original article

Health care services and sickness profile in the United Nations Interim Force in Lebanon

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ABSTRACT

Objective

This article presents the organization structure and tasks of the UNIFIL (United Nations Interim Force in Lebanon) health services, investigates the prevalence of diseases and injuries in the population of soldiers deployed within the UNIFIL, and discusses the sickness risk factors involved, with particular attention being paid to environmental causes.

Material and Methods

The conducted analysis was based on medical records of 2.054 patients of various nationalities treated in the UNIFIL Hospital from 1993 to 2000. The soldiers treated in the UNIFIL Hospital within the given period had a complete clinical evaluation. The examined population was selected out of 38.434 persons, military personnel of particular contingents, in the UNIFIL service from 1993 to 2000. The composition of the studied population was random (without choice). The medical records were used for a retrospective epidemiological assessment; the rate of morbidity, the rate of dynamics on constant and inconstant bases and the rate of morbidity structure of the studied group were measured. A chi-square test was applied for the statistical analysis. Changes in confidence level $p>0,05$ were considered essential.

Results

Health problems among soldiers hospitalized within the given period were categorized in injuries (23.5%), diseases of the digestive system (18.4%) and infectious diseases (10.6%)

The incidence of injuries of particular organs and systems within the studied period had been decreasing, on average, by 1.3% annually. The most frequently hospitalized in the UNIFIL Hospital were Polish, Fijian and Nepalese soldiers. A high incidence of injuries was conditioned by the fact of being deployed within an operational area (battle injuries). Also, a high proportion of injuries resulted from traffic accidents and sports injuries (non-battle injuries). While, high incidence of infectious and digestive tract diseases resulted from disregard of basic sanitary principles that ought to be followed within areas of unfamiliar climatic and sanitary conditions.

Conclusions

The present study showed that the large volume of patients treated in UNIFIL, had a high level of treatment needs, the health problems among soldiers were found to be mainly battle injuries and health problems related to the pattern of life of the soldiers in Lebanon followed (diseases of the digestive system, infectious diseases, sexually transmitted diseases, psychiatric disorders). Risk factors related to environmental causes and to inadequate hygiene seemed to play a continuing role through the studied years and to contribute in morbidity, indicating the need for the development of better prevention policies, although a gradual improvement has been observed in morbidity data.

Keywords: health care services, diseases, injuries, military medicine, Lebanon.

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INTRODUCTION

Historical Data

The Middle East, being the cradle of three great religions: Judaism, Christianity and Islam, had always been the territory of numerous armed conflicts. Practically, the situation has not changed until today. The end of the Second World War raised hopes of stabilization in this turbulent region. However, successive Arab-Israeli conflicts had completely ruined the chance of peaceful coexistence between the two neighboring nations. Lebanon - a small country which has been entangled in hostilities since antiquity and which is a conglomeration of 17 different religions - is a strange phenomenon on the world's map. In April 1975, a civil war between Muslim and Christian militant groups, with the involvement of Syria and Israel, broke out in Lebanon. Officially the war ended in 1991. Nevertheless, fight in southern parts of the country continued. On the 11th March 1978, Palestinian commandoes, who had their bases in southern Lebanon, attacked some Israeli people near Tel Aviv; 37 Israelis were killed and 76 wounded. This was the proximate cause of the Israeli invasion three days later. On March 14th 1978, Israel Defence Forces invaded Lebanon and captured the land to the south of the Litani River. In response to the invasion, the Lebanese government lodged a protest at the UN calling for an immediate ceasefire and the withdrawal of Israeli forces from Lebanon aiming at restoration of the Lebanese sovereignty in the territory occupied by Israeli forces.[1] On March 19th 1978, the UN Security Council passed the Resolution 425 calling for strict respect for the territorial integrity, sovereignty and political independence of Lebanon, calling upon Israel immediately to with-

draw its forces from all Lebanese territory and establishing United Nations Interim Force in Lebanon for the purpose of confirming the withdrawal of Israeli forces, restoring international peace and security and assisting the Government of Lebanon in ensuring the return of its effective authority in the southern area of the country.[2]

The UNIFIL (United Nations Interim Force in Lebanon)

A so called 'Blue-Line', a buffer-zone controlled by the Israel Defense Forces and Lebanese militant groups co-operating with Israelis, was established on the border between Lebanon and Israel. In September 1978, 5.931 soldiers from Fiji, France, Iran, Ireland, Nepal, Nigeria, Norway, Senegal and Canada were deployed within the UNIFIL (United Nations Interim Force in Lebanon). The UN soldiers made efforts to implement the Lebanese administration in South Lebanon. The execution of the UNIFIL mandate was considerably obstructed by armed incidents and shelling UNIFIL posts by militant groups (by February 1984 43 UNIFIL soldiers had been killed and more than 120 had been injured).[3] The UNIFIL mandate allowed the troops to open fire in self-defense and also to use minimum force to withstand any attacks aimed at obstructing the execution of mandatory tasks. In general, however, particular contingents tried to avoid any skirmishes or active involvement in defending their positions. The UNIFIL operational area is unlike any other demilitarized zone in which UN peacekeepers had been deployed formerly. The UNIFIL Forces do not fulfill any administrative duties or exercise any authority over the local people despite the fact that neither military nor civil authorities are in power within the district supervised by the UNIFIL Forces. In 1982, following the Israeli invasion in Lebanon, the UN Security Council changed the UNIFIL mandate and the UNIFIL Forces were additionally requested to provide humanitarian assistance to the local people. The abovementioned mandate was primarily executed by the UNIFIL medical services which were responsible for providing outpatient medical assistance and nursing care at both the primary and the secondary levels.[4] In December 2000 the UNIFIL Forces included 5.633 soldiers and civilian staff representing 11 different countries: Fiji, Finland, France, Ghana, India, Ireland, Nepal, Poland, Sweden, Ukraine and Italy.[5]

