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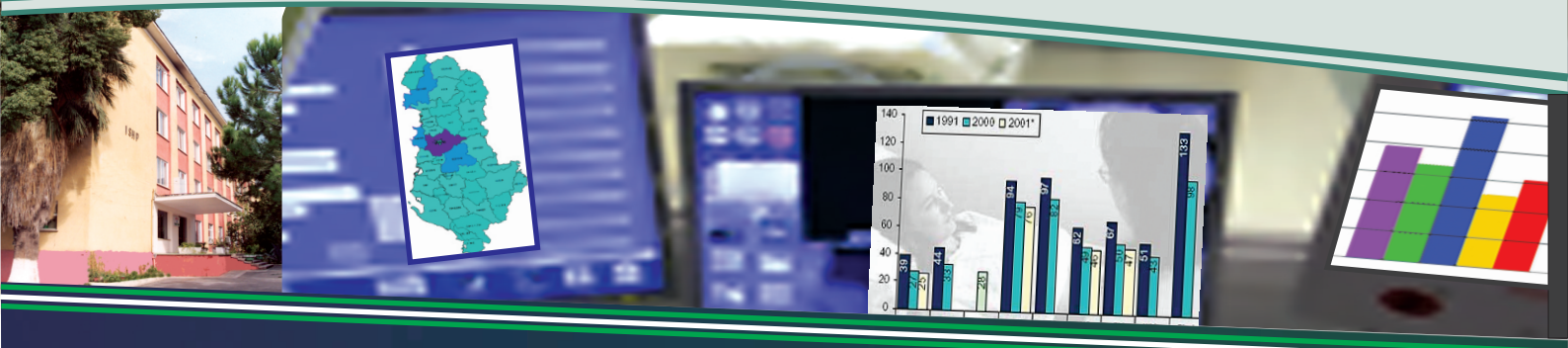

No. 4 - 2016

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BULLETIN: 4-2016

TABLE OF CONTENTS

INSTITUTE OF PUBLIC HEALTH BULLETIN: 4-2016

ORIGINAL RESEARCH

HEALTH POLICY INFORMATION

The incidence of diarrheal diseases in Albania in 2015

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Abstract

Diarrheal diseases comprised 36% of the total annual infectious morbidity in 2015. In 2014 the respective incidence was 35% with a slight increase in 2015. Unspecified Gastroenteritis accounted for 95% of total diarrheal disease cases reported in 2015, compared with 93.6% in 2010, followed by alimentary intoxication (3.62% of total), bacillary dysentery (0.58% of total), non-typhoid salmonellosis (0.57% of total). Abdominal typhoid and paratyphoid manifest a lower incidence with fluctuations over the years. They comprised only 0.02% of overall diarrheal disease cases in 2015. Diarrheal diseases can be prevented through a multisectoral approach.

Introduction

Diarrheal diseases include: **Abdominal typhoid and paratyphoid, salmonellosis, bacillary dysentery, amoebic dysentery, alimentary toxic infections and gastroenteritis** (Group C). Diarrheal diseases constitute a very important part of infectious diseases.

Methodology

The main source of data for the analysis of the epidemiological situation of infectious diseases in Albania comes from obligatory reporting of infectious disease cases from the epidemiological services operating in all Districts of Albania to the Institute of Public Health through the official 14/SH forms.

The description of the epidemiological situation of diarrheal diseases is based by paying special attention to the:

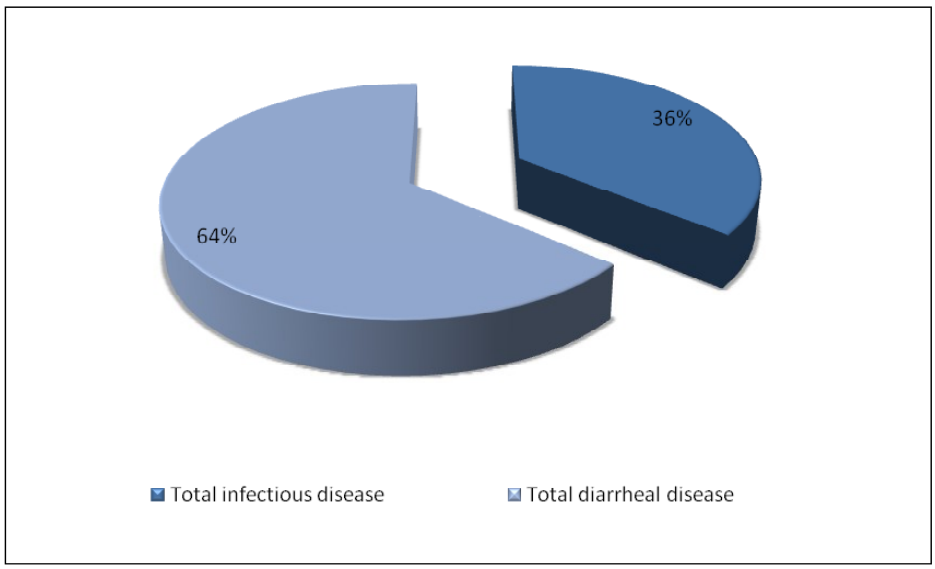
1. Description of trends during 2010-2015.
2. Distribution of disease by gender and age.
3. Distribution by regions and areas.

The data were analyzed and presented in graphs and tables using Microsoft Excel. Group B (Table 14/Sh) contains 48 nosology entities. This group also includes **diarrheal diseases** reported by the clinical medical services of respective district to the epidemiological service, which completes the 14/SH forms and epidemiological individual files.

Results

Figure 1 presents the specific weight of diarrheal disease in the 2015 infectious morbidity. The total number of infectious disease cases reported in 2015 in monthly 14/SH form was 80 911, and the incidence was 2 889.5 cases per 100 000 inhabitants. The data show that diarrheal diseases account for around 36% of annual infectious disease morbidity. In 2014 the incidence was 35% with a slight increase in 2015 (Figure 1).

Figure 1. Specific weight of diarrheal disease in infectious morbidity

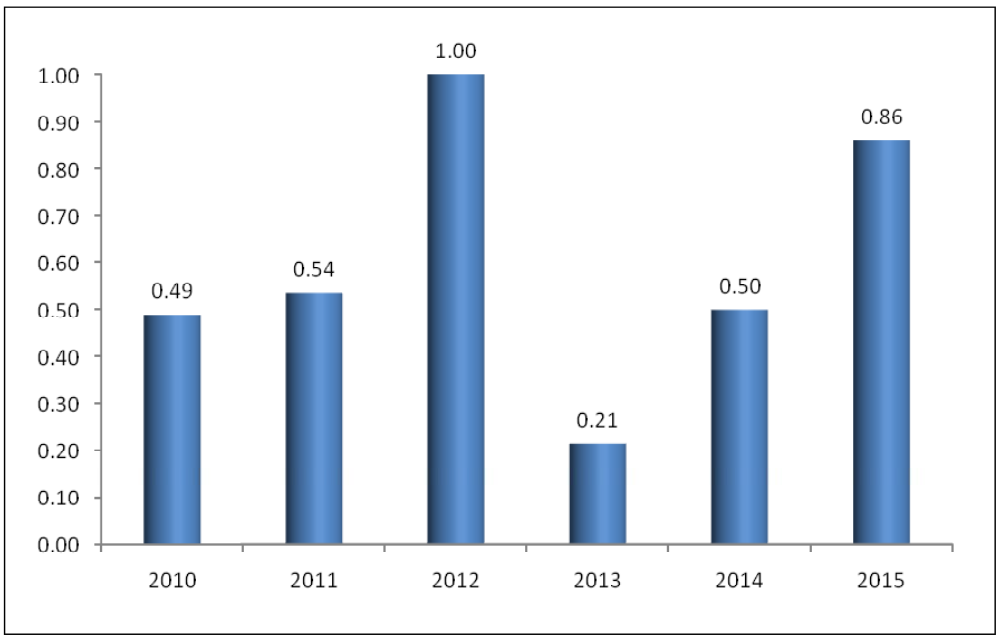


Among diarrheal diseases, 95% of cases are represented by unspecified gastroenteritis because the majority of cases with diarrheal infections/disease are reported as unspecified gastroenteritis in our infectious disease surveillance Statutory Notification System

