

ORIGINAL ARTICLE

UNTAG (United Nations Transition Assistance Group) - Peacekeeping in Africa

Krzysztof Korzeniewski

*Military Institute of Health Service
Department of Epidemiology and Tropical Medicine, Gdynia, Poland*

ABSTRACT

Introduction - Aim of the study

UNTAG (United Nations Transition Assistance Group), an operation conducted from 1989 to 1990, was a United Nations peacekeeping mission in Southwest Africa, where after long years of colonialism and apartheid a new and independent country, Namibia, was about to be formed. The article presents the results of the research regarding the morbidity structure in the population of peacekeepers of multinational contingents deployed within the framework of the UNTAG mission from April 1989 to March 1990.

Material and Methods

The conducted analysis was based on medical records of 4414 patients of 11 different nationalities treated in the 1st and 2nd level medical centers. The 1st level medical center was constituted of outpatient clinics of particular contingents, while the 2nd level center was constituted of 4 field hospitals, which belonged to the Swiss Medical Unit, located in the north (3 units) and central (the capital, Windhoek) parts of the operational zone.

Results and Conclusions

The most serious problem in the population of UNTAG peacekeepers were diseases of the respiratory tract (22.8%), dermatoses (13.3%), dental problems (13.1%) as well as contagious and parasitic diseases (11.5% of which mainly contagious diarrheas - 5.9%, sexually transmitted diseases - 3.8%, and malaria - 1.8%).

Keywords: *United Nations, Namibia, Africa, soldiers, health status, military medicine.*

INTRODUCTION

In the 1980s there still existed a few countries which kept fighting for their independence, Namibia was one of them. Hypothetically, the country constituted a manda-

ted territory of the United Nations (UN); however, the actual authority in Namibia was exercised by the Republic of South Africa. Eventually, in 1989 the Namibian people got their chance - the first free elections were organized in the country under the auspices of the UN. The process of the formation of a new country had been monitored by United Nations Transition Assistance Group (UNTAG) from 1989 to 1990.

The Polish Military Contingent, which was in charge of securing the mission with logistical support in the northern parts of the country and also contributed a group of military observers, became a part of the UN assistance group.¹ UNTAG - the UN peacekeeping mission - constituted the final phase of a long-lasting and complicated process of Namibia's decolonization. Its aim was to monitor the ceasefire between South African Defence Force (SADF) and guerrillas of the South West African People's Organization (SWAPO), and also to prepare and administer free elections to a Constituent Assembly in Namibia.² The UNTAG operation was founded under the UNSC resolution No. 632 on the 16th of February 1989. The mission was considered a full success and it was terminated in April 1990 when Namibia - a free democracy - gained recognition of the international community, thus becoming a full member of the UN.³ In total 7114 people took part in the UNTAG mission, including 4144 soldiers and civil workers forming 11 national contingents, 299 military observers, 2671 police officers, civil and local personnel from a few dozen different countries.⁴ A number of 16 peacekeepers died while executing mandatory tasks from April 1989 to March 1990, mainly in a traffic accident.^{2,5}

Namibia, a country located in Southwest Africa, was characterized by adverse climatic conditions as well as low sanitary and hygienic standards of the local people within the period of the UNTAG mission operations. The warmest month in the north of the country is October (42.7°C), December - in the center (36.6°C) and January - in the south (41.3°C). The territory of Namibia (825.000 km²) is sparsely populated. In the early 1990s it was inhabited by merely 1.2-1.3 million people. Life expectancy of Namibians was estimated at 47 for men and 50 for women. A 65% of the

Corresponding author: Krzysztof Korzeniewski MD, PhD
Military Institute of Health Service
Department of Epidemiology and Tropical Medicine
81-103 Gdynia 3, Grudzińskiego St. 4, Poland.
E-mail: kktropmed@wp.pl

population had access to uncontaminated drinking water. The access to the health service was limited: there were 10.000 people per 1 doctor, 130 people per a hospital bed. The infant mortality (under 1 year old) was estimated at 116 per 1000 live births (mainly due to malaria and diarrheas). Only 30% of children were vaccinated against contagious diseases.⁴

Malaria, sexually transmitted diseases, measles and tuberculosis were the main causes of high morbidity rate in Namibia in the 1980s and 1990s. Incidence of malaria amounting to tens of thousands of cases annually occurred in the summer to the north of the 20° south latitude and all year long in the centre of the country. As far as chemoprophylaxis of malaria was concerned the application of chloroquine (300 mg) 1 x weekly + proguanil (200 mg) 1 x daily was effective.