Organizational structure and tasks of the UNIFIL health services

The UNIFIL health services were run by a *Force Medical Officer* (FMO), who was a medical coverage advisor of the UNIFIL *Force Commander*.[6] The staff of a *Medical Cell* at the HQ UNIFIL were professional and official subordinates to an FMO, including *Force Hygiene Officer* (FHO), in charge of sanitary-hygienic and anti-epidemic coverage, *Force Medical Supply Officer* (FMSO), in charge of medical supplies, and a medical statistician. Additionally, professional subordinates to an FMO included a *Commanding Officer* of the UNIFIL Hospital, *Senior Medical Officers* (SMO's) of particular contingents and *Medical Officers* (MO's) of separate companies.[7]

Medical coverage of the UNIFIL mission was based on 3 levels. Level 1. was based on outpatient clinics which provided medical services to soldiers of particular contingents. Level 2. was based on the UNIFIL Hospital. Level 3. consisted of highly specialized hospitals outside the operational zone of the mission, in the territory of Lebanon (Saida) and Israel (Haifa). The principle tasks of the UNIFIL Hospital (functioning as the main medical center of the peacekeeping mission) were as follows: providing medical care to the military and civilian staff of the mission, medical evacuation (MEDEVAC) of sick and wounded from the operational zone to the UNIFIL Hospital or to hospitals in Lebanon or Israel, conducting clinical and bacteriological examination, providing medical care to the local people inhabiting the territory covered with humanitarian assistance, supervising the implementation of sanitary regulations and anti-epidemic procedures in the areas of deployment of the UNIFIL troops.[8] Medical units of particular contingents provided outpatient medical care over the range of diseases and injuries to military personnel who were presumed to recover and assume their duties within 7 days. Otherwise, a patient was treated at Level 2. in the UNIFIL Hospital or at Level 3. outside the operational zone of the mission. In cases of diseases or injuries whose treatment period exceeds 30 days a patient was evacuated to a home country for medical reasons.[9] Until October 1999 the staff of the Medical Cell of the UNIFIL Hospital totaled 63 persons, which allowed to provide medical coverage in accordance with the UNIFIL mandate (a medical team consisted of 3 sub-units: 2 surgical units each including 2 surgeons and 1 anesthetist, and 1 internal medicine unit including 3 internists; a nursing team consisted of 9 nurses at the sick call and 11 nurses in the hospital ward). Following October 1999, after the reduction of the UNIFIL Hospital personnel to 42 persons (including merely 7 doctors: 1 general surgeon, 1 orthopedist, 2 anesthesiologists and 3 internists) the hospital was incapable of providing full medical coverage at Level 2. In such a situation it was a necessity to consult and treat patients in hospitals at Level 3. as the diagnostic and therapeutic measures of the medical staff in the UNIFIL Hospital were insufficient to diagnose and treat all disease entities. Only in close cooperation between inpatient and outpatient health service at Level 3. it was possible to provide a full medical coverage for the UNIFIL personnel in Lebanon.[10]

The epidemiological situation of South Lebanon

Health problems prevailing in South Lebanon are primarily connected with poor living conditions and also with low sanitary-hygienic standards. Neglect of basic principles of personal hygiene and ignorance regarding water and feeding hygiene both facilitate increased prevalence of contagious and parasitic diseases.[11,12] Birth rate is high in South Lebanon, particularly in the population of poor Shi'a Muslims among which extended families prevail. This is mainly influenced by lack of pro-family policy and also low education standards of the local people. Perinatal care as well as mother and child care are at a particularly low level, which results in high infant mortality and increased mortality among children under 5 years old. Prophylactic vaccinations are insufficient.[13] The most frequently occurring contagious and parasitic diseases in the territory of South Lebanon from 1998 to 1999 are illustrated in Table 1.

Restricted access to health care poses a significant problem among inhabitants of South Lebanon. This is predominantly a result of low standards of medical services provided by the local health service. In contrast to fledgling private medical services, which are quite costly, public health care (both in- and outpatient) is incapable of providing basic therapeutic and prophylactic services to the Lebanese people. Despite environmental factors, such as economic backwardness of the region, unsatisfactory sanitary-hygienic living standards of the local people, underdeveloped public health care, as well as subtropical climatic conditions prevailing in Lebanon, which all condition the occurrence of infectious diseases, the epidemiological situation in Lebanon

Table 1. Occurrence of infectious diseases in South Lebanon in 1998-1999.