(SNS) surveillance 14-sh forms for recorded cases, as it is quite obvious the impossibility and the uselessness of the routine laboratory confirmation of a case of diarrheal disease when the clinical diagnosis has excluded the presence of abdominal typhoid-paratyphoid and/or non-typhoid salmonellosis (in the context of the infectious syndrome "non-bleeding diarrhea"), or of a shigellosis and/or amebiasis (in the context of the infectious syndrome of "bleeding diarrhea"). Unspecified gastroenteritis comprised 95% of all reported diarrheal cases in 2015 compared to 93.6% in 2010, followed by alimentary intoxications with 3.62% of the total, bacillary dysentery with 0.58% of the total, and non-typhoid salmonellosis with 0.58% of the total. The exceptionally high specific weight of unspecified gastroenteritis in diarrheal disease reporting is related to the low level of microbiological confirmation of cases at district level, as a consequence of the low level performance of the microbiological laboratories of public health at district level regarding bacteriological and parasitology diagnosis of diarrheal infections/diseases.

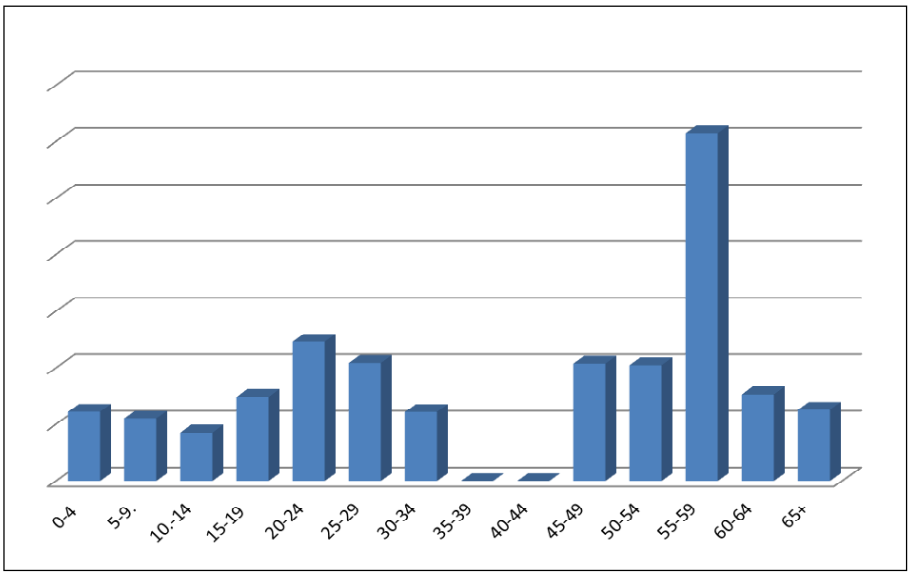
The annual occurrence of diarrheal disease exhibits its well-known seasonal feature with the overwhelming of cases presenting during summer. The incidence increases in June and the peak occurs in August (Figure 2).

Figure 2. The incidence of abdominal typhoid and paratyphoid during 2010-2015



Abdominal typhoid and paratyphoid show a fluctuating incidence over the years. However, they comprised only 0.02% of the total diarrheal disease cases in 2015 (Figure 3).

Figure 3. The incidence of abdominal typhoid and paratyphoid by age-groups in 2015

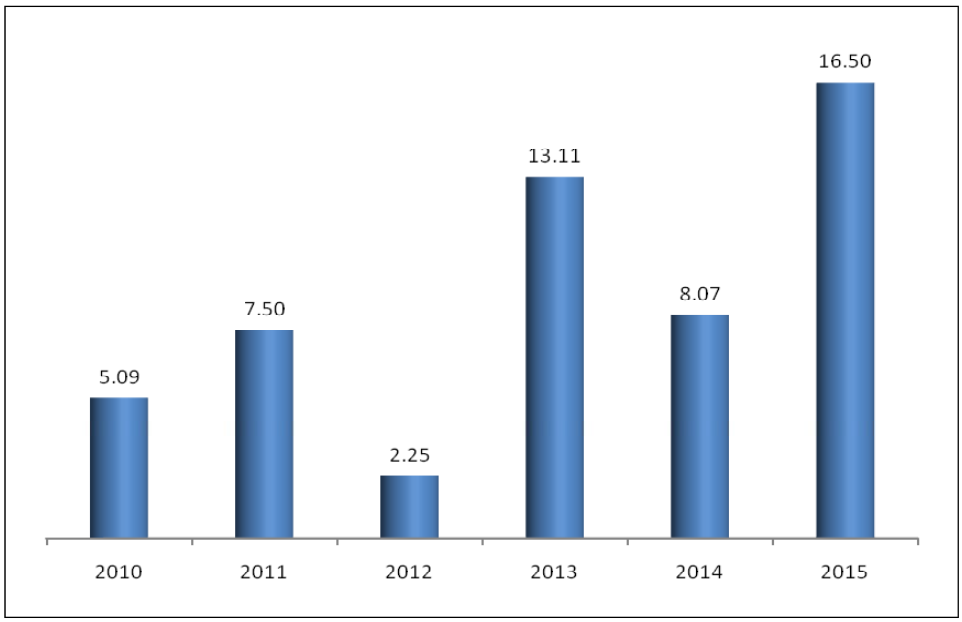


Nontyphoidal Salmonellosis

In 2015 nontyphoidal Salmonella accounted for only 0.57% of total diarrheal disease cases. Its incidence shows a slight increase and then a decrease from 2010 to 2015. In 2015 nontyphoidal Sallmonella is more frequent among infants 1-4 years old, and also it was very common in the age group 15-44, and the situation is almost similar each year.

The incidence of nontyphoidal Salmonella during 2010-2015 is presented in the Figure 4. Despite the fluctuations in time, the incidence of nontyphoidal Salmonella shows an increasing trend, reaching the highest level in 2015 (Figure 4).

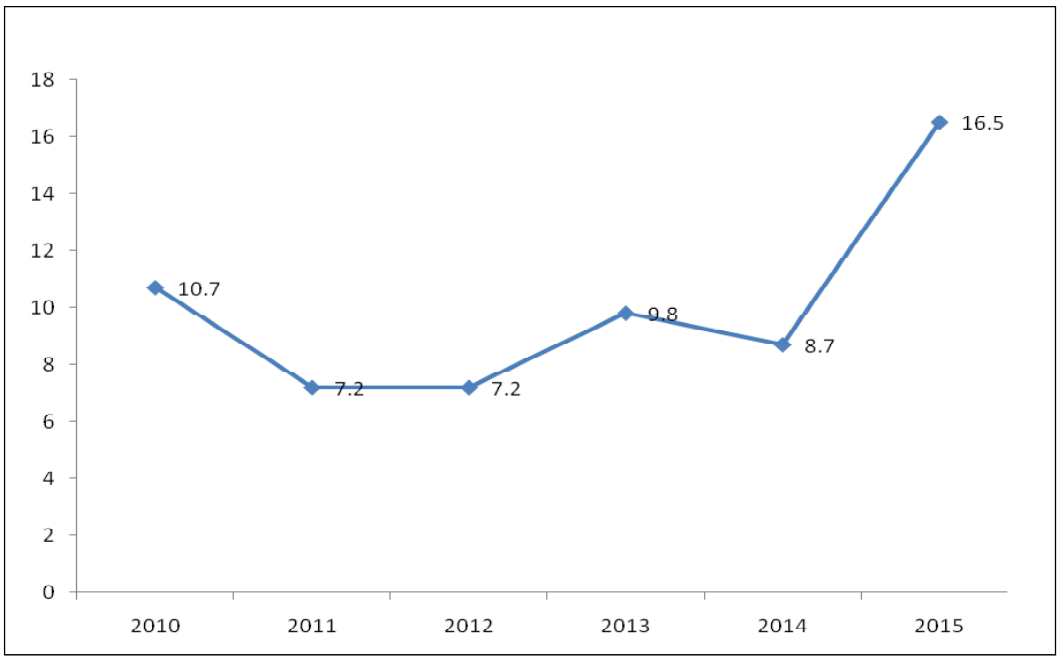
Figure 4. The incidence of nontyphoidal Salmonella during 2010-2015