Venereal diseases were widespread in the territory of the whole country (6.800 cases per 100.000 inhabitants over 15 years of age). The first cases of AIDS were diagnosed in 1986. In total 189 cases of AIDS had been registered in Namibia until December 1989. Also 299 cases of tuberculosis per 100.000 people had been registered from 1987 to 1988. Other contagious and parasitic diseases were mainly observed in the northern parts of the country (rabies, plaque, schistosomiasis - *S. masoni*, *S. haematobium*; trypanosomiasis, relapsing fever).

The following cases of infectious and invasive diseases were registered in Namibia in 1988:

- Arthropod-borne diseases: malaria (73.458 cases), schistosomiasis (777 cases), relapsing fever (93 cases),
- Food and water-borne diseases: typhoid fever (85 cases), amebiasis (69 cases), shigellosis (9 cases),
- Airborne diseases: tuberculosis (3312 cases),
- Contagious diseases subjected to the vaccination schedule: measles (4487 cases), viral hepatitis (416 cases), meningococcal cerebrospinal meningitis (301 cases), tetanus (48 cases), diphtheria (8 cases)
- Sexually transmitted diseases (STD): syphilis (7980 cases), gonorrhoea (8219 cases), other STD (339 cases),
- Animal-borne diseases: plaque (95 cases), anthrax (40 cases), rabies (31 cases),
- Other: leprosy (62 cases), infants' gonorrhoeal conjunctivitis (87 cases), trachoma (20 cases).⁴

MATERIAL AND METHODS

The conducted analysis of the morbidity rate, incidence of diseases and traumas occurring in the population of military and civil personnel of the UNTAG peacekeeping mission in Namibia was based on the data included in medical records of patients provided with medical assistance at the 1st and 2nd level medical centers of national contingents. The epidemiological and statistical assessment was conducted on the basis of medical records of 4144 patients of 11

nationalities treated in the UNTAG medical centers from April 1989 to March 1990.

The examination of the specified population was complete, i.e. each of the 4144 soldiers and civil workers deployed in Namibia within the given period was subjected to medical examination. The study which had been performed allowed to assess the structure of diseases and body injuries, the number and causes of deaths and medical evacuations to a home country. The information on health condition of UNTAG peacekeepers was collected at medical centers of the 1st and 2nd level on specially prepared standardized forms which were used as epidemiological questionnaires.^{6,7}

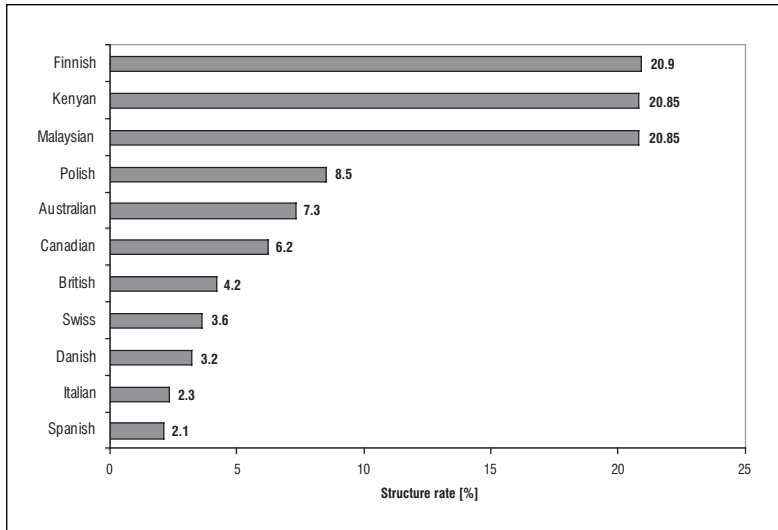
The medical coverage of the UN peacekeeping mission in Namibia was based on three levels. The first level were outpatient clinics of 11 different national contingents. They provided medical (treatment of the sick and wounded), sanitary-hygienic and anti-epidemic (prophylactic actions) assistance for the dependent military and civil personnel. The 1st level medical centers consisted of 1-2 doctors, a hygiene officer, 5-15 nurses and 2 paramedics. Apart from providing outpatient health service, outpatient clinics were also in possession of a small bed base (2-10 beds).⁴