Diseases	South Lebanon	Lebanon All Provinces
Shigellosis	283	544
Salmonellosis/Staphylococcal food poisoning	26	421
Viral hepatitis A	93	519
Viral hepatitis B	253	879
Viral hepatitis C	43	138
Typhoid fever/ paratyphoids	231	1671
Tuberculosis	122	309
Measles	145	1006
Pertussis	4	31
Rubeola	7	18
Mumps	22	115
Meningitis	25	129
Brucellosis	51	477
Epidemic typhus	1	31
Malaria	23	88
Syphilis	10	76
Gonorrhea	1	4

Source: Ministry of Health. Lebanese Epidemiological Newsletter, Lebanon 2000;7

has been considered satisfactory. This is mainly due to non-occurrence of endemic focus of contagious or parasitic diseases and also non-occurrence of particularly dangerous diseases such as plaque, cholera, yellow fever or hemorrhagic fever.[10]

The epidemiological situation in the territory of deployment of the UNIFIL Forces in South Lebanon differs in many respects from the one discussed above. Permanent health care system and efficiently functioning sanitary services remain the basic elements which constitute entirely different sanitary-hygienic and anti-epidemic picture referring to accommodation, feeding, personal hygiene, etc. within the UNIFIL operational zone. Yet, there are a number of similarities between the two areas - these mainly result from the reaction of a human body to climatic and environmental factors prevailing in the region. Thus, despite certain cultural differences between the local people and foreign personnel of the UN peacekeeping mission as well as some evident diversity among the population of the UNIFIL contingents, the influence of hot climate conditions, ongoing hostilities, exposure to infectious diseases all result in the fact that a number of factors which constitute the epidemiological situation in the population of civilians and soldiers shows several common features. The primary factors which influence the morbidity rate among participants of the UN mission in Lebanon are: high temperatures and air humidity - which cause thermoregulation disorders (heat injuries), exacerbation of chronic diseases (hypertension, coronary heart disease, nephrolithiasis, ulcer disease) and also the occurrence of clinical symptoms of previously asymptomatic diseases; cultural differences of the region and of the local people, deployment within the operational zone (which is a stressful situation), low sanitary-hygienic standards of the region leading to the increased incidence of contagious and parasitic diseases.[14,15]

A fundamental problem frequently occurring within a military mission's operational zone is alcohol and drugs abuse. It remains a basic factor destabilizing work and service of military missions' personnel. Intoxication often results in different types of accidents (traffic, with the use of arms, battery). In addition to this, the consequences of alcohol abuse are frustration, lowering morale and discipline levels.[16] The studies conducted in the population of Norwegian soldiers demonstrated that 43.5% of those surveyed admitted to alcohol abuse during their service. Interestingly, only few of them abused alcohol as a means of relieving emotional tension. Surveyed soldiers who, in fact, served under a lot of stress acknowledged that the reason of their alcoholism was mainly addiction.[17] The individual studies revealed similar problems referring to alcohol abuse in the population of the Polish military contingent. From 1993 to 2000 Polish soldiers constituted the group of patients who were the most frequently hospitalized owing to alcohol intoxication and acute gastrointestinal disorders being the effect of alcohol abuse.[10]

The operational zone of the UNIFIL peacekeeping mission has got its own specific character. A many-thousand population of soldiers, who represent a group of immigrants, is temporarily deployed in the territory of a country characterized by environmental conditions different to the ones prevailing in their home countries. The population of peacekeepers differs considerably in many respects. Coexistence of representatives of different races, religions and nationalities, people of different cultures, habits and attitude towards personal hygiene, feeding and accommodation all contribute to increased occurrence of various diseases and injuries.[10]

