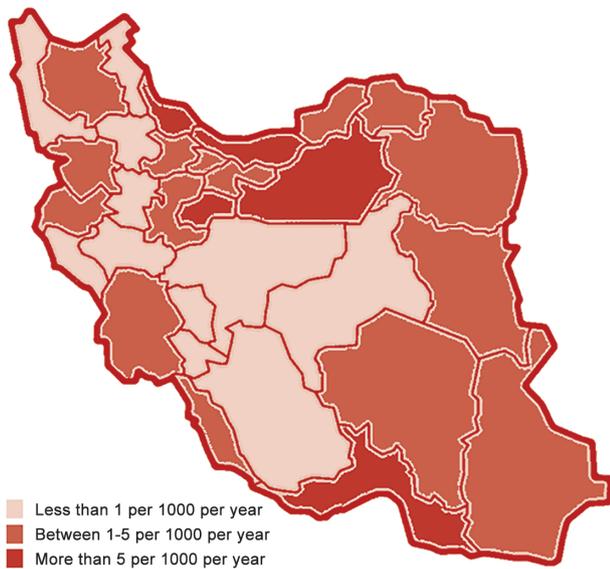


Figure 2. Distribution of scabies cases among different seasons.



**Figure 3.** Geographical distribution of scabies' cases among different provinces.

**Table 1.** Distribution of scabies reported cases among triple forces of Iran's Army.

Force	Number of cases	Percentages
Air Force	899	17.03
Army	1112	21.07
Navy	3266	61.89

## DISCUSSION

During 2004 to 2010, 5277 cases of scabies were reported in Iran's Army. The annual incidence rate of scabies on average was 1.75 per 1000 military personnel. Because of the long period of disease, periodical prevalence can be considered about 1.3%. In a study by Jahani and colleagues on police units deployed in various provinces of Iran, 1915 cases were reported during three years and the prevalence of the disease has been more than 49% which is grossly more than this study's result.<sup>9</sup> Although comparing our study with this study might not seem appropriate because of the different target populations and the long time interval, the sampling method of Jahani and colleagues is very much similar to the present study. In another cross-sectional military study by Karimi-Zarchi and colleagues on the conscripts, the prevalence of scabies was 1.1 per 1000 conscripts (0.11%).<sup>4</sup>

In a study by Rahmati and colleagues on penitentiary prisoners in Karaj city in Iran, the obtained prevalence of scabies was 2.2%.<sup>1</sup> Sharif and colleagues conducted a study on students in Sari city in Iran in which the prevalence of scabies was reported to be 2.09%. In

another study on prisoners, Hamzehnejad obtained 26% prevalence for scabies.<sup>14,15</sup> The two recent studies have less consistent with the results of this study. The likely reasons of higher prevalence of scabies among prisoners can be low health status, lack of health education and high prevalence of drug addiction. In this regard, Rahmati and colleagues have found an association between drug addiction, taking less bath and lack of skin hygiene with the increasing prevalence of scabies.

The low prevalence of scabies in Karimi-Zarchi and colleagues' study can be because of low prevalence of scabies in the studied area. In this sense, Davoodi and colleagues' study on 809 individuals in 2011 at a particular center resulted in zero prevalence of scabies that surely cannot represent actual prevalence in other areas.<sup>12</sup> Thus, the variation in the prevalence of this disease in different years and populations confirm the fact that there are multiple factors involved in its etiology. This can be proven by all previous studies.<sup>7</sup>

In the present study, most cases of the disease were observed in spring and summer and the least in winter. This is consistent with the previous studies of scabies and can be a sign that high temperature and humidity can increase the growth of parasites. In this study, the highest incidence of scabies was seen in Hormozgan, Guilan and Mazandaran provinces. These findings also confirm the role of moisture as a disease main risk factor which is seen in most national and international studies. In a study by Sharif and colleagues, most prevalence of scabies were in Guilan and Mazandaran provinces, especially in public accommodation centers such as barracks and prisons.<sup>10</sup> Also, in the study by Jahani and colleagues most cases of scabies had occurred in Hormozgan and Guilan provinces.<sup>5</sup>

The prevention methods of scabies are considering the personal hygiene, prevention from close contact to the patients and not using common cloths, beds and personal means. The affected people must be isolated and treated as soon as possible without having contact to the others. In a wide-spread epidemics international health organizations' involvement are needed. Necessary educations must be given to the healthcare personnel for rapid examination, diagnosis and beginning the follow-up and treatment in suspected cases.<sup>6,17-18</sup>

According to Walton seasonal change has an effect on scabies prevalence. By decreasing people's bathing and increasing their clothing, lower temperature in winter can increase the incidence of the disease. This matter has not been mentioned directly in other studies but maybe addressed in the way that the more contact with water

and more cloth changing in warm seasons can neutralize the effect of temperature and humidity but there must be more studies to confirm this hypothesis.<sup>16</sup>

In this study among the three Army military forces, the highest incidence was in Navy. The annual incidence of scabies in Navy was 7.71 per 1000 persons per year, more than five times greater than the Air Force which was 1.56 per 1000 persons per year and fifteen times greater than the Ground Force which was 0.54 per 1000 persons per year. This difference has not been studied in previous works. However, a reason can be vicinity of Navy centers to the sea and being in humid climates (increasing moisture can increase susceptibility to this disease).

## CONCLUSION

In some of the previous studied on scabies, significant correlation was found between poverty and low levels of literacy and health with increased prevalence of scabies. So this parasitic disease can be an indicator of the status of public health community. It must be emphasized that the high incidence of this disease in a particular region requires more attention from authorities and military commanders to provide the required healthcare facilities in that region.

Although total trend of scabies has been declining in the recent years among military personnel and this certainly occurred due to improved preventive measures of healthcare system, it is still a common problem of warm and humid provinces and the Navy. This shows the need for more healthcare facilities and resources particularly in those provinces, especially in warm seasons.

## ACKNOWLEDGEMENT

The authors thank all the personnel of Preventive Medicine Department and Infectious Diseases Research Center of AJA University of Medical Sciences for their cooperation.

## CONFLICT OF INTEREST

None declared.

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Corresponding Author:  
Elnaz Tabibian, MD-MPH  
Address: 16<sup>th</sup> Azar St., Poursina St.,  
Tehran University of Medical Sciences,  
Tehran, Iran.  
Postal code: 1417613151  
Tell: +98 21 88002581  
Fax: +98 21 88002581  
Cell Phone: +98 9126035170  
E-mail: elnaz\_tabibian@yahoo.com



Received July 2014  
Accepted November 2014