

# Prevalence of Water and Food-borne Diseases in Kosova

**Sefedin Muçaj<sup>1,2</sup>, Serbeze Kabashi<sup>2</sup>, Sanije Gashi<sup>1,2</sup>, Edita Haxhiu<sup>1,2</sup>, Valbona Zhjeqi<sup>1,2</sup>, Ramadan Kryeziu<sup>1</sup>, Hajrullah Fejza<sup>3</sup>**

**National Institute of Public Health of Kosova, Pristine, Republic of Kosova<sup>1</sup>**

**Faculty of Medicine, Pristine University, Pristine, Republic of Kosova<sup>2</sup>**

**Sector for Public Health, Municipality of Pristine, Republic of Kosova<sup>3</sup>**

## ORIGINAL PAPER

### SUMMARY

Infectious diseases in general, represent a major health, social, economic and biological problem in Kosova. Aim of the work is to define prevalence of infectious water and food-borne diseases in Kosova. Methods are based on the use and analysis of epidemiological data. For data testing we have used the proportional t-test with reliability level  $p < 0.01$ . The data were collected in NIPHK (National Institute of Public health of Kosova) and annual reports on the evidence of infectious diseases in Kosova. During the period 2000-2008, the trend of infectious diseases was variable with a tendency to decrease, with the exclusion of acute diarrhea cases that marks an increasing trend. Acute diarrhea is the most common with almost 90% of all water and food born diseases. The largest number of cases with acute Jaundice A (4.4%) was recorded in 2000, since then we have smaller number of new cases through years. There were smaller number of cases with meningeal syndrome and diarrheic syndrome with blood during those years compared with acute diarrhea and acute jaundice A. While there is a lack of a serious approach to these diseases, and we don't have an increased awareness on health we can conclude that in the future, the trend of water and food born diseases will consistently get higher, and with the possibility of registering new epidemics.

**Keywords:** prevalence, trend, water and food-borne diseases, Republic of Kosova.

## 1. INTRODUCTION

Infectious diseases in general, represent a major health, social, economic and biological problem in Kosova, but also throughout the world, especially in no developed countries and those in developing. From overall number of all diseases, contagious water and born-disease participate with about 20-25%, [1,2]. Waterborne diseases are caused by pathogenic microorganisms which are directly transmitted by consuming contaminated fresh water. Contaminated fresh water, used in the preparation of food, can be the source of food borne disease through consumption of the same microorganisms, [3, 4, 5 and 6]. As in the past but also today, these diseases still represent unresolved problem in Kosova in general health, therefore they are specified as a priority of the Kosova health institutions.

## 2. AIM OF THE WORK

The main aim of the study was to define prevalence of infectious water and food-borne diseases in Kosova.

## 3. MATERIAL AND METHODS

The method is based on the use and analysis of epidemiological data. Descriptive component have been used

by the epidemiological methods from retrospective aspect. For data process are used statistical parameters: relative numbers, morbidity rates and prevalence. For data testing we have used the proportional t-test with reliability level  $p < 0.01$ . Tables and figures are used for the presentation. The data were collected in NIPHK form annual reports on the evidence of infectious diseases in Kosova, 2000-2008.

