

## Prevalence of common cutaneous diseases and related factors in a non-educational military center

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### Abstract

**Aims:** Pattern of cutaneous diseases in military centers is different from the society due to presence of predisposing factors in these centers. The aim of this study was to determine the prevalence rate and related factors of common cutaneous diseases in a non-educational military center.

**Methods:** In this cross-sectional study a sample of 809 persons were selected by census sampling method and examined in year 2008. Subjects with suspicious lesions were referred to laboratory. Data was analyzed using SPSS 15 by descriptive and analytical statistical methods including Chi square and logistic regression.

**Results:** 26.2% of the study subjects suffered from skin diseases. The disease distribution pattern was as follows: acne (8.9%), dermatitis (8.8%), pityriasis (3.1%), warts (1.9%), psoriasis (0.7%) tinea versicolor (0.7%), hair loss (0.5%), urticaria (0.4%) leishmaniosis (0.4%) burning scar (0.4%) and cutaneous tuberculosis (0.1%). The prevalence rate of cutaneous diseases was significantly different regarding the bathing frequency and residence place ( $p < 0.05$ )

**Conclusion:** According to the high proportion of contagious cutaneous diseases among the observed diseases, it is strongly recommended to examine soldiers at their first entry to military centers. Periodic physical examinations in order to control the contagious cutaneous diseases are also necessary.

**Keywords:** Military Center, Cutaneous Disease, Prevalence Rate

### Introduction

Skin, as the body cover, forms the first defense barrier against alien agents. Therefore, it encounters several destructive and varied mechanical, physical, chemical and infectious stimulations [1]. Skin is an organ which can easily be visible and accessible; therefore, any disorders happen easily on it, and are also discovered fast. Mortality of these diseases is low, but they lead to very serious side effects [2]. According to the U.S. Air Force surgeons, cutaneous diseases have special importance among employees in the Air Force. Although the numbers of this disease had not been identified, cutaneous disease had caused the death of 3 million patients a day and average of 11 patients a day for each cutaneous patient [3]. Cutaneous diseases have a particular importance in terms of infection. For example, in Vietnam War, cutaneous disease was one of the important and unique factors of loosing individual among U.S. soldiers so that many efforts have been recently done that the soldiers can be able to take shower in the battlefield at least once week. The numbers of bathing depends on environmental conditions, military training, weather conditions, efficient use of antimicrobial soaps and so [4]. In the Crimean War, nearly 16 thousand British soldiers

died, which one of the important factors of mortality was typhus disease that is transmitted by lice [5]. In a study, the prevalence of cutaneous diseases was reported 47.7% and 36.7% in disabled and healthy English soldiers presented in Persian Gulf War [6]. Cutaneous diseases that might have a greater abundance in the military centers are as follows:

Acne is a chronic inflammation of glands and begins from adolescence. Its beginning is like skin-colored lesions, bulging, blackheads or whitehead which can become red bulging inflammatory lesions or even large purulent cysts.

Eczema or dermatitis is one of the most common cutaneous diseases, so that a high percentage of specialized clinic patients complain from it [7].

ETA alopecia (regional baldness) is a disease in which the hair of hairy body parts fall quite abruptly. This part can be head, beard, eyebrows, eyelashes or any other part of the body. In severe cases, all hair of the head falls which is called alopecia totalis or even all the body hair would fall, which is called alopecia Universalis [8].

Scabies is caused by parasitic infection with a type of microscopic mite. This type of mite has male and female that the female is disease-causing for human. This insect makes burrows in skin surface layer in

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order to ovulate in these deep channels, and gives survival to its generation by this way. Human body's reaction to this insect is severe itching and the number of mites in normal type of scabies won't be more than 12 to 14 due to itching and this is due to scratching and digging skin by patients which destroys the channels [9].