Shigellosis incidence

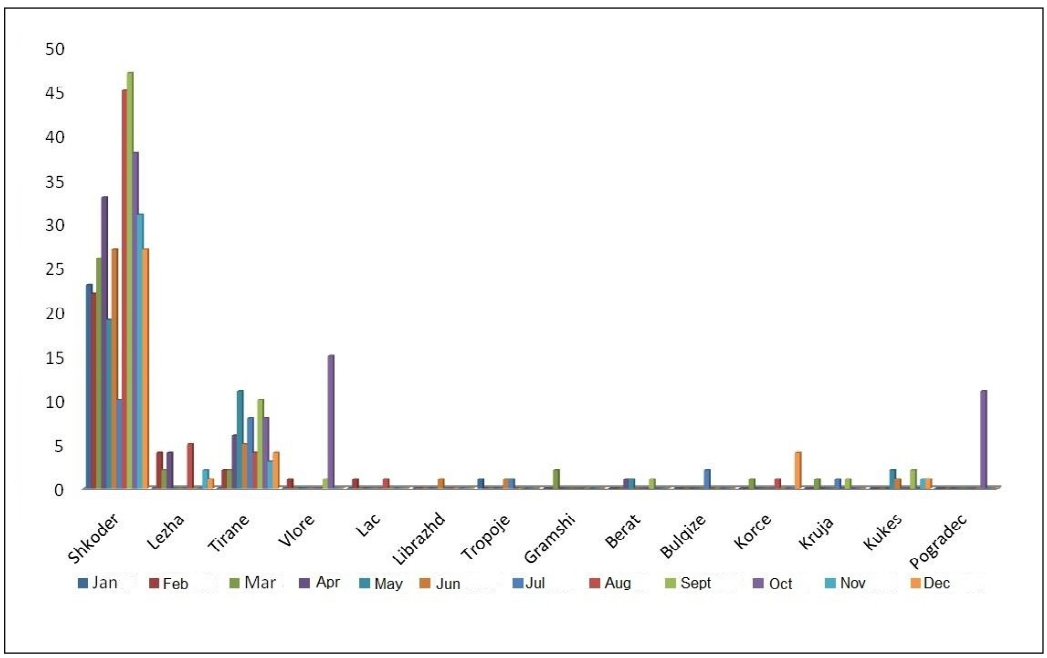
The incidence of shigellosis presents a decrease from 2010 to 2014, and an increase in 2015 (Figure 5). In 2015 shigellosis comprised only 0.58% of total diarrheal disesase cases. Shigellosis is mostly diagnosed in the age-group 15 to 44 years old.

Figure 5. Shigellosis incidence during 2010-2015



District of Shkodra, Tirana and Lezha reported more cases during 2015 (Figure 6).

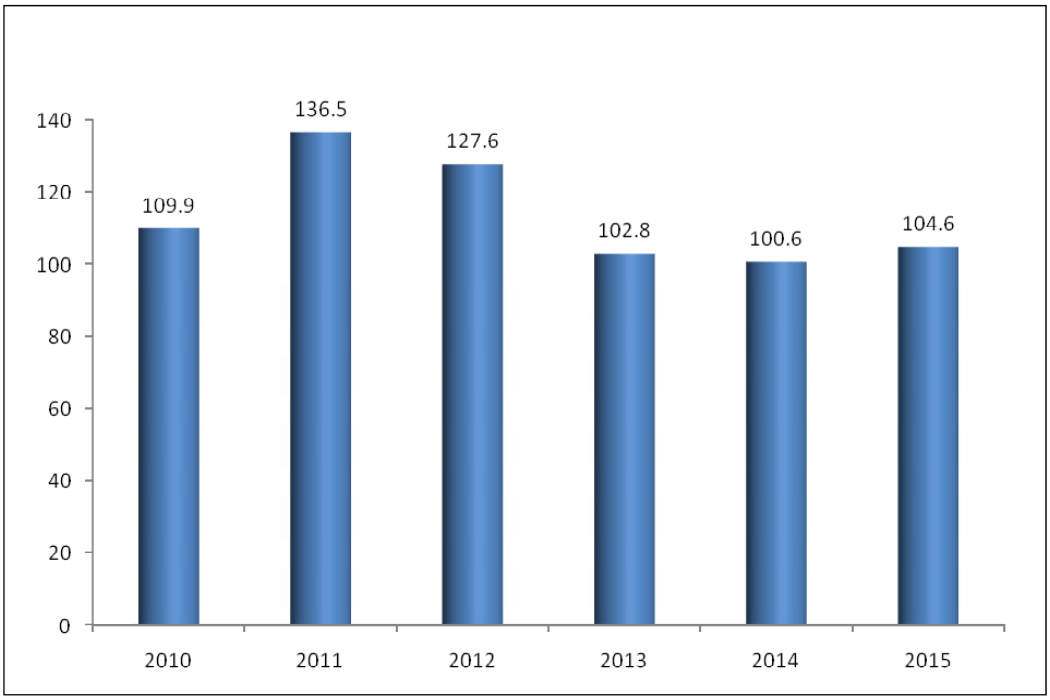
Figure 6. Number of cases with shigellosis in 2015 by districts and months



Alimentary toxic infections

Incidence of alimentary toxic infections has not changed much from 2010 to 2015 (Figure 7). Alimentary toxic infections comprised 3.62% of diarrheal disease cases in 2015. Perhaps the number of cases was higher, but in outpatient services they are commonly diagnosed as unspecified gastroenteritis. This might explain the high number of gastroenteritis cases.

