

Structure and intensity rate of illnesses in American females serving in the U.S. Forces in Afghanistan

Struktura i natężenie zachorowań Amerykanek pełniących służbę w U.S. Forces w Afganistanie

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Abstract. Aim: The article presents the results of own research concerning the structure and intensity rate of diseases in females serving in the U.S. Forces in Afghanistan. Sickness profile of female personnel was compared with illnesses reported among male personnel performing mandatory tasks and treated in the same time and place. Material and methods: The retrospective analysis was based on medical records of 219 female patients of American nationality treated in the outpatient clinic of the Combat Support Hospital (Level 3) in Bagram Air Base (BAF) in Afghanistan from March to August 2005 (initial visits, excluding check-up appointments). The analysis was carried out on the basis of structure rate and intensity rate per 100 patients. Results: The most common health problems diagnosed in the U.S. Forces personnel were respiratory tract and gastrointestinal diseases, injuries, and dermatoses. Conclusions: The prevalence of illnesses was directly connected with the effects of climatic conditions, low sanitary standards in the area of deployment, with neglect of basic rules of health prevention and also with injuries experienced on duty and while doing sport exercises. The intensity rate among female personnel was two-fold higher than among men.

Key words: Afghanistan, morbidity, U.S. Forces

Streszczenie. Cel pracy: W pracy przedstawiono wyniki badań własnych, dotyczących struktury i natężenia zachorowań Amerykanek pełniących służbę w U.S. Forces w Afganistanie. Profil zachorowań personelu żeńskiego porównano z problemami zdrowotnymi Amerykanów, żołnierzy wykonujących zadania mandatowe oraz leczonych w tym samym miejscu i czasie. Materiał i metody: Przeprowadzona analiza retrospektywna została oparta na dokumentacji medycznej 219 pacjentek narodowości amerykańskiej leczonych ambulatoryjnie w izbie przyjęć Combat Support Hospital (poziom 3.) w bazie Bagram Airfield (BAF) w Afganistanie w okresie marzec-sierpień 2005 r. (wizyty wstępne, wyłączając wizyty kontrolne). Analizę wykonano w oparciu o wskaźnik struktury oraz wskaźnik natężenia w przeliczeniu na 100 osób. Wyniki: Najczęstszym problemem zdrowotnym żołnierzy U.S. Forces były choroby układu oddechowego i pokarmowego, obrażenia ciała oraz choroby skóry. Wnioski: Występowanie zachorowań było związane z działaniem czynników klimatycznych, niskimi standardami sanitarnymi w rejonie zakwaterowania wojsk, lekceważeniem zasad profilaktyki zdrowotnej, a także z urazami nabytymi podczas wykonywania obowiązków służbowych i zajęć sportowych. Różnice dotyczyły natężenia zachorowalności, które było ponad dwukrotnie większe w badanej grupie kobiet.

Słowa kluczowe: Afganistan, U.S. Forces, zachorowalność

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Introduction

The events, which took place on September 11, 2001 led to the rapid formation of an anti-terrorist coalition, aimed at eliminating al-Qaeda bases and the Taliban regime in Afghanistan. The NATO Council of Ambassadors convened a meeting the next day after the attacks; the council declared that the attack on the United States was an assault on all NATO countries. The UK, France, Spain and Italy announced strong support for the American attack on Afghanistan, whereas Germany, Holland, Belgium and Norway opposed the invasion. The U.S. military operation in Afghanistan was also supported by Russia, which maintains extensive influence over former Soviet Union countries in Central Asia. On September 15, 2001, the U.S. Congress passed a resolution authorizing the U.S. President to use armed forces in Afghanistan. Preparations for the Operation Enduring Freedom were primarily based on reconnaissance activities and flow of information with the use of reconnaissance satellites in space. Combat activities were carried out in close cooperation between the Air Force and the Land Forces. The primary aim of the Land Forces, which were composed of the Special Forces units, was to guide pilots of military aircraft. The first phase of the operation was primarily conducted by the Air Force, which was responsible for attacking and destroying strategic targets. In December 2001, American troops began a search for al-Qaeda fighters hiding in fortified networks of caves and tunnels in the Tora Bora Mountains. In March 2002, the U.S. and U.K. forces jointly launched another military operation under the code name Anaconda. Despite the deployment of a large number of coalition forces, the Taliban put up fierce resistance against the U.S.-led troops, with the result that there were many dead and wounded on both sides of the conflict. Fighting between the Taliban and the U.S. / U.K. Special Forces intensified in January 2003. In October 2006, the NATO International Security Assistance Force (ISAF) provided military support for the American-led Operation Enduring Freedom in Afghanistan. The U.S. continues to be the leading coalition member, with the difference that the other NATO countries (including Poland) have made a much greater contribution to maintain stability in Afghanistan since the ISAF was formed. The ISAF forces are responsible for preserving peace in the whole territory of Afghanistan (in close cooperation with the Afghan army and police), they are also in charge of assisting Afghan authorities in rebuilding the devastated infrastructure with the help of Provincial Reconstruction Teams (PRTs) [1].

