

# Health problems in soldiers of the Polish Military Contingent serving in Iraq

Problemy zdrowotne żołnierzy Polskiego Kontyngentu Wojskowego pełniących służbę w Iraku

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**Abstract.** Aim: the article presents the results of own research concerning the structure and intensity rate of diseases in soldiers serving in the Polish Military Contingent (PMC) in Iraq. Material and methods: The retrospective analysis was based on medical records of 893 patients of Polish nationality, 22 females and 871 males treated in the sick call of the Medical Support Group in Camp Lima (MSG, Level 2) in the period from August 2003 to June 2004 (initial visits, excluding check-up appointments). The analysis was carried out on the basis of structure rate and intensity rate per 100 persons. Results: The most common health problems diagnosed in the group of Polish soldiers were respiratory tract and gastrointestinal diseases, dermatoses, and injuries. Conclusions: The prevalence of diseases among Polish soldiers of both sexes was closely related to the effects of climatic factors, low standards of sanitation in the areas of deployment as well as common disregard of basic principles of health prevention. In addition, higher prevalence of injuries was observed during performing mandatory tasks or sports activities. The intensity rate among female personnel was three-fold higher than among men.

**Key words:** Iraq, morbidity, Polish Military Contingent

**Streszczenie.** Cel pracy: W pracy przedstawiono wyniki badań własnych, dotyczących struktury i natężenia zachorowań żołnierzy Polskiego Kontyngentu Wojskowego (PKW) pełniących służbę w Iraku. Materiał i metody: Przeprowadzona analiza retrospektywna została oparta na dokumentacji medycznej 893 pacjentów narodowości polskiej, 22 kobiet i 871 mężczyzn, leczonych ambulatoryjnie w izbie przyjęć Grupy Zabezpieczenia Medycznego w Camp Lima (GZM, poziom 2.) w okresie 08.2003–06.2004 (wizyty wstępne, wyłączając wizyty kontrolne). Obliczenia wykonano w oparciu o wskaźnik struktury oraz wskaźnik natężenia w przeliczeniu na 100 osób. Wyniki: Najczęstszym problemem zdrowotnym polskich żołnierzy były choroby układu oddechowego i pokarmowego, choroby skóry, obrażenia ciała. Wnioski: Występowanie zachorowań wśród polskich żołnierzy obu płci pełniących służbę w Iraku było związane z działaniem czynników klimatycznych, niskimi standardami sanitarnymi w rejonie zakwaterowania wojsk oraz lekceważeniem podstawowych zasad profilaktyki zdrowotnej, a także z urazami nabytymi podczas wykonywania obowiązków służbowych i zajęć sportowych. Znacząca różnica dotyczyła natężenia zachorowalności, które było trzykrotnie większe w badanej grupie kobiet.

**Słowa kluczowe:** Irak, Polski Kontyngent Wojskowy, zachorowalność

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## Introduction

Military intervention by the United States and Great Britain in Iraq in March and April 2003 led to overthrowing the totalitarian regime of Saddam Hussein. Poland clearly sided with the anti-terrorist coalition and despite its

limited economic and military potential it became one of the main allies of the Coalition Forces. Poland was tasked with maintaining order and security in one of the four stabilization zones in Iraq. In September 2003, the Multinational Division Center South (MND CS) under Polish command declared its readiness to carry out mandated



tasks; the Polish Military Contingent (PMC) consisting of 2400 military personnel was deployed to several military bases located in the territory of Iraq [1].