Figure 7. Alimentary toxic infections incidence during 2010-2015

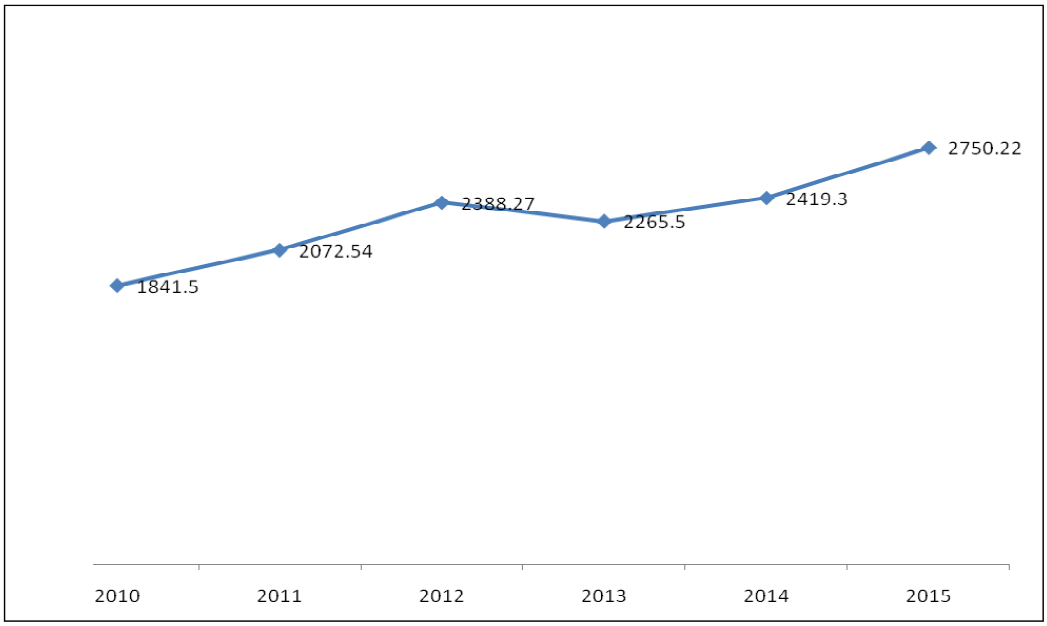


Kukes district repeatedly reported a high number of alimentary toxic infections cases in during 2010-2015.

Gastroenteritis

Unspecified gastroenteritis accounted for 95% of all diarrheal disease cases. Figure 8 shows that the incidence of gastroenteritis is increasing in both men and women.

Figure 8. Gastroenteritis incidence during2010-2015



Conclusions and recommendations

Diarrheal diseases can be prevented by following a multisectoral approach, through:

1. Continuous monitoring of environmental health risk factors and food safety;
2. Provision of clean water supply within the sanitary parameters;
3. Sanitary inspection of food conditions in which they are produced and merchandized;
4. Sanitary management of urban waste and sewage;
5. Prevention and control of epidemiological outbreaks;
6. Promotion of health education on personal and community hygiene.

Summary box

What is known about this issue?

The specific weight of diarrheal diseases among all infectious mordidity is considerable.

What this study adds?

This report presents data on diarrheal disease cases in 2015 and compares the data with previous years.

What are the implications for public health?

Careful monitoring of situation is needed in order to timely detect any possible changes and plan specific and appropriate measures.

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Evaluating the acceptability of three injections in one day

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Abstract

National Immunization Program aims to maintain nationwide vaccine coverage over 95%, and also tries to assess and understand the acceptability of the vaccines provided in the framework of this program by the medical staff and the children caretakers. Starting from May 2015 in selected districts of the country a qualitative assessment is being carried out in order to analyze the acceptability of administration of three or more injection vaccines during a single medical visit by the medical staff and/or child caretaker, after the introduction of inactivated polio vaccine (IPV) in the national immunization schedule. This evaluation consists of several stages, through carrying out a variety of activities ranging from planning of the sites and number of interviews, necessary trainings, conducting fieldwork and data analysis in order to improve this service.

Introduction

The introduction of polio inactivated vaccine (IPV) in the national immunization schedule in Albania was realized after a careful assessment of all the possible schemes and discussions between the Immunization Coordinating Committee and immunization technical group, including experts from Albanian Pediatric Association and Albanian Infectious Diseases Association.

The Committee presented 3 possible scenarios for the introduction of IPV, and because of budget constraints, only the monodose IPV vaccine was approved and accepted.

Until now no qualitative evaluation on the acceptability from the health personnel or child caretaker of the addition of this IPV vaccine in the national immunization schedule, or adding another vaccine during a single visit has been carried out in Albania. Qualitative evaluation is a widespread method for the assessment of health services (Shortell 1999; Sofaer 1999). Qualitative evaluation methodologies generate rich information including health care, but not only, as they also include patients' preferences, decision-making process in medicine, cultural values and beliefs on health, customer satisfaction, health welfare behaviors, inequalities in health, etc. In addition, qualitative methods provide inside information about development, interpretation and allocation of services, and for determining the weaknesses of health systems (Bradley 2007).

The information retrieved from the medical staff and/or child caretakers regarding the acceptability of IPV vaccine and the administration of three or more injecting vaccines in a single medical visit will help national vaccination program to evaluate the success of the introduction of IPV vaccine and to determine the most optimal vaccination scheme. Also, qualitative assessment will serve as a guideline for local decision-makers and other countries that face similar issues.

Methodology

A number of health centers across the country were selected randomly for the data collection process. Selection of health centers was made using the instrument provided by the World Health Organization (WHO), EVM-site selection tool, (2014). In total there were included 42 health centers, of which 9 urban health centers, 8 rural health centers (nearby) where the vaccination process was occurring every day and 25 health centers (more distant) where the vaccination process did not occur every day. We collected data for the children who were qualified to perform the IPV vaccine and that showed up at the health center (for example, those children who show up for the visit and respective vaccination at 2 or 4 months), as well as data about the practices and behavior of health personnel who apply vaccines to these children. In addition, interviews with children caretakers were conducted in order to obtain thorough information about their behavior toward the vaccination, as well as to control or check the vaccination documentation the child caretaker has provided and the fundamental register of the health center. The qualified health personnel interviewed was the person performing the vaccination process routinely for at least one month (the health personnel engaged only during vaccination campaigns was not interviewed). The number of interviews was calculated based on the sample size taking into account the refusal rate as well.

Results

During this evaluation stage there were conducted interviews in 42 selected health centers. In total 288 interviews were conducted with children caregivers. Furthermore, 58

interviews were conducted with the health personnel engaged in the vaccination process, as explained earlier.

Measures taken

To conduct this evaluation process several stages were planned and carried out. The number of interviews to be conducted was determined as well as the necessary training, field interviewing, building of a database and data analysis. During the interviews supervisors were also present in order to monitor study progress and field procedures.

Conclusions

Interviewing and data entering process will lead to the analysis of collected data, that will provide answers on the main goals of this qualitative assessment about the behaviors and beliefs of these groups regarding the acceptability of the vaccine IPV, and the administration of three or more injection vaccines during a single visit. Also, the data obtained will provide information about the acceptability of IPV vaccine after its introduction in national immunization schedule, identify children caregivers behaviors and health staff towards vaccination process in general, serving this was as a good basis for formulating recommendations that will lead us to the introduction of new injection vaccines in Albania in the future.

Summary Box

What is known about this issue?

The introduction of IPV vaccine in the national immunization schedule in Albania, was conducted after a careful assessment of all possible schemes and after multilateral discussions of relevant experts. However, until now in our country there has been no qualitative assessment of the health staff and children caretakers about the acceptability of the introduction of this vaccine (IPV) in immunization calendar, or acceptability of adding of another vaccine during a single medical visit.

What this study adds?

Qualitative assessment is a very popular way to assess the health services. The methodology of qualitative assessment generates rich information including health care, health care providers and users of health services.

What are the implications for public health?

The information generated from this qualitative assessment will help the National Immunization Program to assess the success of IPV vaccine introduction and to determine the optimal vaccination scheme. Also, qualitative assessment will serve as a guide for local and foreign decision-makers who face the same issues.

Water quality of sandy coasts of Durres, Gjiri i Lalzit and Kavaja for 2011 and 2015

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Abstract

This study aimed to assess the quality of coastal bathing waters in the beaches of Durres and Kavaja, two areas widely used for recreational purposes and tourism, and to compare the results in 2011 and 2015. This assessment is based on hygienic and sanitary inspection to determine the sources of pollution (discharges of wastewater discharged directly or indirectly into the sea), as well as in assessing the microbiological load in water samples taken from specific stations through two faecal pollution indexes: faecal coliform (FC), Escherichia Coli and Intestinal Enterococci (Intestinal Enterococcus-IE), respectively. Comparison of results is based on the recommendations of the World Health Organization (WHO), as well as the EU's regulations, Directive 2006/7/EC on the management of bathing water quality (based on the assessment of percentiles 90-95). Based on the comparison between the two years under study, for the three monitored beaches (Durres, Lalzi Bay and Kavaja), there is a significant improvement of the quality of coastal bathing waters in Category A - very good quality, from 24 % to 65%; there is a decreasing tendency by 3 percentage points of water quality regarding Category B - good quality; there is a growing percentage in category C - enough Quality at 9% and a significant decrease in the percentage of monitoring stations with very poor quality, category D.