The organizational structure of health care in present-day military operations on the example of Afghanistan

The system of medical support of present-day military operations is based on four levels of health care and medical evacuation. Medical evacuation is either airborne or overland. The highest level (Level 4) is organized outside the theater of operations – in the territories of the countries, which are part of the stabilization forces participating in a given combat operation. Both structure and tasks of the system implemented in Afghanistan are adjusted to fit the requirements of the multileveled medical support provided to the U.S. Forces and are carried out by health services of all member states engaged in a given operation. Such close cooperation with the U.S. troops is necessary to ensure the health and life of soldiers serving in coalition forces deployed to a combat zone. Each subsequent level of medical support is more specialized and capable of providing more advanced medical treatment compared with the preceding level. Medical evacuation from the areas of operations is executed by air, using sanitary helicopters, or overland, depending on the type of diseases and injuries as well as tactical situation in a particular combat zone.

Level 1. Level 1 of medical support denotes immediate first aid at the scene, usually provided by buddy-aid or a paramedic (*combat medic* in the U.S. Forces). Apart from cardiopulmonary resuscitation (CPR), first aid typically includes tourniquet application, stabilization of broken bones by splint application and application of sterile dressing on wounds. A wounded soldier is then transferred to a Battalion Aid Station (BAS) where a physician or a PA (*physician assistant*) stabilizes a patient and provides treatment of diseases and injuries, which do not require long hospitalization.

Level 2. Forward Surgical Team (FST) is tasked with providing qualified surgical assistance and stabilizing a patient. The FST is a mobile unit and it is relocated together with a unit, which provides the FST with logistical support. The FST has a 72-hour capability and it is capable to provide operating tables for 10 serious cases or for a maximum of 30 minor cases.

Level 3. Combat Support Hospital (CSH) represents Level 3 of medical support. Its aim is to stabilize a patient and provide specialized treatment in the area of operations according to indications or full range. Patients who cannot be returned to duty within 7 days are evacuated to Level 4 of medical support, which is outside the theater of war. The CSH is capable of providing general, orthopedic, thoracic, vascular, urologic and gynecologic surgery. The CSH has extensive laboratory capabilities: X-ray, ultrasound scan, CT scan, blood bank, physiotherapy. In addition, the CSH provides outpatient treatment to soldiers serving in coalition forces, mainly the U.S. military personnel. Outpatient treatment is provided at the sick call of the CSH.

Level 4. Specialized medical care according to indications or full range is provided outside the area of operations. The bulk of casualties evacuated from the Middle East and Afghanistan are transferred to the Landstuhl Regional Medical Center in Germany, an American medical unit located in the U.S. Air Force base in Ramstein. It admits approximately 80% of the sick and wounded soldiers who had to be evacuated from areas of operation in Iraq and Afghanistan. Polish military personnel who had been evacuated to the American medical unit in Germany are later transferred to military hospitals in Poland (mainly to the Military Institute of Medicine in Warsaw), where they receive multi-profile medical care [2].