The 2nd level were 4 field hospitals run by a 149-person Swiss contingent (the Swiss Medical Unit) located in the north (3 hospitals) and central (the country's capital, Windhoek) parts of the operational zone. They consisted of 10- to 20-bed internal, surgical and isolation wards, a 4-bed intensive care unit, a surgical theatre, an X-ray office and a dental care office. There were 3-5 doctors, 10-15 nurses, an X-ray technician, and a laboratory analyst employed within a 24-hour duty. Senior medical staff of the hospitals was composed of internists, specialists in tropical medicine, anesthetists, surgeons, traumatic surgeons, GPs, a psychiatrist, a dentist and a pharmacist.⁴ The 3rd level was a multi-profile civil hospital in the country's capital, Windhoek.⁸ Medical evacuation of the sick and wounded within the operational zone was carried out via overland (5-8 ambulances in each of the contingents) or air route (AIRMEDEVAC).⁴

The vaccination schedule intended for the peacekeepers, recommended by the UNTAG health service, included vaccinations against cholera, viral hepatitis A, poliomyelitis, tetanus, typhoid fever, yellow fever. As regards the anti-malarial chemoprophylaxis, chloroquine + proguanil were administered.^{4,8}

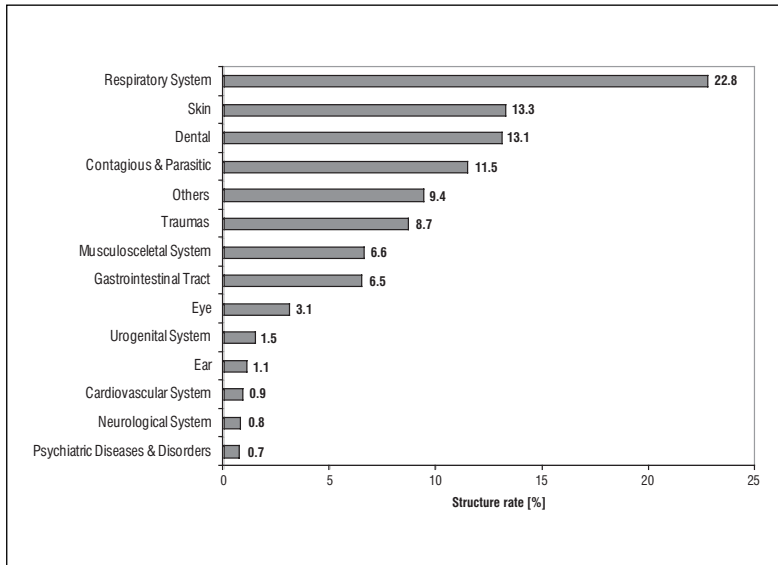
RESULTS

The data collected from 4144 patients of 11 national contingents (Fig. 1) treated in the UNTAG 1st and 2nd level medical centers were analyzed with regard to the structure rate of diseases and injuries, the number and causes of deaths as well as medical evacuation to a home country.



Source: UNTAG. CMO Medical Report March 1989 - April 1990

Fig.1. Population of UNTAG military contingents in Namibia in the period April 1989 - March 1990 according to nationality (N = 4144).