Introduction

In the bay of Durrës it is located the biggest seaport and the most frequented beach in the country. This beach has been transformed into an urban area with a heterogeneous population, frequented not only in summer but throughout the year. The population of the city multiplies 3-4 times during summer. The uncontrolled constructions of buildings and public services have brought about the reduction of maintenance capacity of urban areas, and making it appear a not self-sustaining city district. Most of these buildings do not have any sewage system for waste water, and it is discharged directly or indirectly into the sea.

In Durres there are located the largest number of monitoring stations (21 stations), because Durres has the largest and the most popular beach of the country. Durres District coastline is about 62 km long, of which 25 kilometers belong to Gjiri i Lalzit. During 2011, as it has become a very populated beach, Gjiri i Lalzit was included into the monitoring program. This beach is under the administration of Ishmi municipality, and it is a quiet beach near two noisy cities, welcoming thousands of native and foreign tourists.

Kavaja coastline has a length of approximately 35 km, starting at "Perroi i Agait" (boarded by Durres) down to the estuary of the Shkumbin river, and along the coastline are located some villages and certain segments of the beaches are named after them. So, one by one, we find Golem, Karpen, Bago, Spille and Greth beaches. According to the report of 2011, in Durrësi beach, the sanitation network of used water is of small capacity, and in several times sewage surfaced on the ground and was freely discharged onto the sea. Some of the constructions like different buildings or public service ones (restaurants, hotels, etc.) use septic tanks, due to the lack of sewage system, and discharge them into the sea, becoming in this way a potential source of sea water pollution. According to monitoring stations, Currila beach was more problematic for the quality of the water , and also former holiday cottages whose walls had signs of waste water flow poured later in yards, sand and sea.

In Vollga area, a tubing measuring Ø1,5 – 2 m discharges large amounts of waste water directly onto the sea in Plepa beach zone, where the Shkallnur canal of high water brings waste water from uncontrolled discharges, and also in Shkembi Kavajes beach when the buildings were not connected with the sewage system. In Durrsi beach sewage system from Ura e Dajlanit to Plepa is connected with urban waste water through an open canal which traverses all the swamp zone ending in Porto Romano hydrovor, where the waters are pumped into the sea by the pumping station without any water treatment.

In Golemi beach, under the administration of the Golem municipality, a very problematic hygiene-sanitary situation is present, due to discharged waste water in those areas. In addition to Golem a problematic situation is present also in Mali Robit and Qerret, in uncontrolled discharges of urban waters at Perroi i Agait, and in the canal of high water traversing this beach. Surrounding areas of canals and streams smell badly due to waste water stench. On a coastline length of about 7.4 km, there is discharged water from a pumping station (hydrovor), 4 canals of high water, and also 3 streams and sewage from the 8 surrounding villages.

By inspections of year 2015, in Durres beach significant improvement was noted regarding liquids discharge control, whereas in the problematic area from "Shkembi Kavajes" to "Perroi i Agait" uncontrolled discharges are now connected with sewage system through pumping stations along the shore, which go to the Waste Water Treatment Plant of Durres. In Plepa beach, microbiological contamination was

significantly reduced after Shkallnur high waters were discharged, while the same problematic situation continues in monitoring stations of: Zhiron beach, Railway, Ministry of Interior, Tropical Resort and Xhardino Complex. In Kavaja beach there was made an important improvement in sewage water sanitation system, but connections were not yet finished, and especially secondary and tertiary ones.

Along coastline segment from 'Përroi Agait' to ' Former Sport Field'(Qerret), five pumping stations function, discharging liquid waste waters to Urban Waste Water Treatment Plant of Kavaja, where an enlargement of existing tanks has also been accomplished Liquid waste of the area from 'Kompleksi Murrizi' to Police Station, which years ago were drained in the nature through an open canal, today have become a part of the main water collector system, where used water of the businesses stationed in both sides of the road are discharged, while around 20% of secondary lines have been finished. Other business subjects operating in the areas are still using septic tanks. From the pumping Station No.2 (Grint Hotel, near the Police station, in the centre) to pumping Station No.5 (Resorts in Qerret) 70-80% of the secondary sewer connections are now discharged into the main collector. Afterwards, those waters are discharged by pumps into the Urban Waste Water Treatment Plant of Kavaja. At the entrance of the Golemi beach, at the Police Station, the waste water discharging canal has been covered up, and only surface waters are discharged into the sea. In Gjiri i Lalzit beach, in all the sampling fields there was not any recorded pollution, and the analytical results categorize the waters as of class A-very good water quality.

In this context, the purpose of this study was the comparison of quality of bathing water for years 2011 and 2015, in relation to the level of microbiological contamination, for Durrës beach, Gjiri i Lalzit and Kavaja beach. More specifically, the present study aims at:

1 The evaluation of the causal factors of beach pollution, purposely quality assurance and protection of public health from contaminants.

2 The determination of direct and indirect sources of the pollutants and to highlight water pollution dangerous areas for population health.

3 The categorization of beaches according to the level of microbiological contamination.

Methodology

There have been conducted 8 sampling and inspection campaigns before, during and after summer season in the years 2011 and 2015.

Sampling stations of Durres beach monitored: Currila beach, Zhiron beach (Brryli) from "Ura e Dajlanit" to Golem beach (Giardino). Sampling Stations of Kavaja beach monitored: Miami, Vienna, Golem - Kosmira, "Vapori i mbytur", Jurgen Pizza, Silver Pizza, Mak Albania, "Lokali i Reshatit", 'Bunker i Bardh', Sport Field (Qerret) and Sampling Stations of Gjiri i Lalzit beach monitored: Kepi i Rodonit, Lura Resort, Public Beach beyond Lura resort (Table 1).

Table 1. International respective codes, monitored beaches and the number of sampling stations

International code	Beach	Monitoring stations no.
ALB2	Durrës	21
ALB2/1	Gjiri i Lalzit	3
ALB2	Kavaja	10

Coastal water samples taken from monitored stations were transported and analyzed according to the Decision of the Council of Ministers No. 797, date 29.09.2010, For the approval of hygiene-sanitary regulation " For the quality administration of Bathing Waters" in accordance with Directive 2006/7/EU, date.15/02/2006 "For the quality administration of Bathing Waters". Annex V; Sampling methodology, transportation, microbiological analysis, paragraph 1, 2,3 and 4 of this annex.

Samples were collected from sea water with single-use sterile plastic containers, with a volume of 250 ml . The samples were taken in 30 cm depth in waters less than 1 m deep. Costal bathing waters were analyzed for two bacteriological indicators Intestinal Enterococci (IE) – Methods ISO 7899-1 *and Escherichia Coli (E.coli)* – Methods ISO 9308-3, of Filtration Membrane (MF). Categorisation of quality of costal bathing waters is based on the Decision of the Council of Ministers No. 797, date 29.09.2010, For the approval of hygenie and sanitation regulation " For the quality administration of Bathing Waters" in accordance with Directive 2006/7/EU, date.15/02/2006 "For the quality administration of Bathing Waters" and Water Bathing Criteria and Standards for Mediterranean Countries (WHO/UNEP 2010).