Impetigo is caused by the *Streptococcus* or *Staphylococcus* bacteria or both. This disease is more common in children and adolescents and its prevalence season is summer. Lesions are like the yellow clots that are on red and sore skin. These cottages are easily dug. Most of these lesions are located on the face especially around the mouth and nose. Sometimes this disease super-imposes other diseases such as eczema, fever blisters or chickenpox. The disease transmission happens through direct contact or contact with towels and personal belongings of patients [10].

Rash is a highly itching skin bulging that may involve a small part of the skin or all body. This skin bulge is red or pink. Sometimes several small parts of rash are connected to each other and cause great lesions. Lesions of rash are usually durable several minutes to several hours. Rash can be caused due to allergic reactions to certain foods, medications, insect pollens or stings [11].

Psoriasis is a chronic skin inflammatory disease that the exact cause of it is still not clear, but genetic factors are certainly involved in its occurrence. In psoriasis, reproduction of skin cells happens more rapidly and it causes molting. In the United States, 7 million people suffer from this disease and 150 thousand new cases are observed annually [12].

Fungal cutaneous infections are generally divided into superficial fungi which are limited to the stratum corneum and hair and nails, and cutaneous fungi which attack deeper parts of the skin, i.e. dermis, and deep fungi which reach to hypodermal tissue and cause infection and inflammation. Among these, cutaneous and surface fungi have higher prevalence. The most important surface fungal disease is *Tinea versicolor* which causes brown-stain surface infection, and it is also effective on the exacerbation of seborrheic dermatitis symptoms. The most important cutaneous fungal diseases are dermatophytes and candidacies that the first one involves only the skin and the latter affects the skin and mucosa [13]. Although these two types of disease are often limited and improvable, the studies on them are particular important in terms of public health.

In military centers, the pattern of cutaneous diseases is different from the society due to predisposing factors

such as gathering centers and sanatoriums, the excessive sweating due to exercises, etc., wearing specific shoes and dress, using others' personal devices, resting in others' beds, and failure to change under-garments [14].

The aim of this study was to determine the prevalence rate and related factors of common cutaneous diseases in a non-educational military center.

## Methods

This cross-sectional study was conducted in 2008. 809 persons were selected as the subjects of this study by census sampling method from a non-educational military center with the distance of about 30 km from the city and a hot and dry climate region, and they were examined.

These subjects referred to Medical Center Department after the initial justification of the project and their various parts of body were examined including head, face, neck, chest, abdomen, underarm, back and waist, arms, groin, hand and feet nails, between feet toes and sole. After examination, subjects with suspicious lesions of cutaneous diseases were introduced to the laboratory. Demographic information and related factors were recorded in the form of data collection.

Data was analyzed using SPSS 15 by descriptive and analytical statistical methods including frequency distribution tables, central index and dispersion and chi-square test, and logistic regression. The relative chances indexes were used to compare subgroups of independent variables with the cutaneous disease.

## Results

The age mean of subjects was  $23.8 \pm 6.6$  years. The minimum age was 18 years old and the maximum age was 52 years old. All participants were male. 610 subjects (75.4%) were single. 3.2% of subjects had primary education, 23.1% of subjects had guidance education, 50.7% of subjects had high school diploma and 23% of subjects had university education. Regarding the number of bathing, only 9.1% of subjects were bathing daily. At the period of this study, 276 patients (34.1%) less than six months, 167 patients (20.6%) six months to one year, 208 cases (25.7%) between one to two years and 158 patients (19.5%) more than two years had the experience of military service. 233 patients (28.8%) of the subjects had lived in garrisons and others outside of the garrisons. 720 patients (89%) of the subjects had lived in urban and the rest were lived in rural. Fathers' occupations of 120 patients (14.8%) were agriculture

and animal husbandry and others were not agricultural and animal husbandry. Regarding the service status, 152 patients (18.8%) were cadre, 643 patients were (79.5%) duty, and 14 patients (1.7%) were contract staffs. Regarding the service location, 198 patients

(24.5%) in the office, 153 patients (18.9%) had served in Preservation, 95 patients (11.7%) in transportation and repair, 51 patients (6.3%) in General readiness, 32 patients (4%) in support, and 242 patients (29.9%) in other parts.