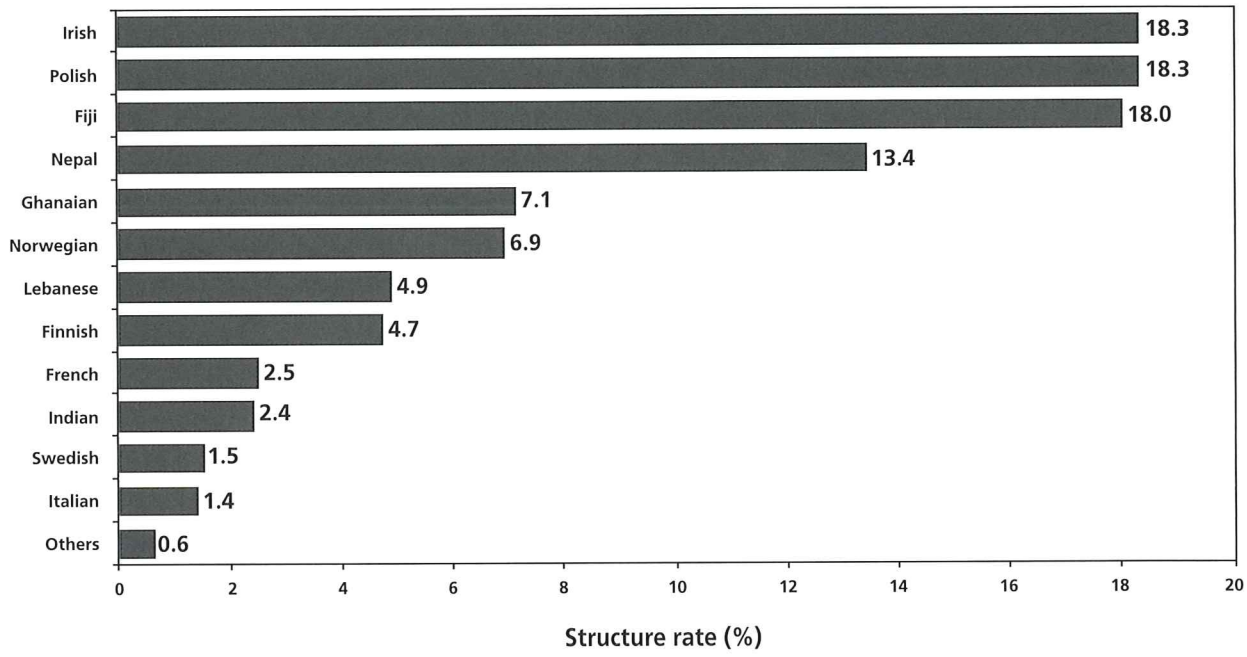
The aim of this article was to present the organization structure and tasks of the UNIFIL health services, and to analyze the prevalence of diseases and injuries in the population of soldiers deployed within the UNIFIL in Lebanon hospitalized in the UNIFIL Hospital from 1993 to 2000. Risk factors which determine the occurrence of diseases and injuries have been discussed with particular attention being paid to environmental factors.

MATERIAL AND METHODS

Upon compiling the epidemiological analysis of diseases and injuries occurring in the examined population of soldiers hospitalized in the Hospital of United Nations Interim Force in Lebanon, data included in case records, hospital records as well as archival and current medical documentation of the General Headquarters' medical unit and the UNIFIL Hospital were used. The conducted analysis is based on medical records of 2.054 patients of different nationalities treated from 1993 to 2000. The study was complete i.e. each of the soldiers treated in the UNIFIL Hospital within the given period was subjected to the epidemiological and statistical assessment. The examined population was selected out of 38.434 persons, military personnel of particular contingents, in the UNIFIL service from 1993 to 2000. The rate of morbidity, the rate of dynamics on constant and inconstant bases and the rate of morbidity structure of the studied group were measured. The composition of the studied population was random (without choice). A chi-square test was applied to the statistical analysis of the obtained results of the study. Changes in confidence level $p>0,05$ were considered essential.

RESULTS

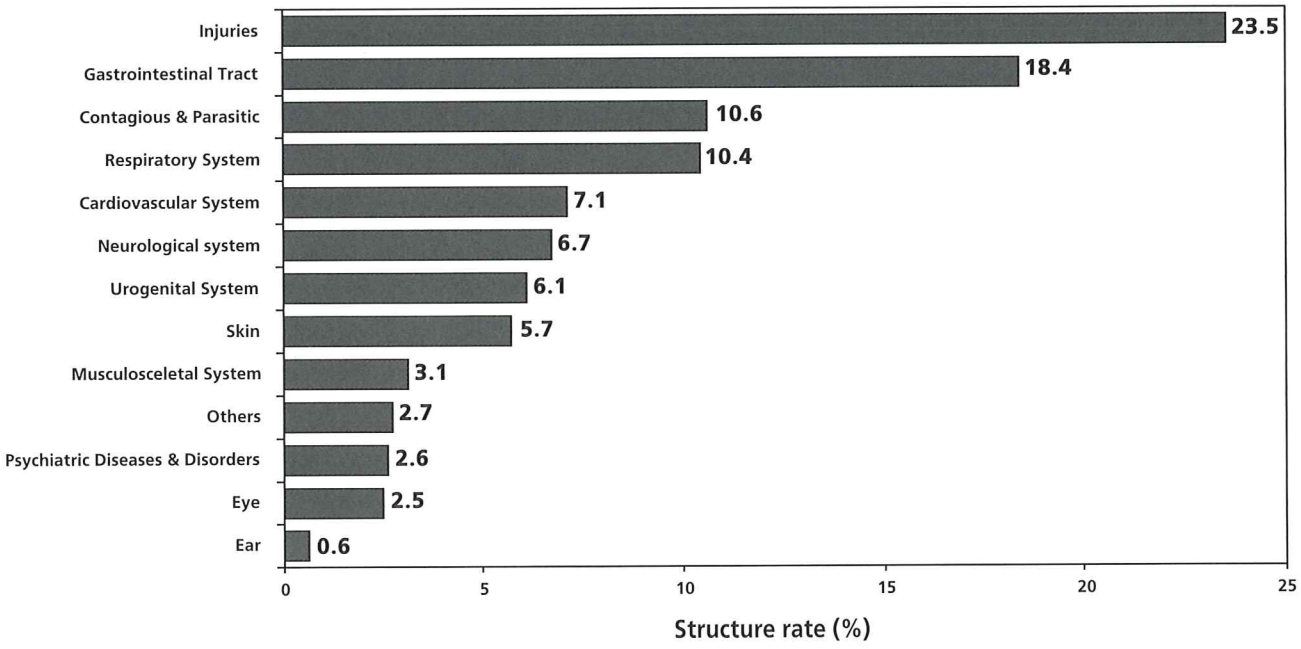
From 1993 to 2000 2.054 soldiers in the UNIFIL service were hospitalized in the UN Hospital in Lebanon. Patients who were the most often hospitalized were those of Irish, Polish, Fijian and Nepalese nationalities (Figure 1).