The results obtained by bacteriological examinations were analyzed according WHO/UNEP 2010 recommendations (based on percentiles 90 and 95).

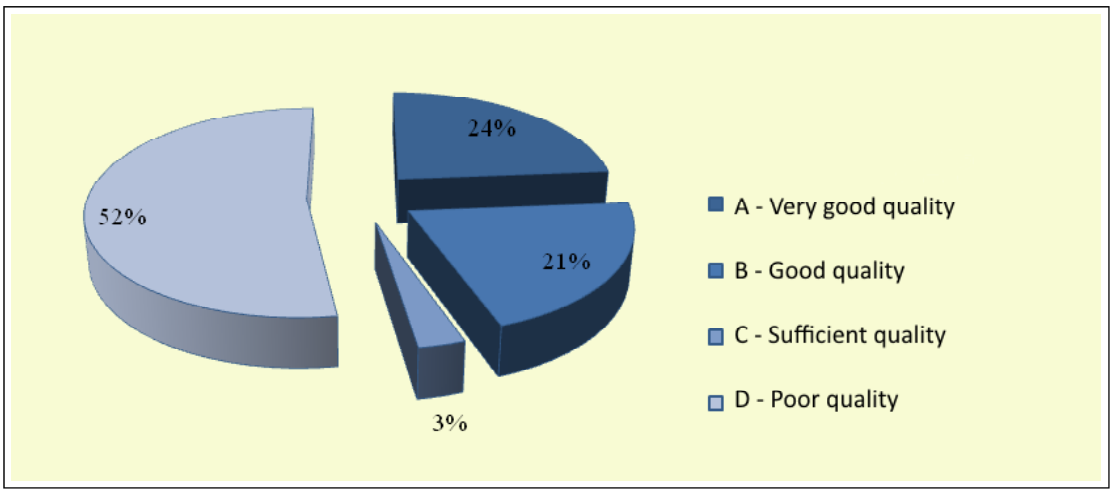
Analytical results and beach classification

Table 2 below presents a summary of costal bathing waters microbiological quality of sandy beaches of Durres, Gjiri i Lalzit dhe Kavaja for the year 2011, in a table and a graph (Table 2 and Figure 1)

Table 2. Evaluation of the quality of coastal bathing waters according to categories of WHO / UNEP 2010

Category	Stations	Percentage
A - Very Good Quality	8	24
B - Good Quality	7	21
C - Sufficient Quality	1	3
D - Poor Quality/ Immediate Action	18	53

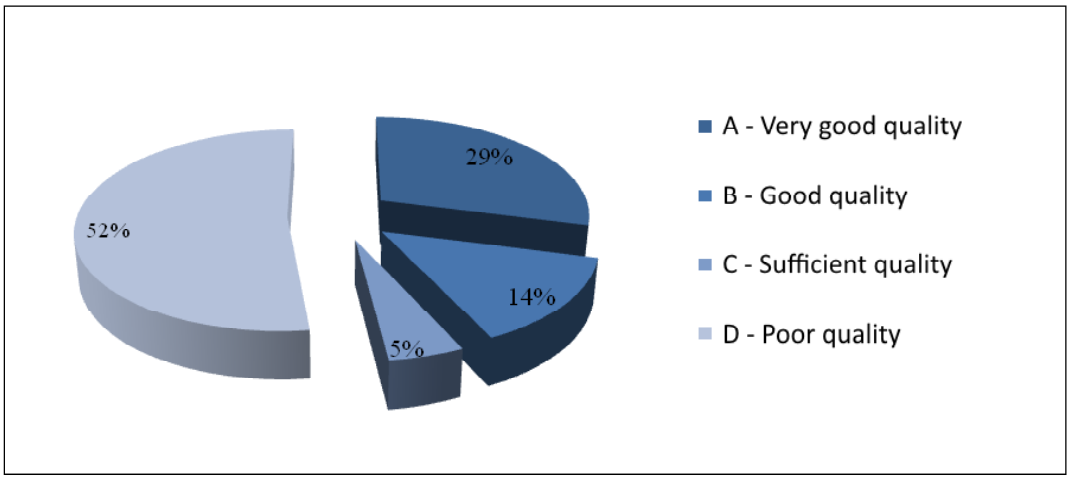
Figure 1. Categorization of sandy beaches of Durresi, Kavaja and Gjiri i Lalzit for 2011 (in



Out of 34 monitored stations in total in the sandy beaches of Durrësi, Gjiri i Lalzit, Kavaja for 2011, 23% belong to A- very good quality, 21% belong to B- Good Quality, 3% belong to C- Sufficient Quality, 53% of the results belong to D- Poor Quality - Immediate Action (recommended)

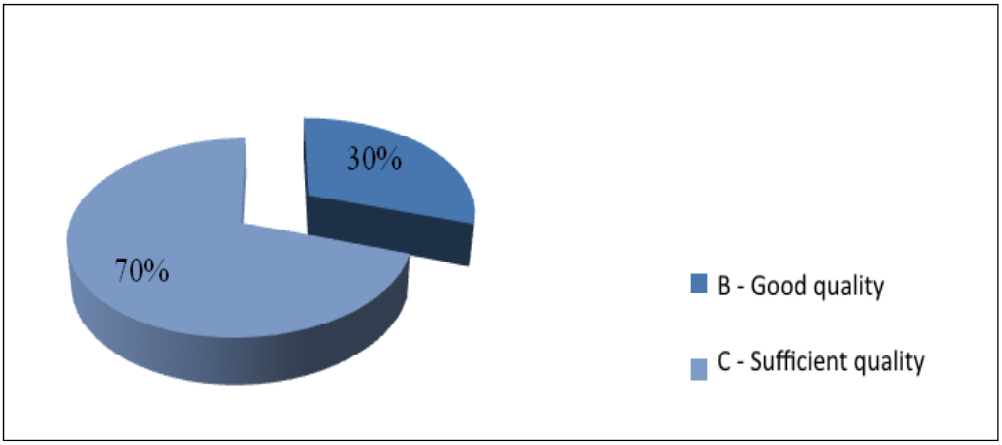
The charts below show the categorization of the three beaches for the year 2011. Durrësi beach (Figure 2), from obtained results, 52% of the results belong to D- Poor Quality - Immediate Action(recommended); 29% belong to A- Very Good Quality; 14% belong to B- Good Quality dhe 3% belong to C- Sufficient Quality.

Figura 2. Durres sandy beach categorization for 2011 (%)



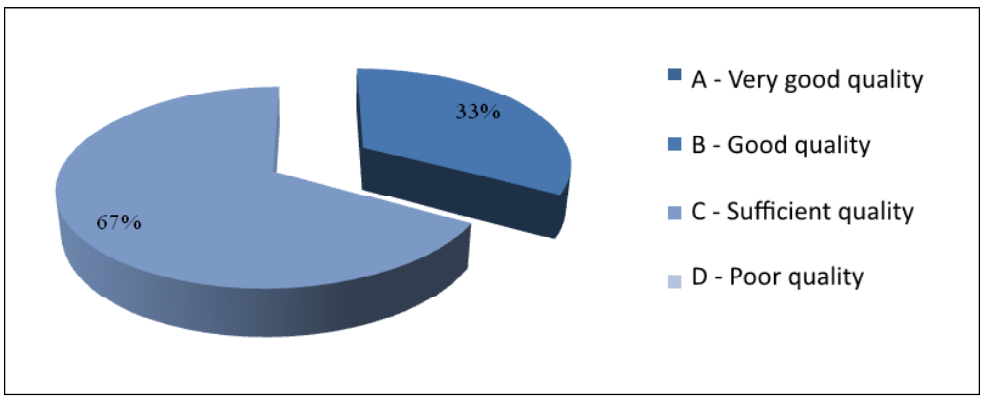
Kavaja beach (Figure 3) results the most polluted beach of the seaside, where 70% of the microbiological results belong to D- Poor Quality - Immediate Action and 30% to category B- Good Quality.