### Medical Support of the Polish Military Contingent in Iraq

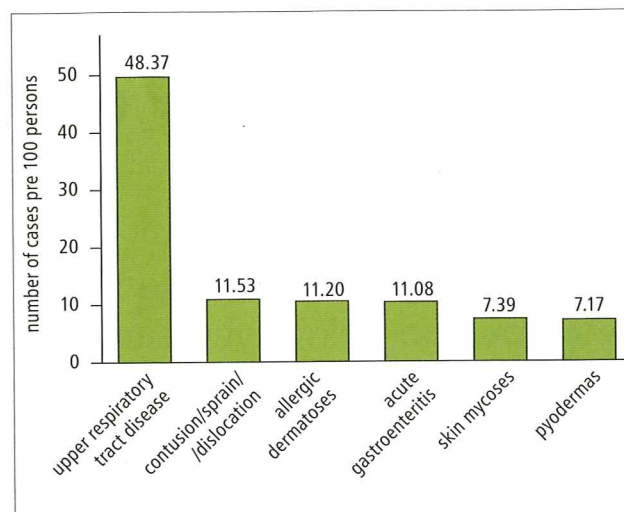
The main objective of health services supporting the PMC Iraq was to secure 24-hour access to medical care. Each base was responsible for providing military personnel stationing there with medical support at either Level 1 or Level 2. Patients in serious condition who required medical treatment unavailable at Level 1 or 2 were transferred to Level 3, which for personnel serving in the MND CS was provided in the Combat Support Hospital in Baghdad and Balad [2]. Level 1 provided inpatient treatment for no longer than 3 days and Level 2 – for no longer than 7 days. The treatment period (including hospitalization at Level 3) could not exceed 21 days. A patient requiring longer treatment, recovery and/or rehabilitation, who could not be returned to duty within 21 days, was homebound for medical reasons [3]. Polish soldiers were provided with Level 1 medical support in outpatient facilities in Camp Alpha (Babylon), Camp Charlie (Al-Hilla) and Camp Juliet (Karbala). Level 2 was provided by the Medical Support Group, a medical facility located on the outskirts of Karbala, in Camp Lima.

### Aim

The aim of the article was to determine the structure and intensity rate of diseases in military personnel serving in the Polish Military Contingent deployed to Camp Juliet and Camp Lima in Karbala, who were treated on an outpatient basis in the sick call of the Medical Support Group during the 1<sup>st</sup> and 2<sup>nd</sup> rotation of the PMC Iraq, i.e. within the period from August 2003 to June 2004.

### Material and methods

The retrospective analysis was based on medical records of 893 military personnel of Polish nationality (22 women and 871 men) deployed to Camp Juliet and Camp Lima (Karbala) who were provided with medical treatment on an outpatient basis in the sick call of the Medical Support Group (Level 2, Camp Lima) from August 2003 to June 2004, during the 1<sup>st</sup> and 2<sup>nd</sup> rotation of the PMC Iraq. 4800 Polish soldiers were serving in Iraq within the analyzed period. Over 70% of Polish troops were relocated to Camp Alpha, Babylon, and nearly 900 performed mandatory tasks in the city of Karbala. Female personnel accounted for merely 2.5% of troop strength at this time. Medical records of outpatients of both sexes (initial visits, excluding check-up appointments) provided



**Figure 1.** The most common health problems in soldiers serving in the Polish Military Contingent in Iraq (n = 893), treated on an outpatient basis in the Medical Support Group from August 2003 to June 2004. Source: Iraqi Freedom. Own studies

**Rycina 1.** Najczęstsze problemy zdrowotne żołnierzy pełniących służbę w Polskim Kontyngencie Wojskowym w Iraku (n = 893), leczonych ambulatoryjnie w Grupie Zabezpieczenia Medycznego w okresie sierpień 2003 – czerwiec 2004

the basis for conducting statistical analysis (structure rate and intensity rate per 100 persons). The data, which have been collected, were then presented in the form of figures and tables. The diagnosed diseases and injuries affecting different organs and systems were analyzed in line with the ICD-9-CM classification: diseases of the respiratory, circulatory, gastrointestinal, musculoskeletal, nervous, genitourinary system, diseases of the skin, diseases of the sense organs, mental 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 (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 = 22 female personnel of the PMC Iraq; n = 871 male personnel of the PMC Iraq), multiplied by the coefficient  $C = 10^k$  (k = 0,1,2,3..., in this statistical analysis k = 2). The intensity rate was used to calculate the incidence of diseases and injuries per 100 persons in the study population. STATISTICA PL software was used to calculate the final scores.