Source: UNTAG. CMO Medical Report March 1989 - April 1990

Fig.2. Structure rate of diseases and injuries in the population of various nationalities treated in UNTAG 1. and 2. level in Namibia in the period April 1989 - March 1990 (N = 4144).

From April 1989 to March 1990, 26281 outpatient admissions and hospitalizations had taken place in the UNTAG medical centers. Among them, 20152 cases were therapeutic actions (77%) and 6129 cases - prophylactic actions (23%), mainly preventive vaccination. In total 16125 admissions had taken place in the UNTAG 1st level medical center and 10156 admissions were reported in the 2nd level medical center.⁴

The most frequent outpatient admissions were due to the upper respiratory tract diseases (which was undoubtedly influenced by climatic conditions, i.e. hot climate and sand storms), dermatoses (sunburns, skin allergies and mycoses) dental problems (as many as 2631 admissions to a dentist's office within the analyzed period), traumas (the total number

of injuries, including hospital treatment, amounted to 247 patients wounded in traffic accidents, 812 sports injuries, 10 gunshot wounds), contagious and parasitic diseases (infectious diarrheas - 5.9% of all outpatients admissions; sexually transmitted diseases - 3.8%; 364 cases of malaria including 183 laboratory confirmed cases - 1.8% admissions), and non-infectious diseases of the digestive system (mainly diarrheas at the beginning of service in the operational zone, during the acclimatization period) (Fig. 2).⁴

During the analyzed period 369 of the UNTAG peacekeepers were hospitalized in the field hospitals run by the Swiss Medical Unit. The most frequent reasons for hospital treatment were diseases of the respiratory tract (25 cases of pneumonia, 3 cases of tuberculosis), fever of the unknown origin, injuries (traffic accidents, sports injuries, gunshot wounds), diseases of the digestive system (diarrheas), sexually transmitted diseases (gonorrhoea, candidiasis, non-gonococcal urethritis; 3 HIV infections, including 2 cases of symptomatic AIDS evacuated from the operational zone), parasitic diseases (among the total number of 191 laboratory confirmed cases of malaria, merely 8 patients required hospital treatment, including 1 patient hospitalized longer than for a 4-

day period; the etiological factor in 99% of all cases was *Plasmodium falciparum*).

The average period of hospitalization in the UNTAG field hospitals was 2-5 days. Twenty five patients who required highly specialist procedures (mainly cases of injuries) were evacuated to the 3rd level medical center for further hospital treatment.^{4,8}

In total 46 of the UNTAG peacekeepers, including 35 soldiers and 11 civil workers, were evacuated to a home country for medical reasons. The causes of medical evacuation were injuries due to traffic accidents (19 cases), mental health disorders and/or alcoholism (11 cases), gastric ulcers (3 cases), AIDS (2 cases), discopathy of the spine (2 cases), tuberculosis, salmonellosis, otitis and inflammation of

the mastoid bone, epilepsy, type I diabetes, pancreatitis, benign spinal cord tumor, Hodgkin's lymphoma and rhabdomyosarcoma.⁸

DISCUSSION

Contemporary military operations have recently been executed in diverse climatic and sanitary conditions which are frequently unfamiliar for their participants. Tropical climate, poor sanitary and hygienic conditions along with warfare determine the occurrence of numerous diseases and body injuries not only among the local people but also among peacekeepers, who represent the population of immigrants. Health problems which pose the major epidemiological threat in combat zones are respiratory tract diseases, food and water-borne, arthropod-borne, also, sexually transmitted diseases, battle injuries resulting from combat operations, non-battle injuries, i.e. traffic accidents, and illnesses related with environmental factors, such as hot climate and sand/dust storms.