Epidemiological situation in Afghanistan

Afghanistan, a country situated in Central Asia, has been continuously affected by armed conflicts. Due to its devastated communal and industrial infrastructure, countless natural disasters, limited access of the Afghan people to both food and health care, the country has long been considered one of the poorest states in the world. According to the UN ranking, classifying 182 countries in terms of their wealth and economic development, Afghanistan is placed on the penultimate, i.e. 181st position. Demographic indexes of the country are estimated to be the lowest in the world. The Afghan people are heavily dependent on international humanitarian assistance. Labor-related mortality is estimated second-highest in the world (one out of eight Afghan women dies from labor-related complications), infant mortality is also second highest (151/1,000 live births) and the mortality among the entire population is the third highest (17.65/1,000 inhabitants per year). One out of five Afghan children die before reaching the age of five, and the average life expectancy is estimated at 44. Afghanistan is considered a country of high risk as far as the occurrence of infectious and invasive diseases is concerned. This is largely influenced by contamination of water and soil (sewage, excrements, and pesticides), disastrous condition of sewage systems, water and sewage treatment plants, shortages of basic medicines and medical equipment, a large number of asymptomatic carriers of certain contagious and parasitic diseases among the local population and mass migrations. Contamination of water with pathogenic microorganisms is widespread; as a result, the incidence of diarrheal diseases in Afghans, especially among children under five, is exceptionally high. Merely 5–7% of the population has access to lavatories meeting basic sanitary requirements. More than 50% of the Afghan people are chronically malnourished. In addition, the most common health problems diagnosed in Afghans include infectious diarrheal diseases, vector-borne parasitic diseases (malaria, leishmaniasis) and injuries being the effect of ongoing combat operations [3,4].

The epidemiological situation in areas where Multi-national Stabilization Forces have been relocated differs radically from sanitary standards and living conditions of the local people. This is mainly due to well-functioning medical services and effective logistical support of the military operation. Nevertheless, because of difficult climatic and sanitary conditions as well as the intensification of hostilities, the incidence of diseases of different etiology among military personnel serving in the Coalition Forces (people who come from countries of satisfactory sanitary standards) is particularly high [5]. Owing to the fact that military service ceased to be an all-male profession, it seems justified to undertake health assessment of female soldiers, as the percentage of females serving in armed forces of different countries has been rising steadily. Female personnel account for 10–15% of the troop strength in the U.S. Forces [6].

Aim

The aim of this study was to determine the structure and intensity rate of diseases in females serving in the U.S. Forces engaged in the Operation Enduring Freedom in Afghanistan. The disease profile of female soldiers was compared to the sickness profile of male personnel serving in the U.S. Forces in Afghanistan and treated in the same time and place as female personnel.

Material and methods

The retrospective analysis was based on medical records of 219 female patients of American nationality treated on an outpatient basis at the sick call in the Combat Support Hospital (Level 3) located in the Bagram Airfield (BAF) in Afghanistan in the period March-August 2005 (initial visits, excluding check-up appointments). 7,000 soldiers of the U.S. Forces served in the BAF within the analyzed period. Female personnel serving in the American contingent accounted for 10% of troop strength in that time. The analysis was carried out on the basis of structure rate and intensity rate per 100 patients. The analysis of medical data obtained from American service personnel was carried out by consent of the Head of Health Services supporting the Operation Enduring Freedom in Afghanistan (Combined Joint Task Force-76 Surgeon, Commander 249th U.S. Army General Hospital, Bagram Airfield). The study population was of accidental composition (no choice). The data, which have been collected, were then presented in the form of figures and tables. The most commonly diagnosed diseases and injuries of different organs and systems were analyzed in line with the ICD-9-CM classification: respiratory tract diseases, cardiovascular diseases, digestive system diseases, musculoskeletal diseases and disorders, skin diseases, nervous system