### Results

The research indicated that the prevalent health problems reported among 893 military personnel treated

**Table 1. The incidence of diseases and injuries in male soldiers serving in the Polish Military Contingent in Iraq (n = 871), treated on an outpatient basis in the Medical Support Group from August 2003 to June 2004****Tabela 1. Występowanie chorób i obrażeń ciała u mężczyzn pełniących służbę w Polskim Kontyngencie Wojskowym w Iraku (n = 871), leczonych ambulatoryjnie w Grupie Zabezpieczenia Medycznego w okresie sierpień 2003 – czerwiec 2004**

Diseases and injuries	Male personnel of Polish nationality outpatient treatment (number of patients n = 871)		
	number of cases	structure rate (%)	intensity rate (per 100 persons)
respiratory	397	24.8	45.58
skin	360	22.4	41.33
injuries	278	17.3	31.92
gastrointestinal	128	8.0	14.70
nervous	111	6.9	12.74
musculoskeletal	88	5.5	10.10
eye	71	4.4	8.15
mental disorders	52	3.2	5.97
heat injuries	38	2.4	4.36
ear	24	1.5	2.76
circulatory	23	1.4	2.64
genitourinary	20	1.2	2.30
contagious & parasitic	9	0.6	1.03
other	5	0.3	0.57
total	1,604	100.0	184.15

Source: Iraqi Freedom. Own studies

in the sick call of the Medical Support Group in Iraq from August 2003 to June 2004 were: upper respiratory diseases (25.2%, 48.37/100 persons), non-battle injuries – contusion/sprain/dislocation (6.0%, 11.53/100 persons), allergic dermatoses (5.8%, 11.20/100 persons), acute gastroenteritis (5.7%, 11.08/100 persons), skin mycoses (3.9%, 7.39/100 persons), and pyodermas (3.7%, 7.17/100 persons; Figure 1).

The main health problems diagnosed in the population of 871 male personnel treated within the analyzed period were respiratory tract illnesses (24.8%, 45.58/100 persons), dermatoses (22.4%, 41.33/100 persons), injuries (17.3%, 31.92/100 persons), and gastrointestinal diseases (8.0%, 14.70/100 persons; Table 1, Figure 2).

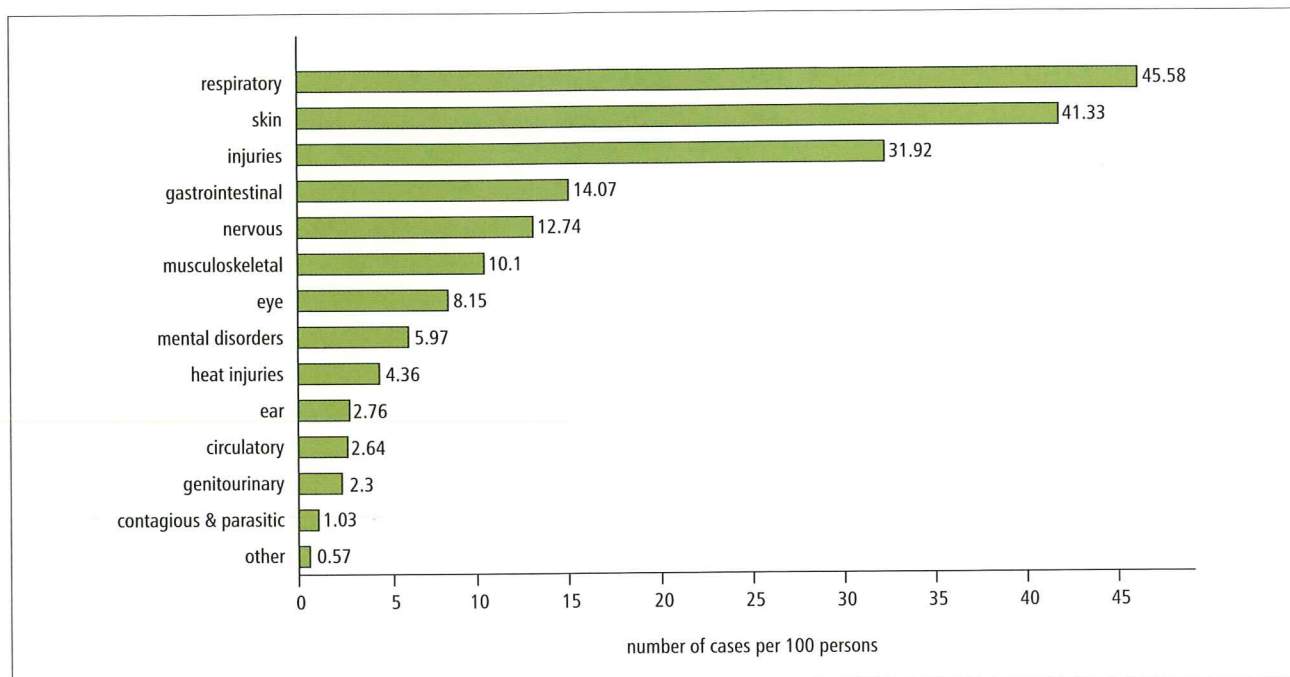
The diagnosed respiratory tract illnesses (397 cases) included common cold – 234, pharyngitis and/or tonsillitis – 116, sinusitis – 27, bronchitis – 20. Skin diseases (360 cases) included allergic dermatoses – 87, mycoses – 61, pyodermas – 61, viral diseases – 52, other – 99. Gastrointestinal diseases (128 cases) included acute gastroenteritis – 89, gastritis – 15, other – 24. The reported injuries were either of a battle (2 cases: shrapnel wound – 1, gunshot wound – 1) or a non-battle character (276 cases: contusion/sprain/dislocation – 96, contused/incised/lacerated wound – 51, acoustic trauma – 18, skin burn – 16, fracture – 11, eye injury – 10, other – 57). In addition, attention should