**Table 1-** Comparing the prevalence of cutaneous diseases regarding its related variables in a non-educational military center

Studied Variable		Relative frequency of disease	Prevalence (%)	Relative chance	%95 Confidence Interval
Marital status	Single	156	25.6	1	0.94 -2.15
	Married	56	28.1	1.42	
Education	Non-University	165	26.5	1	0.62 -1.46
	University	47	25.1	0.95	
Residence place	Home	137	23.8	1	1.15 -2.48
	Garrisons	75	32.2	1.70	
	7 times	15	21.7	0.63	
Bathing frequency in the week	4 times	52	21.8	0.65	0.27 -1.54
	3 times	66	30.1	0.40	0.17 -0.95
	2 times	72	30.8	0.69	0.19 -1.04
	Once	7	14.6	1	0.14 -0.85
Parents' residence place	City	191	26.5	1	0.38 -1.26
	Village	21	23.6	0.69	
Parents Occupation	Agriculture and animal husbandry	180	26.7	1	0.65 -2.76
	Etc.	32	26.1	0.95	

The prevalence of cutaneous diseases was determined 26.2%. The disease distribution pattern was as follow: acne 8.9%, dermatitis 8.8%, pityriasis 3.1%, warts 1.9%, psoriasis 0.7%, *Tinea versicolor* 0.7%, hair loss 0.5%, mole 0.4%, urticaria 0.4%, leishmaniasis 0.4%, burning scar 0.4% and cutaneous tuberculosis 0.1%. Three parts which had the highest involvement included head and neck in 62 patients (7.7%), back in 53 patients (6.6%) and feet in 36 patients (4.4%), respectively.

Relative and absolute frequency of cutaneous diseases are given in Table 1 regarding the variables of marital status, education level, location, bathing frequency in a week, residence place and parental occupation.

The prevalence rate of cutaneous diseases was significantly different regarding the bathing frequency in a week and residence place ( $p < 0.05$ ), but was not significantly different regarding education, marital status, residence place and parental occupation ( $p > 0.05$ ).

Relative frequency of cutaneous diseases among patients who had lived in the nursing home with a capacity of less than 10 patients was 42.9% and among patients who had lived in nursing home with a capacity of more than 20 patients was 29.9% respectively. There was no statistically significant difference between the ratios of cutaneous diseases in nursing home with the different capacities.

## Discussion

Preventing and promoting the employees' health in any organization is considered the most important tasks of organizations' officials. This subject is very important in the military organizations. During 1995-96 in Bosnia War, 12.5% of the medical advice in the British troops was related to cutaneous diseases [15]. In the present study, the prevalence of cutaneous disease was 26.2%. The prevalence of cutaneous disease was 21% among British troops who attended in Bosnia, which was lower than the present study [16]. The highest prevalence was related to acne and acne skin, dermatitis, and dandruff, respectively. In a study conducted on the military soldiers in Denmark, the prevalence of clinical symptoms, Erythrasma and infection caused by dermatophytes was 58.8%, 51.3% and 6.2%, respectively [17]. Regarding the bathing frequency, the highest risk was for the patients who had bathing twice a week (30.8%). In the study of Afshari which was conducted in the training garrisons of a military agency of Tehran, the highest risk was also for the patients who bathed twice a week. This study shows that lower bathing frequency, the higher cutaneous diseases would be. The study of Afshari et al. also showed that the highest percentage of cutaneous and fungal diseases was related to patients with elementary education (23%) and the lowest one

was related to patients with higher diploma degree (5%) which was consistent with the results of the present study. This study showed that people who lived in garrisons had cutaneous diseases more than those who had lived at home, which describes the necessity of providing health-care facilities and continuous supervision [18].