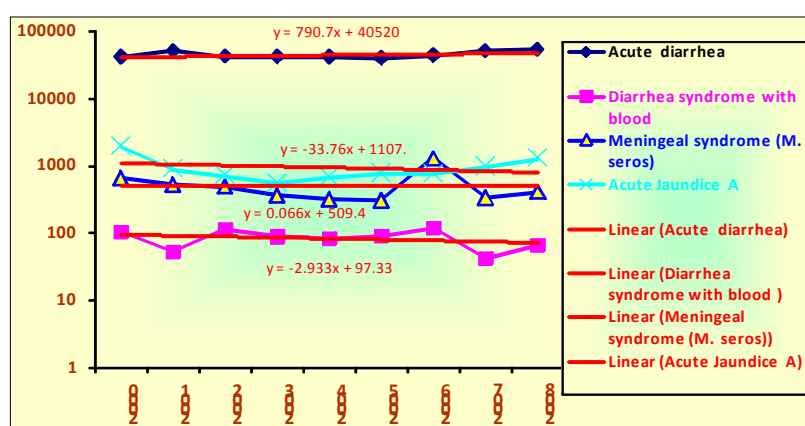
## 4. RESULTS

The number of cases with: Acute Jaundice A, Meningeal syndrome and Diarrhea syndrome with blood according to years is variable but always with a tendency to decrease in number, excluding acute diarrhea cases that marked increase. Presence of a large number of these diseases explains the fact that Kosova still continues to remain endemic area of these infectious diseases because of factors we are aware of, and will mention below, (Tab 1 and Fig 1).

In all these years involved in the research the acute diarrheas dominate with 90% in group of water and food-borne diseases. The largest number with acute Jaundice A was registered on 2000 (4.4%) then we have smaller number of new cases through years.

Years	Acute diarrhea		Diarrhea syndrome with blood		Meningeal syndrome (M. seros)		Acute Jaundice A	
	N	Mb/100.000	N	Mb/100.000	N	Mb/100.000	N	Mb/100.000
2000	40897	1942.8	102	4.8	645	30.6	1902	90.3
2001	49837	2367.5	52	2.4	509	24.1	886	42.1
2002	41859	1988.5	113	5.3	478	22.7	708	33.6
2003	41373	1965.4	87	4.1	350	16.7	551	26.5
2004	41109	1952.9	80	3.8	308	14.6	665	31.5
2005	39604	1881.4	88	4.2	298	14.2	766	36.3
2006	43231	2053.7	117	5.56	1278	60.72	746	35.44
2007	49837	2367.5	41	1.9	325	15.4	955	45.4
2008	52515	2494.7	64	3.04	397	18.8	1271	60.3
Total	400262	19014.4	744	35.1	4588	217.82	8450	401.44

Table 1. Movement of number of cases, and scale of morbidity of infectious water and food-borne diseases in Kosovo, by years, 2000-2008



Graf. 1. Trend of infectious water and food-borne diseases in Kosovo, 2000-2008

There were smaller number of cases with meningeal syndrome and diarrheic syndrome with blood during those years compared with acute diarrhea and acute jaundice A. With proportional t-test we made comparison of the participation percentage of cases with diarrhea in years 2000 and 2008, and we have find distinction with highest statistical significant (Z value= 21.69,  $p < 0.01$ ). In 2008 the percentage of diarrhea cases in the total number of patients with water and food-borne disease has been great compared to year 2000 (96.81% vs. 93.92%), (Tab 2 and Fig 2).

From total number of acute diarrhea, the largest number belongs to the age group 0-4 years (25339 cases), then age group 5-49 years (23687 cases). The smallest number of diseases was recorded at age group over 50 with 3489 cases, (Tab. 3).

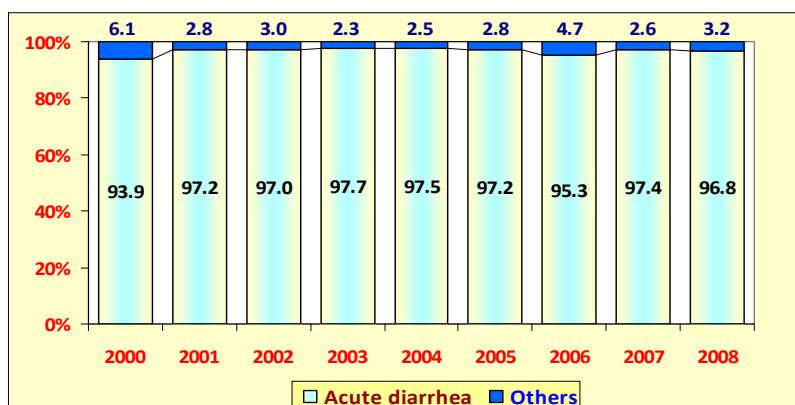
## 5. DISCUSSION

Due to the specific epidemiological characteristics, this group of diseases is quite complex as a clinical overview, epidemiological and preventive measures, [7]. This group of diseases is present mainly in countries which didn't solve the water and sewerage infrastructure (especially rural areas),