Figure 3. Kavaja beach categorization for year 2011 (%)



Gjirit i Lalzit beach (Figure 4) 67% of the waters of this coastline belong to A-Excellent Quality and 33% to category B-Good Quality.

Figure 4. Gjiri i Lalzit beach categorization for 2011 (%)

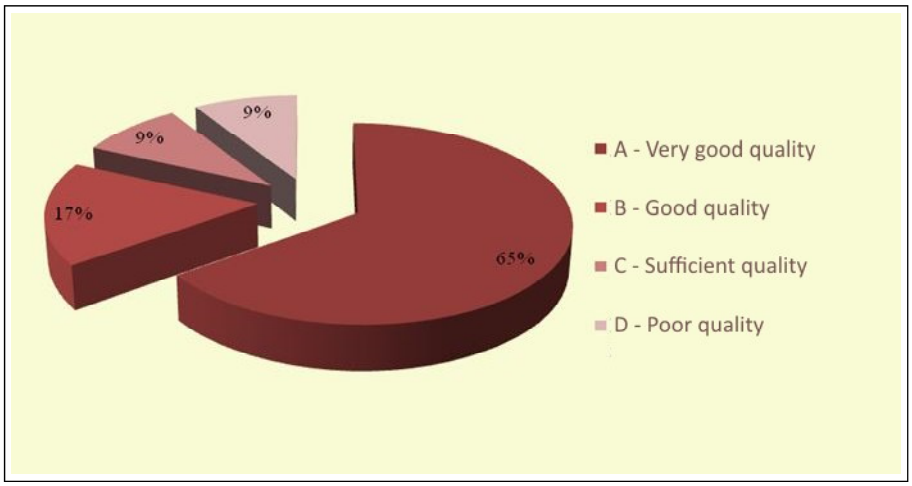


During the year 2015, 34 monitoring systems were set up in the beaches of Durres, Kavaja and Gjiri i Lalzit (Table 3 dhe Figure 5), of which 65% belong to A- Very Good Quality , 18% belong to B- Good Quality, 9% belong to C- Sufficient Quality and 9% belong to D- Poor Quality - Immediate Action.(recommended)

Table 3. Evaluation of the quality of coastal bathing waters according to categories of WHO / UNEP 2010

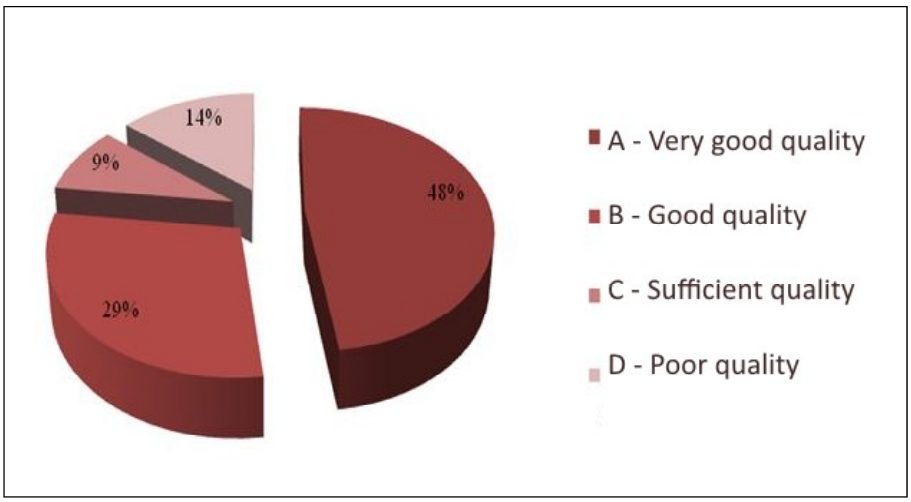
Category	Stations	Percentage
A-Very Good Quality	22	65
B-Good Quality	6	17
C-Sufficient Quality	3	9
D-Poor Quality/ Immediate Action	3	9

Figure 5. Categorization of sandy beaches of Durresi, Kavaja and Gjirit i Lalzit for 2015 (in %)



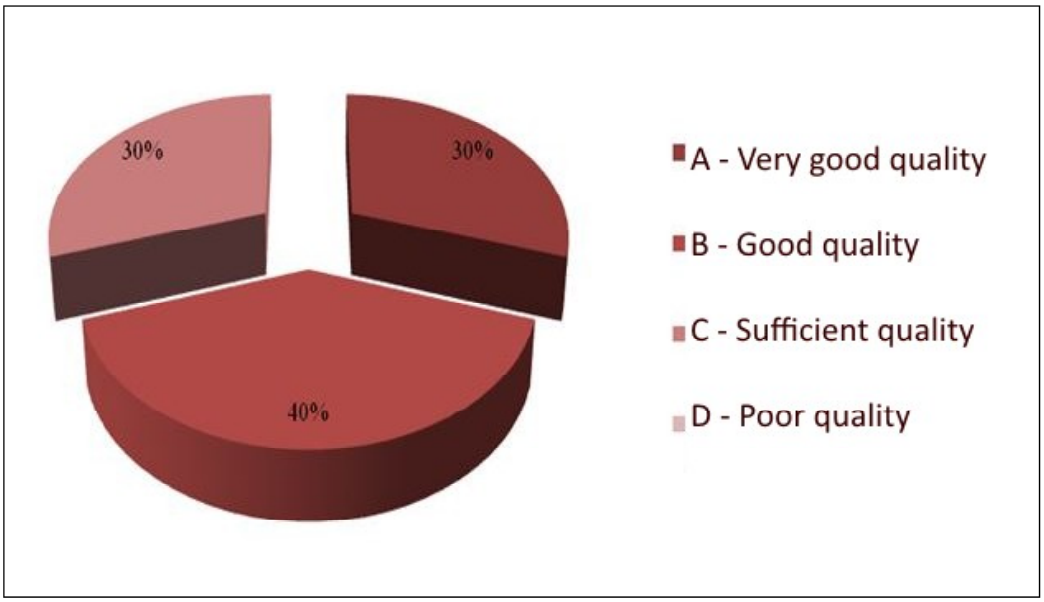
The charts below show the categorization of the three beaches for the year 2015. For Durrësi beach (Figure 2), from obtained results, 48% of the results belong to A- Excellent Quality, 29% belong to B- Good Quality, 9% belong to C- Sufficient Quality and 14% belong to D- Poor Quality - Immediate Action (recommended)

Figure 6. Durres beach categorization for 2015 (%)



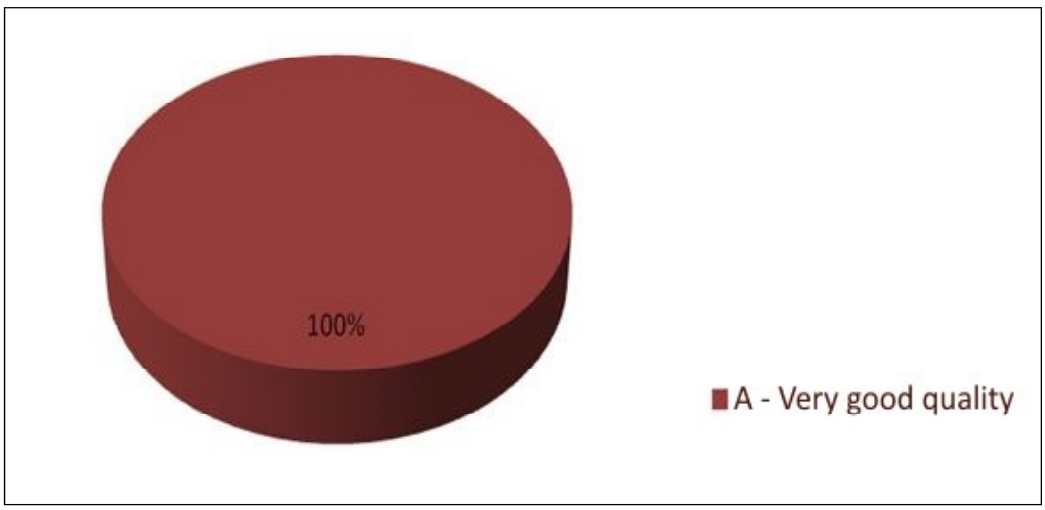
For Kavaja beach (Figure 7), during the year 2015, 30% of the results belong to A- Very Good Quality, 40% belong to B- Good Quality and 30% belong to C- Sufficient Quality.