In the present study, there was no significant relationship between parents' occupation and cutaneous diseases. Although in the study of Dr. Karimi et al. on the prevalence of scabies in military centers, parents' occupation had been effective in the prevalence of scabies [19]. Regarding the type of cutaneous disease, the highest prevalence was related to acne and pimples with the relative frequency of 8.9% due to the higher activity of sebaceous glands and hormones, since the age mean was 23.8 years and 79.5% of subjects were duty and young workers. In a study on 20 thousand volunteers in the United States military, 733 patients (3.67%) had cutaneous diseases. Among these patients, 244 patients had acne, 55 patients had psoriasis, 55, 35 patients had Pyoderma and others had *Tinea*, eczema, disseminated neurodermatitis, etc. [3]. In a study conducted on U.S. soldiers evacuated from battlefields in Iraq and Afghanistan, the highest cutaneous disease was dermatitis and urticaria [20]. In Persian Gulf Battle, benign and malignant skin cancer after dermatitis was the most important cutaneous disease which caused the evacuation of soldiers from battlefields [21]. In a report which was prepared by Hepburn, no observation of skin cancers in the Persian Gulf War was mentioned to be due to the youth of soldiers [22]. Regarding the fungal cutaneous diseases, from 809 patients who were examined, 31 patients (3.7%) of patients suspicious of fungal diseases were contagious that 6 cases of *Tinea versicolor* were confirmed. Reports have shown that percentage of patients with fungal cutaneous diseases is the same in most of non-educational garrisons. In this study, hair loss 0.5%, psoriasis 0.7%, leishmaniasis 0.4%, burning scar 0.4%, skin mole 0.4% and warts 1.9% had been reported. During two years, 522 U.S. troops in the center and Southeast of Asia were suffering from major leishmaniasis disease that leishmaniasis was detected as species of *Leishmania* [23]. In this study, the most prevalent involved sites were head and neck (7.7%), back (6.6%) and legs (4.4%) and the lowest was the hands (1.1%), respectively. In the study of Dr. Karimi et al. on the prevalence of scabies, the highest parts had been reported as legs (27.3%), body (18.2%) and hands (1.5%). In a 12-month study conducted in Malak Khalid military hospital of Saudi Arabia

located in Jeddah, 5260 patients with cutaneous diseases were examined that 910 cases of this group were new patients. The most common diseases included eczema (18.64%), acne (9.26%), viral diseases (6.48%), bacterial (7.65%), pigmented disorders (6.46%) and fungal infections (6.35%) [24]. Today, the prevention of cutaneous diseases among troops is so important that the dermatologists working in U.S. military have been offering medical advice to soldiers through Internet [25].

In the present study, no scabies and Pediculosis was observed. The reported frequency of fungal diseases was also lower than the previous studies that the cause of decreasing cutaneous diseases or eliminating of some diseases could be related to the growing power of public health and observing the public hygiene in the garrisons and increasing the knowledge of health. Non-educational nature of the studied center could also be effective in decreasing the risk. Therefore, the most important factors in preventing the cutaneous diseases were promoting the health awareness and observing personal and public hygiene. Non-compliance with health tips and other disposing causes would increase the prevalence of these diseases in each society. Considering the high proportion of contagious cutaneous diseases among the observed diseases and also the high ratio of diseases among soldiers, initial examinations at the first entry of soldiers to the military centers is recommended. Periodic physical examinations are also essential for controlling contagious cutaneous diseases.

## Conclusion

The prevalence rate of cutaneous diseases in the studied military center was 26.2%. Acne and eczema, dermatitis and dandruff had the highest prevalence, respectively. The most parts of prevalence were head and neck, back and feet and the least involved part was hand. The prevalence rate of cutaneous diseases was significantly different regarding the weekly bathing frequency and residence place. The initial examinations at the first entry to the military centers and also the periodic examinations in order to control cutaneous diseases are necessary.

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