be paid to another health problems such as heat injuries (38 cases: heat exhaustion – 19, muscle cramps – 16, heat stroke – 3), mental disorders (52 cases: adaptation disorder – 19, acute stress reaction – 13, neurosis – 7, other – 13) and eye diseases (71 cases: conjunctivitis – 49, other – 22), which were closely associated with the effects of environmental factors and combat operations. Male military personnel serving in the PMC Iraq, who were treated on an outpatient basis within the given period, were also analyzed in terms of their military rank. The most frequently treated male patients were NCOs (48.3%), which was related to the fact that the highest number of male soldiers assigned to the military operation in Iraq were recruited from this particular corps.

The most common health problems reported among 22 female personnel treated within the analyzed period were respiratory tract illnesses (30.0%, 163.33/100 persons), dermatoses (25.0%, 136.36/100 persons), gastrointestinal diseases (14.2%, 72.27/100 persons), and injuries (9.2%, 50.0/100 persons; Table 2, Figure 3).

The diagnosed respiratory tract illnesses (36 cases) included cold – 19, pharyngitis and/or tonsillitis – 8, bronchitis – 4, sinusitis – 3, laryngitis – 2. Skin diseases (30 cases) included allergic dermatoses – 13, mycoses – 5, viral diseases – 5, pyodermas – 3, other – 4. Gastrointestinal diseases (17 cases) included acute gastroenteritis





**Figure 2.** The incidence of diseases and injuries in male soldiers serving in the Polish Military Contingent in Iraq (n = 871), treated on an outpatient basis in the Medical Support Group from August 2003 to June 2004. Source: Iraqi Freedom. Own studies