Upon the analysis of the morbidity and traumatism rates within the boundaries of an operational zone of military missions frequent occurrence of various injuries is particularly noticeable. The term "injury" denotes an event serious enough for an individual to be either hospitalized or to receive first aid in an outpatient clinic if only such help is accessible.⁹ According to WHO, 75 million people sustain injuries every year; 23% of all casualties die or suffer permanent health damage.¹⁰ Traffic accidents, whose victims commonly sustain complex and multi-organ injuries resulting in complications of all kinds, account for as much as 40% of all accidents. The occurrence of open fractures is typically due to traffic accidents. Traffic accidents constitute the dominant cause of all open fractures. A large number of patients of casualty wards are victims of industrial accidents, sports injuries, falls, injuries sustained during fights, gunshot wounds and mass disasters.¹¹

The group of diseases that poses common health hazards in a combat zone is the respiratory tract infections group. This is undoubtedly influenced by mass migrations, overpopulation, a breakdown in prophylactic vaccination system and changeable weather conditions. High morbidity occurs not only among civilians but also among soldiers participating in military operations.^{12,13} The etiological factors are primarily *Streptococcus pneumoniae*, *Mycoplasma pneumoniae*, and *Haemophilus influenzae*.^{14,15} During the Gulf War in 1991, diseases of the respiratory tract were the most frequently reported illnesses occurring among soldiers of the Coalition Forces taking part in the Desert Storm and Desert Shield operations.¹⁶ Acute respiratory infections resulted in the increased sick absenteeism among the population of Soviet soldiers deployed in Afghanistan in the 1980s. Within their

first year of service in Afghanistan as much as 43% of Soviet soldiers were afflicted with acute bronchitis and/or pneumonia, mainly in the autumn/winter season, which was definitely caused by unfavorable weather conditions.¹⁷ In the regions of contemporary military operations medical services put special emphasis on prophylaxis of airborne diseases, which is primarily based on preventive vaccination against influenza and pneumococcal infections as well as treatment by means of guided pharmacotherapy.^{13,18}

Another health problem among participants of military missions is food- and water-borne diseases, what is primarily related to unsatisfactory sanitary standards in the regions of the forces deployment, contamination of soil and water, incorrect system of purifying drinking water as well as a disastrous condition of plumbing and sewage systems, and also of water purification plants.^{19,20} The occurrence of the diseases is further facilitated by neglect of military personnel to comply with recommendations regarding the rules of personal hygiene as well as food and feeding hygiene.²¹ The most frequently occurring pathogen of contagious diseases of the digestive system among the population of the military personnel undergoing medical treatment has been enterotoxigenic *Escherichia coli*.²² Other pathogenic factors include *Shigella*, *Salmonella*, *Campylobacter*, *Cryptosporidium*, *Giardia intestinalis*, *Entamoeba histolytica*, *Rotaviridae*. In 20-30% of cases the etiological factor remains unspecified (negative microbiological test).^{22,23} A significant problem connected to the occurrence of food and water-borne diseases is the fact that, a large number of the diseases are not diagnosed in terms of the etiology of their pathogens. For this reason data regarding the causes of sickness prevalence may not be fully credible.²⁴ The occurrence of acute gastroenteritis among military personnel is typically associated with the consumption of food from the local market and drinking water from unknown sources.²⁵⁻²⁷

The number of arthropod-borne diseases which have been observed recently among military missions' personnel is insignificant. Nevertheless, a number of difficulties in implementing prophylactic actions (lack of vaccines and desisting from applying drugs, i.e. against malaria) result in the fact that they still pose a considerable threat of 'importing' the infections to a home country. A limited number of prophylactic measures make arthropod-borne diseases the main interest of the medical service.²⁸

Skin diseases constitute a separate group of health problems in tropical climate areas. They might be of endemic character.²⁹ A large number of cosmopolitan dermatoses gain particular significance due to the frequency of their occurrence and intensification of changes.³⁰ The research conducted among the UN peacekeepers in Cambodia demonstrated that dermatoses constituted the largest group of all health problems, with mycoses of groin and feet as the

prevailing ones. Significant problems were also pyodermas, such as furunculosis or ecthyma.³¹ Frequent occurrence of dermatoses has been undoubtedly influenced by uniforms and footwear maladjusted for work or military service in the tropics. Similar diseases occur in the dry tropics, nevertheless, the exacerbation of such diseases is much weaker there.³² Individual research conducted among the population of the Polish Military Contingent in Iraq and Afghanistan indicated that skin diseases, with allergic dermatoses as the prevailing group of most frequently occurring health problems among outpatients.³³