Source: UNIFIL. Own studies.
Figure 1. Prevalence of diseases and injuries in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 according to nationality (N = 2054).

A large number of hospitalizations in the population of Irish peacekeepers were due to severe conditions of military service. Irish posts were located in direct contact with the combat zone between Israeli Defence Forces and troops of Hezbollah. A large number of hospitalizations among Polish peacekeepers, apart from the effects of adverse climatic and environmental conditions, resulted from the lack of a language barrier - they were admitted to hospital (by Polish personnel) with diseases which could have been treated at Level 1. A large number of hospitalizations among soldiers of the Fijian and Nepalese contingents were predominantly due to their disregard of basic hygiene principles which resulted in frequent occurrence of infectious diseases among representatives of the two countries.[12]

Injuries and digestive tract diseases constituted the most frequently treated health problems in the UNIFIL Hospital within the analyzed period. The analysis of the epidemiological situation of the region draws attention to increased incidence of infectious diseases (Figure 2).



Source: UNIFIL. Own studies.
Figure 2. Prevalence of diseases and injuries in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 2054).

Patients with injuries (560 persons) treated in the UNIFIL Hospital from 1993 to 2000 accounted for 23.5% of all the hospitalized. The highest structure rate of injuries within the analyzed period was registered in 1994 and it was estimated at 18%. The highest incidence of injuries on 10.000 soldiers of the studied population was registered in 1996 and it was estimated at 214.8. The highest rate of injuries on 100 hospitalized persons was registered in 1996 and it was estimated at 32.3. The analysis of the rate of dynamics on constant basis demonstrated that the incidence of injuries of particular organs and systems within the studied period decreased by 8.7% in relation to 1993. The highest growth in the incidence of injuries was recorded in 1999 (the rate of dynamics on inconstant basis was estimated at 131.1). The incidence of injuries of particular organs and systems within the studied period had been decreasing, on average, by 1.3% annually. Detailed data on the subject are included in Table 2 and Figure 3. The structure of injuries in the population of UNIFIL soldiers hospitalized from 1993 to 2000 is demonstrated in Table 3 and Table 4.

TABLE 2 - Prevalence of injuries in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 560)

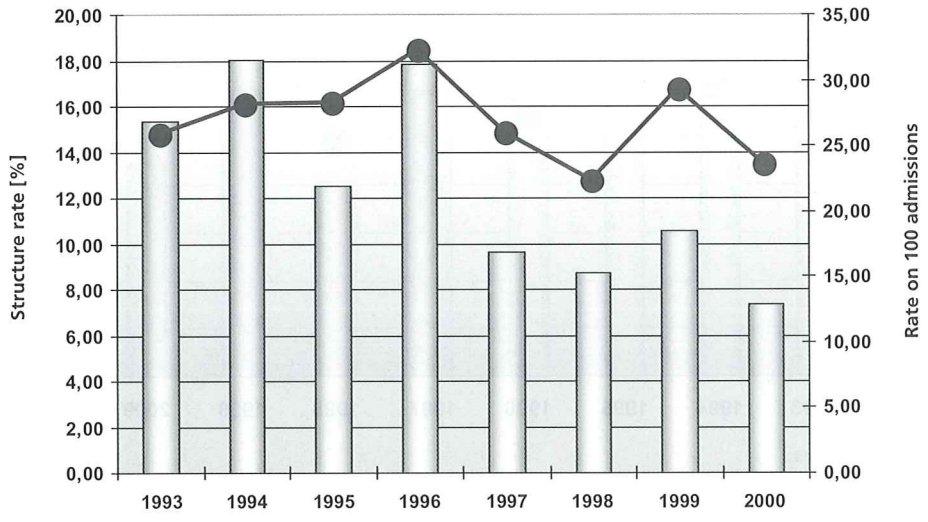
Year of examination	Number of all admissions	Number of injuries	Structure rate [%]	Rate on 10.000 soldiers	Rate on 100 admissions	Rate of dynamics on the basics	
						constant [%]	inconstant [%]
1993	333	86	15.4	163.9	25.8	100.0	-
1994	359	101	18.0	197.8	28.1	108.9	108.9
1995	248	70	12.5	143.1	28.2	109.3	100.3
1996	310	100	17.9	214.8	32.7	124.9	114.3
1997	208	54	9.6	120.6	26.0	100.5	80.5
1998	220	49	8.8	109.3	22.3	86.2	85.8
1999	202	59	10.5	131.1	29.2	113.1	131.1
2000	174	41	7.3	76.6	23.5	91.2	80.7
Total	**2054**	**560**	**100.0**	**144.7**	**27.3**	**Geometrical mean g=98.7%**	

Source: UNIFIL. Own studies.