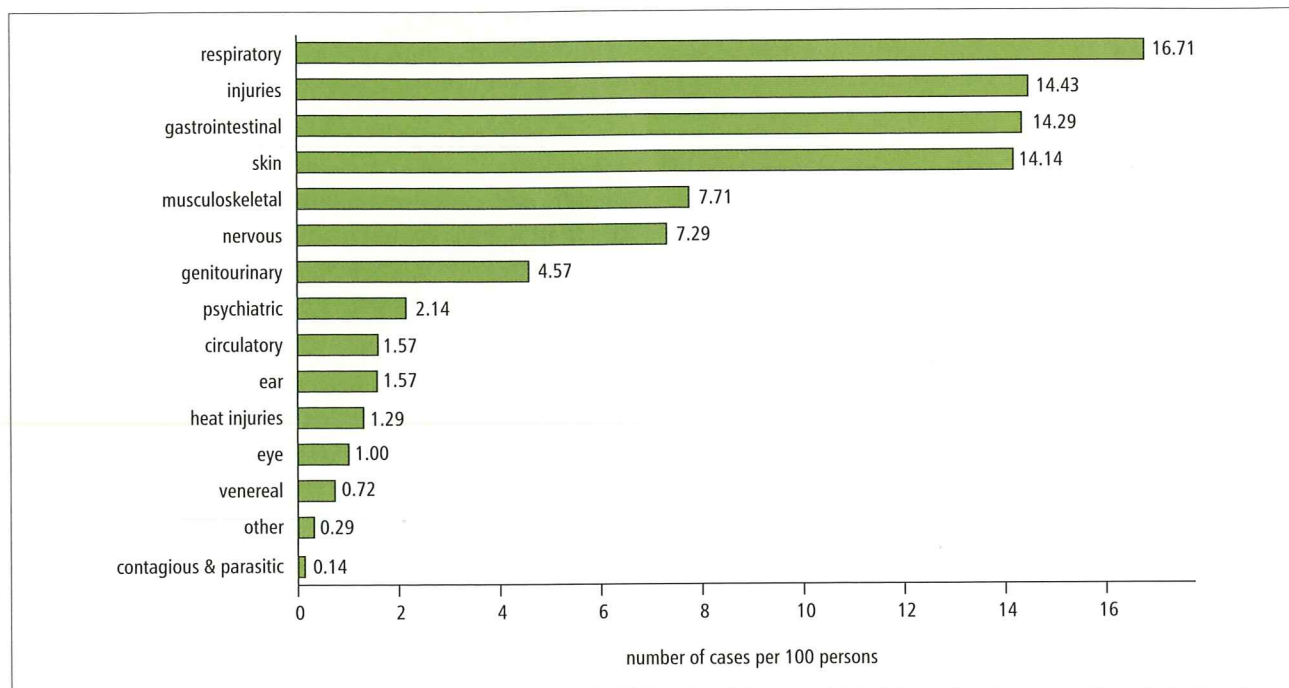


Figure 1. The incidence of diseases and injuries among female personnel serving in the U.S. Forces ($n = 700$), treated on an outpatient basis ($n = 219$) in the period March–August 2005. Source: Enduring Freedom. Own studies

Rycina 1. Występowanie chorób i obrażeń ciała u kobiet pełniących służbę w U.S. Forces ($n = 700$), leczonych ambulatoryjnie w okresie marzec – sierpień 2005 ($n = 219$)

diseases, diseases affecting the organs of sight and hearing, diseases of the urogenital system, psychiatric disorders, injuries. Detailed diagnoses of particular disease entities were analyzed in compliance with the same classification. The basis for calculating the intensity rate was the number of initial appointments according to diagnosed diseases and injuries (excluding check-up appointments for the same disease entity within 2 weeks) used as a numerator and the total number of people in the studied population in a given period used as a denominator ($n = 700$ female personnel in the U.S. Forces; $n = 6,300$ male personnel in the U.S. Forces), multiplied by the coefficient $C = 10^k$ ($k = 0,1,2,3,\dots$, in this statistical analysis $k = 2$). The intensity rate was used to calculate the incidence of diseases and injuries per 100 female/male patients in the study population. STATISTICA PL software was used to calculate the final scores.