Sexually transmitted diseases do not pose a serious epidemiological risk among soldiers executing mandatory tasks under the condition of regular clinical and laboratory supervision of the missions' participants. The risk of infection raises drastically in cases of incidental intercourse without the application of basic preventive means (condoms). Chlamydia, gonorrhoea and viral infections (HSV, HPV, HIV) belong to a group of commonly occurring sexually transmitted infections among missions' participants.³⁴ The incidence rate of sexually transmitted diseases among military personnel surges drastically in times of warfare and is several times bigger in comparison to the times of peace. Military contingents generally consist of young, sexually active men, susceptible to taking up sexual activities with incidental prostitutes as a means of working off stress.³⁵ In terms of venereal diseases the incidence rate is hugely influenced by the region of the deployment of forces. In Muslim countries of the Middle East and Central Asia, burdened with a number of moral restrictions, the access to sexual services is extremely limited. Therefore, an insignificant number of infections have been reported.³⁶ In contrast, the epidemiological situation in other parts of the world, i.e. in Southeast Asia is completely different. Unlimited access to sexual services provided by prostitutes of whom a vast majority are infected with venereal diseases results in the fact that the incidence rate in this part of the world is particularly high.³⁶

Also, a number of various other health problems occur among participants of military missions. However, they are taken less seriously by medical services of military missions as their significance as regards the epidemiological hazards or the loss of combat efficiency is marginal. Such diseases include dental problems which commonly occur in contemporary peacekeeping and stabilization missions. Within the framework of health policy relating to dental care procedures the majority of the NATO member states have implemented the NATO STANAG directives 2466 which classify patients into four dental fitness classes:

- class 1. - a patient with no dental problems,
- class 2. - a patient who requires treatment, however, not within the next year,

- class 3. - a patient who requires treatment within the next year,

- class 4. - a patient who requires immediate treatment.

Soldiers directed into an operational zone of a military mission should exclusively fall into dental fitness classes 1 or 2.³⁷ A superficial assessment of health state conducted during the medical qualification of candidates for military service abroad before their departure into a mission's area result in frequent occurrence of dental caries and paradontoses among the military personnel fulfilling their service abroad. Individual research demonstrated that from 2004 to 2005 over 30% of the Polish Military Contingent's personnel in Afghanistan required dental treatment.³⁸ Frequent occurrence of dental problems was also observed among American soldiers in the same time, which shows that the assessment of health condition during the medical qualification of candidates for military service abroad before their departure into a combat zone was realized superficially.³⁸ The research conducted by Allen and Smith demonstrated that as much as 85% of the U.S. Army military personnel directed into operational zones abroad had their dentition classified into class 3.³⁹ The research conducted by Dunn in the population of the U.S. Forces soldiers deployed in Oman preparing for the military operation in Afghanistan in 2002 revealed the occurrence of dental problems in 137 per 1000 soldiers. The majority of visits in a dentist's office were caused by dental caries (34.8%).⁴⁰

In addition to the health problems listed above, environmental factors such as changeable weather conditions may also be considerable threat. A commonly occurring health hazard among soldiers executing mandatory tasks in hot climate areas are heat injuries. They represent a wide spectrum of symptoms of moderately serious intensification in the course of diseases such as heat exhaustion and heat cramps, to life-threatening conditions such as heat stroke or rhabdomyolysis.⁴¹ A distinctive feature of hot and dry climate areas are much distressing sand and dust storms. The effects of wind, sand and dust are often eye, skin, and respiratory tract diseases.⁴²