TABLE 3 - Structure of injuries in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 560).

Year of examination	Injuries	Fracture	Non-battle wound	Dislocation/ sprain of join	Head trauma	Brain concussion
1993	86	31	7	14	8	5
1994	101	23	14	13	12	6
1995	70	18	17	11	9	5
1996	100	27	22	14	10	6
1997	54	10	9	8	2	3
1998	49	10	6	6	12	3
1999	59	20	8	11	4	1
2000	41	15	7	3	12	4
Total	**560**	**154**	**90**	**80**	**69**	**33**

Source: UNIFIL. Own studies.



Source: UNIFIL. Own studies.

Figure 3. Prevalence of injuries in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 560).

TABLE 4 - Structure of injuries in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 560).

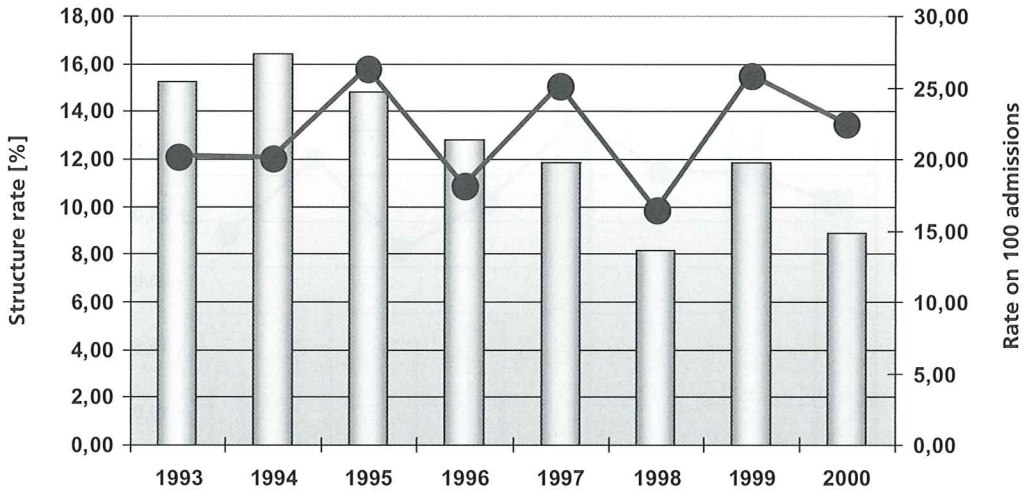
Year of examination	Injuries	Gunshot/ shrapnel wound	Burn of skin	Trauma of eye	Acustic trauma	Bite	Others
1993	86	12	1	1	2	5	14
1994	101	12	3	3	5	2	35
1995	70	6	0	3	1	1	22
1996	100	8	3	1	1	1	33
1997	54	3	2	0	0	0	19
1998	49	5	1	0	0	0	15
1999	59	7	0	3	0	0	11
2000	41	1	2	0	0	0	11
Total	**560**	**54**	**12**	**11**	**9**	**9**	**39**

Source: UNIFIL. Own studies.

TABLE 5 - Prevalence of gastrointestinal diseases in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 439).

Year of examination	Venereal diseases						
	Number of all admissions	Number of gastro intestinal diseases	Structure rate [%]	Rate on 10.000 soldiers	Rate on 100 admissions	Rate of dynamics on the basics	
						constant [%]	inconstant [%]
1993	333	67	15.3	127.7	20.1	100.0	-
1994	359	72	16.4	141.0	20.1	99.7	99.7
1995	248	65	14.8	132.9	26.2	130.3	130.7
1996	310	56	12.8	120.3	18.1	89.8	68.9
1997	208	52	11.8	116.1	25.0	124.2	138.4
1998	220	36	8.2	80.3	16.4	81.3	65.5
1999	202	52	11.8	115.6	25.7	127.9	157.3
2000	174	39	8.9	72.8	22.4	111.4	87.1
Total	**2054**	**439**	**100.0**	**113.4**	**21.4**	**Geometrical mean g=101.5%**	

Source: UNIFIL. Own studies.



Source: UNIFIL. Own studies.

Figure 4. Prevalence of gastrointestinal diseases in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 439)

TABLE 6 - Structure of gastrointestinal diseases in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 439).