Results

The research demonstrated that the most common health problems diagnosed in the population of 219 female soldiers serving in the U.S. Forces who were treated at the sick call of the Combat Support Hospital in Bagram Airfield in Afghanistan in the period March–August 2005 were respiratory tract diseases (19.0%, 16.71/100

persons), injuries (16.4%, 14.43/100 persons), digestive system diseases (16.3%, 14.29/100 persons) and skin diseases (16.1%, 14.14/100 persons; Figure 1, Table 1).

The diagnosed respiratory tract diseases (117 cases) included common cold – 66, bronchitis – 18, sinusitis – 14, pharyngitis – 12, asthma – 2, allergic rhinitis – 2, tonsillitis – 2. The reported injuries (101 cases) were of a non-battle character and they included contusion/dislocation/sprain – 96, fracture – 3, contused/incised wound – 2. The diagnosed gastrointestinal diseases (100 cases) were acute gastroenteritis – 76, constipation – 8, gastritis – 6, dyspepsia – 6, oesophagitis – 2, other – 2. Common skin diseases (99 cases) included allergic dermatoses – 47, mycoses – 16, viral diseases – 8, pyodermas – 4, juvenile acne – 4, other – 20. One case of an infectious disease (molluscum contagiosum) and 5 cases of STD (genital herpes – 3, chlamydia – 1, genital warts – 1) were diagnosed among the American female personnel deployed to the BAF within the analyzed period. In addition, female soldiers serving in the U.S. Forces who were treated on an outpatient basis in the given period were analyzed in terms of age and rank. The most commonly treated female patients were NCOs (78.9%) aged 21–30 (57.6%), which was associated with the fact that the highest number of female soldiers assigned to the military operation in Afghanistan are recruited from this particular age group and corps.

Table 1. The incidence of diseases and injuries among female personnel serving in the U.S. Forces (n = 700), treated on an outpatient basis (n = 219) in the period March–August 2005**Tabela 1. Występowanie chorób i obrażeń ciała u kobiet pełniących służbę w U.S. Forces (n = 700), leczonych ambulatoryjnie w okresie marzec – sierpień 2005 (n = 219)**

Diseases and injuries	Female personnel of American nationality outpatient treatment (number of patients n = 219)		
	number of cases	structure rate (%)	intensity rate (per 100 persons)
respiratory	117	19.0	16.71
injuries	101	16.4	14.43
gastrointestinal	100	16.3	14.29
skin	99	16.1	14.14
musculoskeletal	54	8.8	7.71
nervous	51	8.3	7.29
genitourinary	32	5.2	4.57
mental disorders	15	2.4	2.14
circulatory	11	1.8	1.57
ear	11	1.8	1.57
heat injuries	9	1.5	1.29
eye	7	1.1	1.00
venereal	5	0.8	0.72
other	2	0.3	0.29
contagious & parasitic	1	0.2	0.14
total	615	100.0	87.86

Source: Enduring Freedom. Own studies

Discussion

The incidence of diseases among American females serving in the U.S. Forces in Afghanistan in the period March–August 2005 was directly connected with the effects of different risk factors, e.g. climatic conditions (huge differences between day and night temperatures as well as between the summer and winter temperatures), low sanitary standards in the area of deployment (resulting in the occurrence of diseases affecting the respiratory tract, digestive system and dermatoses), traumas sustained while executing military duties or during sport exercises (injuries), and also disregard for basic principles of health prevention, food and feeding hygiene and personal hygiene. The disease profile observed among female personnel serving in the U.S. Forces was compared to the profile of diseases reported in the population of male American soldiers deployed to Afghanistan who were treated in the same time (March–August 2005) and place (Bagram Airfield). 2,470 military personnel of the U.S. Forces were treated in the sick call of the Combat Support Hospital within the given period; 219 of the patients were women (8.9%) and 2,251 were men (91.1%). The most commonly reported health problem in the population of male personnel treated

on an outpatient basis were battle and non-battle injuries (23.2%, 8.38/100 persons), respiratory tract diseases (16.7%, 6.02/100 persons), skin diseases (15.8%, 5.68/100 persons) and gastrointestinal diseases (12.4%, 4.46/100 persons; Figure 2, Table 2).