REFERENCES

1. Korzeniewski K. Participation of the Polish Armed Forces in International Organizations' peacekeeping and stabilization missions. In: Olszański R, Morawiec B, Dabrowiecki Z, Korzeniewski K (ed). *An Outline of Tropical Medicine*. Infodruk, Gdynia 2007 [in Polish].
2. Kierznikowicz B, Banach J. The organization and functioning of the UNTAG health service in Namibia. In: Kierznikowicz B, Knap J. *Health service of the Polish Armed Forces in peacekeeping missions*. Eurostar, Warszawa 2001 [in Polish].
3. The UN Information Center in Warsaw. *The UN Peacekeeping Missions - UNTAG*. (Accessed at http://www.unic.un.org/pl/misje_pokojowe/mzbw_untag.php on 26.04.2008).
4. UNTAG. *Medical Report from the Chief Medical Officer. March 1989 to April 1990*.
5. Polish Ministry of Defense. *In remembrance of soldiers killed on missions abroad. Second United Nations Emergency Force* [in Polish].
6. Bernard KW, Graitcer PL, van der Vlugt T, Moran JS, Pulley KM. Epidemiological surveillance in Peace Corps volunteers: a model for monitoring health in temporary residents of developing countries. *International Journal of Epidemiology* 1989;18:220-226.