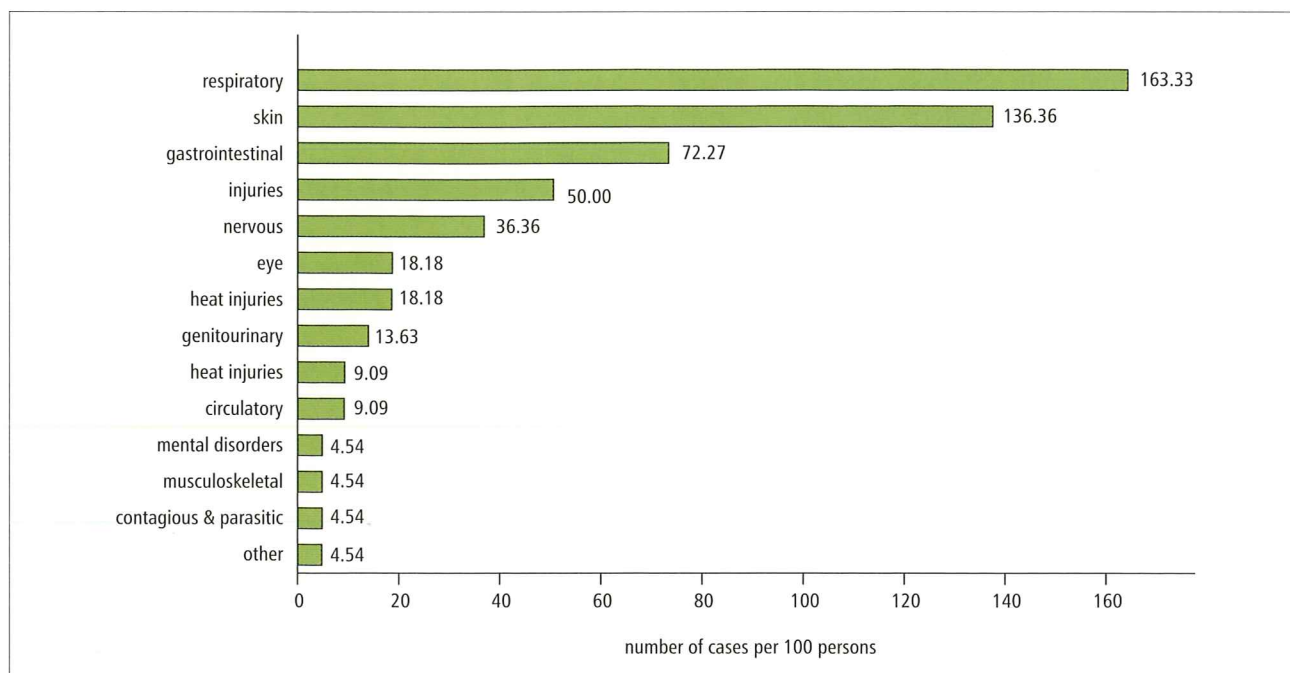
**Rycina 2.** Występowanie chorób i obrażeń ciała u mężczyzn pełniących służbę w Polskim Kontyngencie Wojskowym w Iraku (n = 871), leczonych ambulatoryjnie w Grupie Zabezpieczenia Medycznego w okresie sierpień 2003 – czerwiec 2004

**Table 2. The incidence of diseases and injuries in female soldiers serving in the Polish Military Contingent in Iraq (n = 22), treated on an outpatient basis in the Medical Support Group from August 2003 to June 2004**

**Tabela 2. Występowanie chorób i obrażeń ciała u kobiet pełniących służbę w Polskim Kontyngencie Wojskowym w Iraku (n = 22), leczonych ambulatoryjnie w Grupie Zabezpieczenia Medycznego w okresie sierpień 2003 – czerwiec 2004**

Diseases and injuries	Female personnel of Polish nationality outpatient treatment (number of patients n = 22)		
	Number of cases	Structure rate (%)	Number of cases
respiratory	36	30.0	163.33
skin	30	25.0	136.36
gastrointestinal	17	14.2	72.27
injuries	11	9.2	50.00
nervous	8	6.7	36.36
eye	4	3.3	18.18
heat injuries	4	3.3	18.18
genitourinary	3	2.5	13.63
circulatory	2	1.7	9.09
mental disorders	2	1.7	9.09
musculoskeletal	1	0.8	4.54
contagious & parasitic	1	0.8	4.54
other	1	0.8	4.54
total	120	100.0	545.45

Source: Iraqi Freedom. Own studies



**Figure 3.** The incidence of diseases and injuries in female soldiers serving in the Polish Military Contingent in Iraq (n = 22), treated on an outpatient basis in the Medical Support Group from August 2003 to June 2004. Source: Iraqi Freedom. Own studies

**Rycina 3.** Występowanie chorób i obrażeń ciała u kobiet pełniących służbę w Polskim Kontyngencie Wojskowym w Iraku (n = 22), leczonych ambulatoryjnie w Grupie Zabezpieczenia Medycznego w okresie sierpień 2003 – czerwiec 2004

– 10, gastritis – 5, other – 2. The reported injuries (11 cases) were of a non-battle nature; they included contusion/sprain – 4, contused/incised wound – 4. All of the above-mentioned diseases were the result of difficult environmental conditions and combat operations. Female military personnel serving in the PMC Iraq who were treated on an outpatient basis were also analyzed in terms of age and rank. The most frequently treated female patients were NCOs (77.5%), which was associated with the fact that the highest number of female soldiers assigned to the military operation are recruited from this particular corps.