namely the problem of supply of hygienic drinking water and food quality control. It's a very disturbing fact, that despite all the measures taken, we still have consistently large number of registered diseases that spread with food and water. According to the World Health Organization, diarrheal disease accounts for an estimated 4.1% of the total DALY global burden of disease and is responsible for the deaths of 1.8 million people every year. It was estimated that 88% of that burden is attributable to unsafe water supply, sanitation and hygiene, and is mostly concentrated in children in developing countries.[8] According to the foreign literature, in developing countries (India, Latin America, Africa and others) there are annually registered about 3 billion cases of infectious diarrhea. Every year there are recorded about 5-10 million deaths from diarrhea. Every child suffers 50 – 60 days a year from diarrhea, 10% of them suffer from dehydration. In the United States are about 25-29 million cases per year with diarrhea that require medical assistance, where about 10,000 people die from them. Every year child suffers about 2-2.5 diarrhea episodes. Out of 8.2 million patients per year visit hospitals for this reason and about 250,000 cases of them are hospitalized. If 50% of these patients with diarrhea, lose one working day, and as it estimated the cost is near 23 million dollars every year, [9-19]. For children age 0–14

Diseases/ Syndrome	2000 n=43546 %	2001 n=51284 %	2002 n=43158 %	2003 n=42361 %	2004 n=42162 %	2005 n=40756 %	2006 n=45372 %	2007 n=51158 %	2008 n=54247 %	Total n=414044 %
Acute diarrhea	93.9	97.2	97.0	97.7	97.5	97.2	95.3	97.4	96.8	96.7
Diarrhea sy. with blood	0.2	0.1	0.3	0.2	0.2	0.2	0.3	0.1	0.1	0.2
Meningeal sy. (M. seroz)	1.5	1.0	1.1	0.8	0.7	0.7	2.8	0.6	0.7	1.1
Ac. Jaundice A	4.4	1.7	1.6	1.3	1.6	1.9	1.6	1.9	2.3	2.0

Table 2. Infectious water and food-borne diseases in Kosovo, by years, 2000-2008



Graf. 2. Graphic presentation (%) of the water and food-borne diseases in Kosovo, by years, 2000-2008

Disease	Age group			Total	
	0-4	5-49	50+		
Acute diarrhea	N	25339	23687	3489	52515
	%	48.3	45.1	6.6	100.0

Table 3. Movement of number of cases of acute diarrhea in Kosova during the period January-December 2008, by group ages

years in the European Region, the burden of diarrheal disease attributed to poor water, sanitation and hygiene is estimated at 5.3% of all deaths. The largest contribution comes from countries of Central and East Europe as well as from Central Asia,[20]. Children under the age of 10 are among the groups most vulnerable to food-and water-borne diseases. Possible health consequences of pesticide residues and chemicals potentially present in the environment, food and water include immunological effects, endocrine-disruption, neurotoxic disorders and cancer,[21] Kosova's residents live in difficult economic conditions. According to World Bank assessment the unemployment is around 60%, while in 12% live in extreme poverty. It is one of the countries with unsatisfying sanitary-hygienic conditions, while water supply and sanitation is not satisfactory. Sanitary and hygienic conditions in Kosova are very low, where 60-65% of the population drink hygienic water, 64% of rural population are supplied with drinking from wells not covered, where 74% of them indicate fecal contamination. 28% of the population is not included in a collection of waste, [2]. When added to the fact that the group of intestinal diseases, in a large percentage remain germ carriers even after the illness.