Year of examination	Gastro intestinal diseases	Acute gastro intestinal disorder	Gastritis	Gastric ulcer	Alcohol intoxication	Acute appendicitis	Others
1993	67	14	12	2	3	14	22
1994	72	18	17	4	4	7	22
1995	65	21	7	4	4	12	17
1996	56	18	3	4	12	6	13
1997	52	17	8	1	4	6	16
1998	36	4	12	2	5	6	7
1999	52	4	13	5	6	13	11
2000	39	2	3	3	2	18	11
Total	**439**	**98**	**75**	**25**	**40**	**82**	**119**

Source: UNIFIL. Own studies.

TABLE 7 - Prevalence of infectious diseases in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 253).

Year of examination	Infectious diseases						
	Number of all admissions	Number of infectious diseases	Structure rate [%]	Rate on 10.000 soldiers	Rate on 100 admissions	Rate of dynamics on the basics	
						constant [%]	inconstant [%]
1993	333	74	29.3	19.3	22.2	100.0	-
1994	359	37	14.6	9.6	10.3	46.4	46.4
1995	248	13	5.2	3.4	5.2	23.6	50.9
1996	310	56	22.1	14.6	18.1	81.3	344.6
1997	208	15	5.9	3.9	7.2	32.5	39.9
1998	220	36	14.2	9.4	16.4	73.6	226.9
1999	202	16	6.3	4.2	7.9	35.6	48.4
2000	174	6	2.4	1.6	3.4	15.5	43.5
Total	**2054**	**253**	**100.0**	**8.2**	**12.3**	**Geometrical mean g=76.6%**	

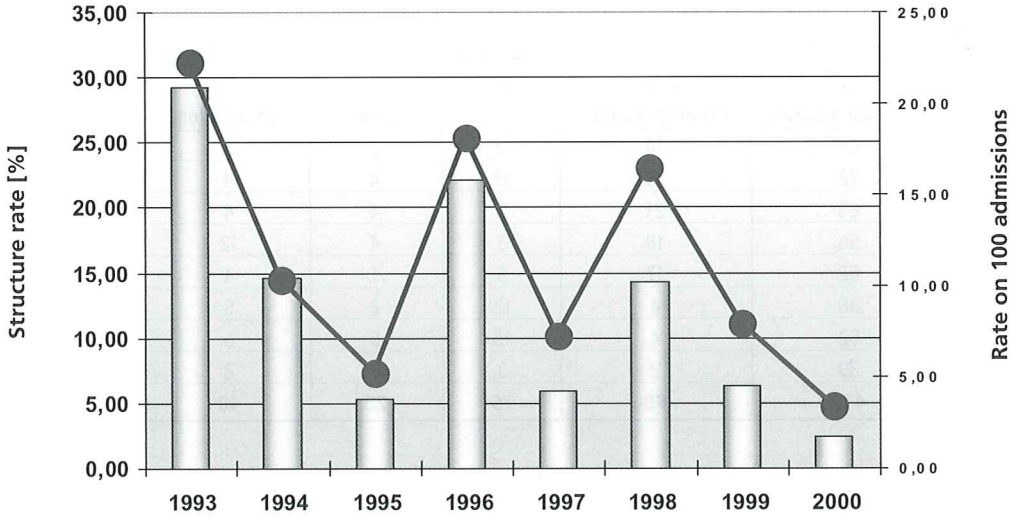
Source: UNIFIL. Own studies.

The individual research demonstrated that the most frequently treated injuries within the analyzed period which were the effect of sustained injuries of particular organs and systems were: fractures (22.6%), non-battle wounds (13.2%), dislocation or sprain of join (11.7%), head trauma (10.1%), and gunshot or shrapnel wounds (7.9%).

The proportion of digestive system diseases (439 persons) in the population of patients treated in the UNIFIL Hospital from 1993 to 2000 accounted for 18.4% of all the hospitalized. The highest rate of morbidity structure within the analyzed period was registered in 1994 and it was estimated at 16.4%. The highest morbidity rate on 10000 of the studied soldiers was noted in 1994 and it was estimated at 141.0. The highest rate of morbidity on digestive system diseases on 100 hospitalized patients was recorded in 1995 and it was estimated at 26.2. The analysis of the rate of dynamics on the constant basis indicated that the prevalence of digestive system diseases within the studied period had increased by 11.4% in relation to 1993. The highest growth in incidence of diseases occurred in 1999 (the rate of dynamics on inconstant basis 157.3). The prevalence of gastrointestinal diseases had been increasing, on average, by 1.5% annually. Detailed data on the subject are presented in Table 5 and Figure 4. The structure of gastrointestinal diseases in the population of the UNIFIL soldiers hospitalized from 1993 to 2000 is demonstrated in Table 6.

Conducted studies demonstrated that the most common reasons for hospitalizations due to gastrointestinal diseases within the analyzed period were as follows: acute gastroenteritis (21.3%), appendicitis (17.9%) and gastritis (16.4%). Attention should be drawn to the fact that a large number of patients, especially of Polish nationality, were hospitalized due to alcohol intoxication.