The structure rate of the most common diseases reported in the population of male military personnel was similar to the profile of disease entities diagnosed in the female population. Yet, there were substantial differences as regards the intensity rate. 219 out of 700 American female soldiers (31.1% of the population) relocated to the Bagram Airfield for the period March–August 2005 needed medical assistance and were treated on an outpatient basis. Another visits of the same 219 female patients (615 appointments in total) resulted in the increased intensity rate of 87.86 per 100 persons (in fact there was an average of three visits per one patient with various kinds of health problems within the analyzed period).

A much lower intensity rate of diseases was observed in the population of male military personnel; 2,251 soldiers (35.7% of the population) out of the entire number of 6,300 male personnel serving in the BAF were treated on an outpatient basis. A total of 2,273 initial appointments resulted in the fact that the intensity

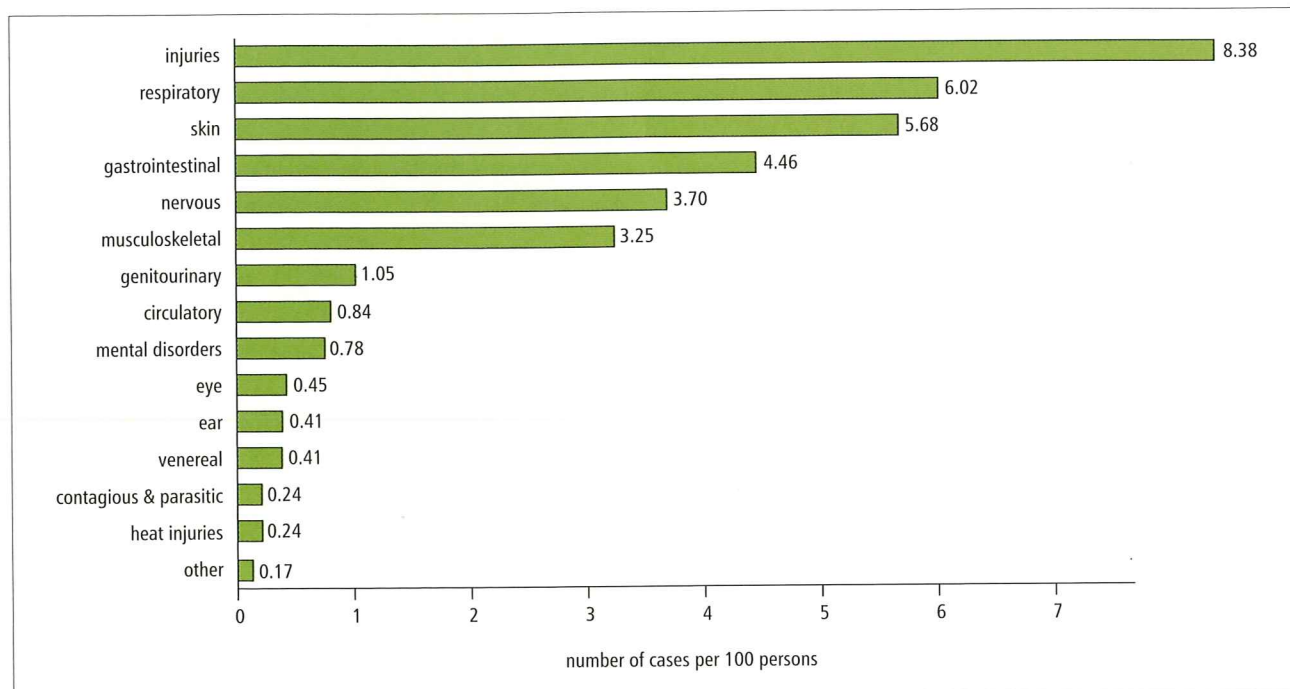


Figure 2. The incidence of diseases and injuries among male personnel serving in the U.S. Forces (n = 6,300), treated on an outpatient basis (n = 2,251) in the period March–August 2005. Source: Enduring Freedom. Own studies