## 6. CONCLUSIONS

- Kosova is an endemic area with intestinal disease.
- In the past but also nowadays, water and food-borne diseases still represent unresolved problem in Kosova in general health, therefore they are specified as a priority of the local health institutions.
- Acute diarrhea is the most common with almost 90% of all diseases that are transmitted by food and water.
- Competing interests: Authors declare that they have no competing interests

## REFERENCES

1. Azis Pollozhani, Vladimir Kendrovski, Selvete Hoxha-Krasniqi; Human Ecology and Public Health, Skopje 2009.
2. NIHPK – Department of Epidemiology. Performance reports for infectious disease from 2000-2008, Pristine, 2009.
3. Sherwood L. Gorbach, John G. Bartlett, Neil R. Blacklow: Infectious Diseases, second edition, United States of Amerika, 1998.
4. Nwachuku N, Gerba CP. Emerging waterborne pathogens: can we kill them all?. *Curr Opin Biotechnol*. 15 (3): 175-80. PMID, June 2004.
5. Dziuban EJ, Liang JL, Craun GF, Hill V, Yu PA. "Surveillance for Waterborne Disease and Outbreaks Associated with Recreational Water— United States, 2003-2004". *MMWR Surveill Summ*. 55 (12): 1-30. PMID17183230. (22 December 2006).
6. Heymann DL, ur. Control of Communicable Diseases Manual, 18th edition. Washington DC: American Public Health Association, 2004.
7. World Health Organization, Weekly Epidemiological record; 2006.
8. J B Rose, P R Epstein, E K Lipp, B H Sherman, S M Bernard, and J A Patz: Climate variability and change in the United States: potential impacts on water- and foodborne diseases caused by microbiologic agents, *Environ Health Perspect*.; 109 (Suppl 2): 211-221, May 2001.
9. Jørgen Schlundt: New directions in foodborne disease prevention, *International Journal of Food Microbiology*, Volume 78, Issues 1-2, 15, Pages 3-17, September 2002.
10. D. Pimentel, S. Cooperstein, H. Randell, D. Filiberto, S. Sorrentino, B. Kaye, C. Nicklin, J. Yagi, J. Brian, J. O'Hern, A. Habas and C. Weinstein: Ecology of Increasing Diseases: Population Growth and Environmental Degradation, *Human Ecology*, Volume 35, Number 6 / December, 2007.
11. Tim Ford: Combating Waterborne Diseases Globally, *Water & International Health, Water Conditioning & Purification*, September 2001.
12. King, CK, Glass, R, Bresee, JS, Duggan, C. Managing acute gastroenteritis among children: oral rehydration, maintenance, and nutritional therapy. *MMWR Recomm Rep*; 52:1, 2003.
13. Guerrant RL, Van Gilder T, Steiner TS, Infectious Diseases Society of America . Practice guidelines for the management of infectious diarrhea. *Clin Infect Dis*. 32 ; 331-350, 2001.
14. Musher DM, Musher BL. Contagious acute gastrointestinal infections. *Engl J Med*. 351; 2417-2427, 2004.
15. Scheidler MD, Giannella RA. Practical management of acute diarrhea. *Hosp Pract*. 36; 49-56, 2001.
16. Schiller LR. Diarrhea. *Med Clin North Am*. 84; 1259-1274, 2000.
17. Sellin JH. Intestinal electrolyte absorption and secretion. *Gastrointestinal and Liver Disease Pathophysiology/Diagnosis/Management*, 7th ed. Feldman M, Friedman LS, Sleisenger MH, Eds. WB Saunders Co, Philadelphia, 1451-1471, 2002.
18. Thielman NM, Guerrant RL. Acute Infectious Diarrhea. *N Engl J Med*. 350; 38-47, 2004.
19. Thielman NM, Guerrant RL. Acute Infectious Diarrhea. *N Engl J Med*. 350; 38-47, 2004.
20. Valent F, d'Anna L, G. Tamburinia and F. Barbone. Burden of disease attributable to selected environmental factors and injuries among Europe's children and adolescents. WHO Regional Office for Europe, 2004.
21. Tamburlini G, Ehrenstein O, Bertollini R. Children's health and environment: a review of evidence: a joint report from the European Environment Agency and the WHO Regional Office for Europe. Copenhagen, European Environment Agency: 44-47(Environmental is report, No. 29), 2002.

Corresponding author: Sefedin Mucaj, MD. National Institute for Public Health, Pristine, Republic of Kosova. E-mail: sefa66@gmail.com