Cases of infectious diseases (253 persons) accounted for 10.6% of all hospitalizations from 1993 to 2000. The highest rate of the morbidity structure within the studied period was recorded in 1993 and it was estimated at 29.3%. The highest rate of morbidity on 10.000 soldiers of the examined population was registered in1993 and it was estimated at 19.3. The highest rate of morbidity on infectious diseases on 100 hospitalized patients was also registered in 1993 and it was estimated at 22.2. The analysis of the rate of dynamics on the constant basis demonstrated that the prevalence of infectious diseases within the studied period had decreased by 84.5% in relation to 1993. The highest growth in the incidence of diseases occurred in 1996 (the rate of dynamics on the inconstant basis 344.6). From 1993 to 2000 the prevalence of infectious diseases had been decreasing, on average, by 23.4% annually. Detailed data on the subject are included in Table 7 and Figure 5.



Source: UNIFIL. Own studies.

Figure 5. Prevalence of infectious diseases in the population of soldiers treated in UNIFIL Hospital from 1993 to 2000 (N = 253).

Cases of contagious diseases (139 persons) accounted for 5.8% of all hospitalizations. The most common reason for hospitalizations was salmonellosis, staphylococcal food poisoning and viral hepatitis A and B. The highest proportion of contagious diseases was observed in 1996 - when an epidemic of salmonellosis broke out in the Irish contingent, and in 1998 when an epidemic of staphylococcal food poisoning broke out in the Polish contingent.

Cases of parasitic diseases within the therapeutic district of the United Nations Interim Force in Lebanon accounted for 3.8% of all hospitalizations (90 persons). Conducted studies indicated that both simple parasitic invasions (1 patient - 1 parasite) as well as complex parasitic invasions (infestation with 2 or more parasites in 1 patient) were diagnosed among patients treated in the UNIFIL Hospital. The latter were mainly diagnosed in soldiers of the Nepalese contingent (95% of all cases). Parasitic diseases generally involved infestations by *Trichiuris trichiura, Ancylostoma duodenale, Ascaris lumbricoides, Necator americanus, Giardia intestinalis.*

Cases of sexually transmitted diseases (24 persons) accounted for 1.2% of all hospitalizations from 1993 to 2000. The incidence of STD posed a considerable epidemiological problem from 1992 to 1994 (over 80% of all cases treated in the UNIFIL Hospital). Following 1994 venereal diseases constituted a marginal issue; from 1999 to 2000 not a single case of STD was treated in the UNIFIL Hospital. The most frequently treated cases of STD within the analyzed period were cases of gonorrhea. Cases of AIDS diagnosed and treated in the UNIFIL Hospital had been imported from home countries of soldiers deployed in Lebanon (Ghana, Ireland).

Conflict of interest: None declared

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REFERENCES

1. Korzeniewski K. Soldier's Handbook. Lebanon. Warszawa: PPH Zapol, 2005 [in Polish].
2. The Blue Helmets. A Review of United Nations Peacekeeping. Third edition. The United Nations Department of Public Information. New York, 1996.
3. Zapałowski L. UN peace operations. Kraków: Krajowa Agencja Wydawnicza, 1989 [in Polish].
4. Korzeniewski K. The Middle East. UNIFIL UNDOF. UN Peacekeeper's Handbook. Bydgoszcz: STUDIO PLUS, 2006 [in Polish].
5. The United Nations Interim Force in Lebanon. History of UNIFIL: 1st August 2000 - 31st January 2001. UNIFIL 2001.
6. Korzeniewski K. Lebanon. Warszawa: DIALOG, 2004.
7. UNIFIL Logistic Directive Nr 802. Medical Directives: Units' Medical Services, 1998.
8. The United Nations Interim Force in Lebanon. Field Hygiene Instruction. UNIFIL, 1997.
9. UNIFIL Logistic Directive Nr 807. Medical Directives: Repatriation on medical grounds, 1998.
10. Korzeniewski K. Epidemiological analysis of diseases and traumas among people treated in the United Nations Interim Force in Lebanon Hospital from 1993 to 2000. Lódz, Doctoral dissertation, 2002.
11. Buczyński A, Korzeniewski K, Bzdega I, Jerominko A. Epidemiological analysis of parasitic diseases in persons treated in the Hospital of the United Nations Interim Force in Lebanon from 1993 to 2000. Epidemiological Review 2004;58:303-312.
12. Buczyński A, Korzeniewski K, Dziedziczak-Buczyńska M. Infectious diseases among persons from catchment area of the Hospital of the United Nations Interim Force in Lebanon from 1993 to 2000. Epidemiological Review 2004;58:313-323.
13. Korzeniewski K. The Arab health service profile on Lebanon example. Epidemiological Review 2004;58:733-739.
14. Korzeniewski K. Epidemiological analysis of stationary area of Polish soldiers serving in UN peace missions in the Middle East. Military Doctor 2005;81(1):11-15 [in Polish].
15. 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
16. Korzeniewski K, Olszański R. Problems Concerning Preventive Medicine Among Representatives of Temperate Climate in the Tropics. Polish Journal of Environmental Studies 2006;15(4b):87-90.
17. Mehlum L. Alcohol and stress in Norwegian United Nations peacekeepers. Military Medicine 1999;164:720-724.