7. Bernard KW. Health risks for temporary residents of developing countries: the U.S. Peace Corps as an epidemiologic mode. In: Steffen R, et al (ed). *Travel medicine proceedings of the First Conference on International Travel Medicine*, Berlin 1989.
8. Steffen R, Desales M, Nagel J, Vuillet F, et al. Epidemiological experience in the mission of the United Nations Transition Assistance Group (UNTAG) in Namibia. *Bulletin of the World Health organization* 1992;70(1):129-133.
9. Murray CJL, Lopez AD. *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020*. The Center of Information Systems - Health Service. The Medical University Publishing House Versaluis, Warszawa-Krakow 2000 [in Polish].
10. Garlicki J, Paczkowski P, Mikula W. The epidemiology of injuries as the problem of the 3rd millennium. *The New Medicine-Orthopedics IV* 2000 [in Polish].
11. Chomiczewski K, Gall W, Grzybowski J (ed). *The epidemiology of warfare and disasters*. Alfa-medica press, Bielsko-Biala 2001 [in Polish].
12. Gray GC, Callahan JD, Hawksworth AW, et al. Respiratory diseases among U.S. military personnel: countering emerging threats. *Emerging Infectious Diseases* 1999; 5: 379-387.
13. Earhart KC, Beadle C, Miller LK, et al. Outbreak of influenza in highly vaccinated crew of U.S. Navy ship. *Emerging Infectious Diseases* 2001; 7: 463-465.
14. Islamic Relief. Facts about Iraq. (Accessed at <http://www.islamic-relief.com/submenu/Appeal/iraqfacts.htm>. on 26.05.2003).
15. World Health Organization report. A population at risk: communicable diseases in the Afghan crisis. (Accessed at <http://www.who.int/disasters/repo/7391.pdf> on 08.01.2002).
16. Hyams KC, Hanson K, Wignall FS, Escamilla J, Oldfield EC 3rd. The impact of infectious diseases on the health of U.S. troops deployed to the Persian Gulf during Operations Desert Shield and Desert Storm. *Clin Infect Dis* 1995; 20:1497-1504.
17. Novozhenov VG, Gembitski EV. Pneumonia in young males in extreme conditions. *Izdatelstwo Medicina Moskva* 1998;76:18-20.
18. Earhart KC, Conlin A, Crum NF, et al. Pneumococcal pneumonia in military recruits [Abstract 876] In: *Proceedings of the 39th general meeting of the Infectious Diseases Society of America* (San Francisco). Alexandria, VA: Infectious Diseases Society of America, 2001.
19. Korzeniewski K. Health hazards in Iraq. *Military Doctor* 2005; 81(3):176-180.
20. Korzeniewski K. Infectious diseases in Afghanistan. *Military Doctor* 2006; 82(1): 48-53 [in Polish].
21. Korzeniewski K. Health hazards in the hot climate. *Military Doctor* 2005; 81(3):170-175 [in Polish].
22. Korzeniewski K. Incidence of diseases and traumas in the population of Polish soldiers treated in the Field Hospital of the Multinational Division Center South in Iraq. *Military Doctor* 2004; 80(3): 203-207 [in Polish].
23. Korzeniewski K. Health hazards in the hot climate on Iraq example. *Military Doctor* 2005; 81(1): 5-10 [in Polish].
24. Hall JA, Goulding JS, Bean NH, Tauxe RV, Hedberg CW. Epidemiologic profiling: evaluating food borne outbreaks for which no pathogen was isolated by routine laboratory testing: United States, 1982-9. *Epidemiol Infect* 2001; 127: 381-387.
25. Connor P, Farthing MJ. Travellers' diarrhea: a military problem? *Journal of the Royal Army Medical Corps* 1999;145:95-101.
26. Cook GC. Influence of diarrhoeal disease on military and naval campaigns. *Journal of the Royal Society of Medicine* 2001; 94: 95-97.
27. Hyams KC, Bourgeois AL, Merrell BR, Rozmajzl P, Escamilla J, Thornton SA, et al. Diarrheal disease during Operation Desert Shield. *The New England Journal of Medicine* 1991;325:1423-1428.
28. Kotwal RS, Wenzel RB, Sterling RA, Porter WD, Jordan NN, Petrucci BP, et al. An outbreak of malaria in US Army Rangers returning from Afghanistan. *The Journal of the American Medical Association* 2005; 293(2): 212-216.
29. Kozmińska-Kubarska A. Tropical dermatology and venereology. *PZWL, Warszawa* 1994 [in Polish].
30. Jeske J, Lupa S, Seneczko F, Kamerys J, Malinowska B. Dermatophytic infections in persons returning from the tropics. *The Parasitologic News* 1999;45(3):395-400.
31. Korzeniewski K. The epidemiological analysis of skin diseases occurring in the population of patients treated in the UNIFIL Hospital in Lebanon from 1993 to 2000. *Medical Doctor* 2005;81(3): 158-162 [in Polish].
32. Korzeniewski K, Olszański R, Nowicki R. Environmental Health Risk Factors Occurring in the Hot Climate, in Warfare Zone. *Polish Journal of Environmental Studies* 2006;15(4b):81-86.
33. Korzeniewski K, Van Damme-Ostapowicz K. Prevalence of allergic dermatoses and other skin problems in the population of military operations in Iraq and Afghanistan. *International Review of Allergology & Clinical Immunology* 2008; 14(1-2): 28-33.
34. Korzeniewski K. Health problems of military missions' participants in contemporary armed conflicts. *International Journal of Health Science* 2008; 3: 93-100.
35. Korzeniewski K, Olszański R. Sexually transmitted diseases and endemic treponematoses characteristic for hot climate areas. *Military Doctor* 2006; 82(3): 222-228 [in Polish].
36. Korzeniewski K, Olszański R. The incidence of sexually transmitted diseases among Polish soldiers serving in U.N. military forces in the Middle East and South-East Asia. *Epidemiological Review* 2006; 60: 359-366 [in Polish].
37. Richardson P. Dental Risk Assessment for Military Personnel. *Military Medicine* 2005; 170(6): 542-545.
38. Korzeniewski K. Analysis of morbidity among Polish soldiers serving in Afghanistan from 2003 to 2005. *Military Doctor* 2006; 82(1): 15-19 [in Polish].
39. Allen W, Smith BE. Impact of dental sick call on combat effectiveness: the dental fitness Class 3 soldier. *Military Medicine* 1992; 157: 200-203.
40. Dunn WJ. Dental emergency rates at an expeditionary medical support facility supporting Operation Enduring Freedom. *Military Medicine* 2004;169(5): 349-353.
41. Knochel JP. Heat stroke and related heat stress disorders. *Disease-a-Month* 1989; 35: 301-378.
42. Korzeniewski K. Environmental risk factors in the territory military operations in Iraq and Afghanistan. *Polish Medical Mercurius* 2008; 145: 5-8 [in Polish].