Rycina 2. Występowanie chorób i obrażeń ciała u mężczyzn pełniących służbę w U.S. Forces (n = 6 300), leczonych ambulatoryjnie w okresie marzec – sierpień 2005 (n = 2 251)

Table 2. The incidence of diseases and injuries among male personnel serving in the U.S. Forces (n = 6,300), treated on an outpatient basis (n = 2,251) in the period March–August 2005

Tabela 2. Występowanie chorób i obrażeń ciała u mężczyzn pełniących służbę w U.S. Forces (n = 6 300), leczonych ambulatoryjnie w okresie marzec – sierpień 2005 (n = 2 251)

Diseases and injuries	Male personnel of American nationality outpatient treatment (number of patients n = 219)		
	number of cases	structure rate (%)	number of cases
injuries	528	23.2	8.38
respiratory	379	16.7	6.02
skin	358	15.8	5.68
gastrointestinal	281	12.4	4.46
nervous	220	10.2	3.70
musculoskeletal	218	9.0	3.25
genitourinary	66	2.9	1.05
circulatory	53	2.3	0.84
mental disorders	49	2.2	0.78
eye	28	1.2	0.45
ear	26	1.1	0.41
venereal	26	1.1	0.41
contagious & parasitic	15	0.7	0.24
heat injuries	15	0.7	0.24
other	11	0.5	0.17
total	2,273	100.0	36.08

Source: Enduring Freedom. Own studies

rate in males was more than two fold lower than in females (36.08/100 persons). The injuries treated in American male outpatients were either the effect of combat activities (6 cases: shrapnel wound – 6, gunshot wound – 1) or they were non-battle injuries (522 cases: contusion/ dislocation/ sprain – 427, contused/ incised/ lacerated wound – 11, fracture – 10, skin burn – 5, eye injury – 2, acoustic trauma – 2, other – 65). Respiratory tract diseases (379 cases) included common cold – 221, bronchitis – 52, pharyngitis and/or tonsillitis – 46, sinusitis – 34, asthma – 10, allergic rhinitis – 2, other – 14. The diagnosed dermatoses (358 cases) included allergic diseases – 114, mycoses – 81, viral diseases – 55, pyodermas – 42, juvenile acne – 11, other – 55. The diagnosed gastrointestinal diseases (281 cases) included acute gastroenteritis/ diarrhea – 213, inguinal hernia – 26, gastritis – 10, constipation – 6, stomatitis – 4, other – 22. Sexually transmitted diseases included (26 cases) chlamydia – 9, genital warts – 9, genital herpes – 4, gonorrhea – 3, trichomoniasis – 1. Infectious and parasitic diseases (15 cases) included cutaneous leishmaniasis – 7, scabies – 2, salmonellosis – 2, hepatitis A – 1, ascariasis – 1, angina – 1, and mononucleosis – 1.

Considerable differences between the number of male and female outpatients treated for contagious and parasitic diseases (women 1 vs. men 15) and sexually transmitted diseases (women 5 vs. men 26) were the result of disproportion between the numbers of male and female military personnel serving in the U.S. Forces in Afghanistan (women 700 vs. men 6,300).

Male military personnel serving in the U.S. Forces who were treated on an outpatient basis in the period March–August 2005 were analyzed in terms of age and rank. The most commonly treated male patients were NCOs (77.8%) aged 21–30 (52.6%), which was associated with the fact that the highest number of male soldiers assigned to the military operation in Afghanistan are recruited from this particular age group and corps.

Conclusions

Health problems occurring among American females serving in Afghanistan were directly connected with the effects of climatic conditions, low sanitary standards in the area of deployment, with neglect of basic rules of health prevention (respiratory tract and gastrointestinal diseases, dermatoses), and also with injuries experienced on duty and while doing sport exercises. Similar sickness profile was reported among male personnel serving in the U.S. Forces in Afghanistan and treated in the same time and place as female personnel. The main difference lies in intensity rate, which was two fold higher in the female population.

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