The disease profile observed in female personnel serving in the PMC Iraq was similar to the structure of disease entities diagnosed among men. More cases of injuries in the group of male soldiers compared to the female personnel was largely due to a different type of service. Men were engaged in patrols, convoys, Quick Reaction Force operations carried out in response to terrorist attacks, while women were typically assigned to duties inside military bases (health services, logistics). Yet, there were substantial differences as regards the intensity rate of diseases. 22 Polish female personnel relocated to Camp Lima and Camp Juliet for the period August 2003 – June 2004 required medical assistance and were treated on an outpatient basis in the sick call of the Medical Support Group as many as 120 times (initial

appointments), which gives an average of 5.5 visits per one patient within the analyzed period. Another visits of the same 22 female patients resulted in the increased intensity rate of 545 cases per 100 persons.

A much lower intensity rate was observed in the group of male soldiers. 871 male personnel were treated as outpatients. A total of 1604 initial appointments resulted in the fact that the intensity rate observed among men was nearly three-fold lower (184 cases per 100 persons) than in case of the treated women.

## Discussion

The areas in which present-day military operations are conducted represent a specific region. Ongoing hostilities, considerable cultural differences and differences between people, low standards of hygiene and sanitation in the areas of deployment determine increased incidence of numerous health problems. The fact of being relocated to a foreign and often hostile territory arouses the feeling of alienation among a closed military community, thus increasing the incidence of mental disorders as well as battle and non-battle injuries [4]. According to German authors, the most common battle injuries observed in a theater of operations are gunshot wounds from small arms and shrapnel wounds from artillery shells or



antipersonnel mines [5]. Apart from battle injuries, a large number of non-battle injuries are also observed; these often result from traffic accidents, sports injuries and daily duties carried out by military personnel. Adverse climatic conditions and low level of sanitation in areas of deployment determine high incidence of gastrointestinal, respiratory tract, and skin diseases [6]. Diarrheas of bacterial, viral or protozoan etiology are common. Diarrheal diseases are considered to be the most annoying health problem which is diagnosed in approx. 40–50% of military personnel relocated to areas with different climatic conditions, especially within the first month after arrival at a new post [7,8]. Common disregard of basic principles of health prevention as well as changeable weather conditions in areas of military operations increase the incidence of respiratory tract diseases. These types of diseases prevail among soldiers treated on an outpatient basis [9]. Dermatoses are another common group of diseases treated on an outpatient basis in military health care facilities. Skin diseases are typically the result of severe climatic conditions and inadequate sanitation in the areas of deployment [10]. The stabilization mission in Iraq conducted with the participation of Polish soldiers in the period 2003–2008 was indisputably one of the most dangerous military operations in the world. The escalation of an armed conflict, variable weather conditions and low levels of hygiene and sanitation affected the disease and traumatic profile observed in the population of the service personnel. The military operation in Iraq has ended. However, the valuable experience gained from it in different fields, including medical support, will certainly pay dividends in the long term, during the next overseas operations with the participation of Polish military personnel.

## Conclusions

Increased incidence of diseases among Polish soldiers of both sexes was closely related to the effects of climatic factors, low standards of sanitation in the areas of deployment as well as common disregard of basic principles of health prevention (respiratory tract, gastrointestinal, and skin diseases). In addition, higher prevalence of diseases was due to injuries sustained while performing mandatory tasks or during sports activities (non-battle injuries). The disease profile observed among male personnel serving in the PMC Iraq was similar to the structure of diseases diagnosed among women treated in the same place and period. There was a large difference in the intensity rate in both study groups. The intensity rate among female personnel was three-fold higher than among male personnel.

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