Figure 7. Kavaja beach categorization for 2015 (%)



Gjiri i Lalzit beach (Figure 8) is categorized A- Excellent Quality according to WHO/UNEP 2010.

Figure 8. Gjiri i Lalzit beach categorization for 2015 (%)

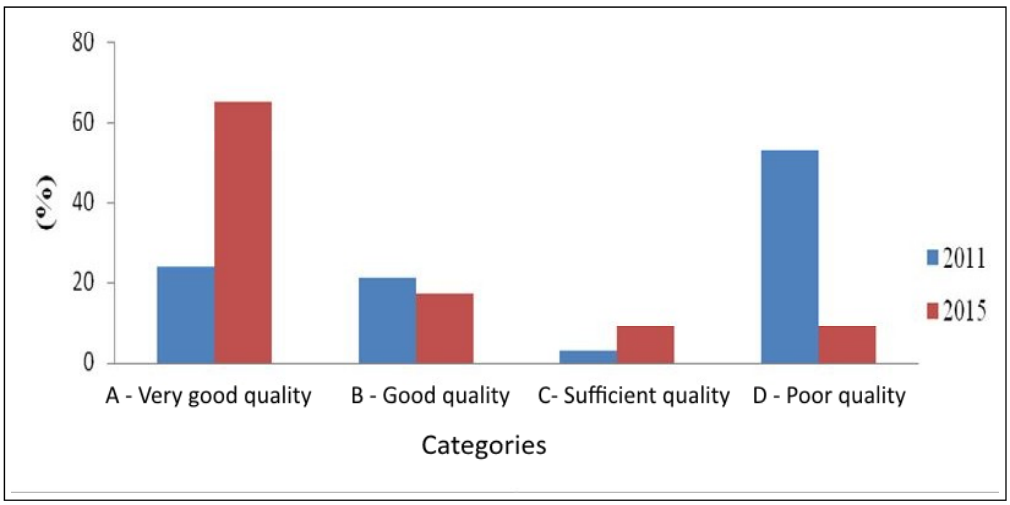


Based on the comparison between both years of the study for the three monitored beaches (Durres, Gjiri i Lalzit and Kavaja), a marked improvement in the quality of costal bathing waters was recorded. (Table 4 and Figure 9). E. g. , in category A - Very good quality,the figure changed from 24 % in year 2011 to 65% in year 2015; in category B - Good quality, a decrease tendency by 3% of water quality from year 2011 to year 2015 was recorded; in the year 2015 there was recorded an increasing percentage for category C -sufficient quality to 9% and a decreasing tendency in the percentage of monitoring stations for category D- poor quality.

Table 4. Quality evaluation of Bathing Waters of the beaches for year 2011 and 2015 acorging WHO/UNEP 2010 categories

Category	Year 2011 (%)	Year 2015(%)
A -Very Good Quality	24	65
B - Good Quality	21	17
C - Sufficient Quality	3	9
D -Poor Quality/ Immediate Action	53	9

Figure 9. Categorization of the beaches (Durrësi, Kavaja and Gjiri i Lalzit) f or years 2011-2015 (%)



There was noted a significant improvement in the quality of coastal bathing waters for Durrës beach, for category A-very good quality, an increasing percentage from 29% in year 2011 to 48% in year 2015 was recorded; for category B-Good quality ,it resulted an increasing percentage from 14% in year 2011 to 29% in year 2015; for category C-Sufficient quality, an increase of 3% in year 2015 and a noted decrease for category D-Poor quality/ Immediate Action of the costal bathing waters from 52% in 2011 to 14% in 2015 .

In Kavaja beach there was also noted an improvement in the quality of coastal bathing waters, for category A-very good quality: an increasing percentage of coastal waters quality of 30% was noted in 2015; for category B-Good quality, an increasing percentage from 30% in the year 2011 to 40% in the year 2015;for category C-sufficient quality, an increase of 30% in year 2015 and for category D, the percentage was reduced to 0.

Gjirit i Lalzit beach compared to values of 2011 with a quality of coastal bathing waters in category B-Good quality of 33% and category C-Sufficient Quality of 67%, during all monitoring period n 2015 resulted only in category A-very good quality.

Conclusions

The main cause of coastal bathing water pollution continues to be the leakage of untreated liquid, discharging into the coastal receiving waters.

Hygiene-sanitary inspection of the terrain and analytical results ascertained that a better waste water sanitation system has brought remarkable improvements in the quality of bathing waters, significantly reducing their pollution

Due to connection with sewerage sanitation and treatment (pumping) system of waste water (partially Kavaja, and Durrës), the quality of bathing water has been improved .

For personsIn charge of administrative/local government, measures for beachs cleaning and management are recommended, especially during summer touristic seasons, and particularly in most polluted areas, for waste water treatment before their discharge into the sea, the establishment of hydro-sanitary points, and improvement of management system of urban solid waste through adding more waste containers in beaches.

Measures are recommended for a better infrastructure of water supply and sewage system . Frequent emptying of septic tanks before they are overcharged and be discharged in bathing waters ore streams,which constitutes a real danger of vector spread.

A fully functional Urban Water Treatment Plant is recommended, the expansion of the existing capacities; also adding new treatment plants in small habitation centers would be a great opportunity for the improvement on coast bathing water quality. Information of the public about quality of the bathing water, with local administration and other responsible authorities warning signs "Prohibited bathing areas" for beaches categorized in D-Poor quality/ Immediate Action.

Summary box

What is known about this issue?

Durrësi and Kavaja coastline hosts some of the most frequented beaches of the country. The uncontrolled constructions of buildings and over population have been responsible for the deterioration of coastal waters thus jeopardizing the health of tourists and constituting a potential risk for the public health.

What this study adds?

The main causes of the pollution of coastal waters are the spills of untreated liquid discharges into the coastal reception waters. Improvement in sewerage infrastructure has brought about significant improvements in the quality of the wastewater and the reduction of their pollution. The connection with the sewerage system and pumping in the used water treatment plants has had an impact as well.

What are the implication for public health?

In order to protect the health of tourists and protect public health, it is generally recommended to undertake measures for further cleaning and continuous management of beaches, paying particular attention to the tourist season and areas identified with a higher level of pollution. Also, appropriate

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- ISO 9308-3 Water quality — Enumeration of Escherichia coli and coliform bacteria — Part 1: Membrane filtration method for waters with low bacterial background flora

Monitoring wells water near landfill waste in Vlora and Tirana

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Abstract

Multiple problems of chaotic urbanization have increased the risk of nearby areas' residing populations from environmental contamination. An obvious concern is the increasing number of residents who live around landfill wastes in both Tirana and Vlora. The aim of the study was to evaluate wells water nearby landfill wastes in Tirana and Vlora in terms of the determination and evaluation of suspended solid levels, turbulence, phosphates, nitrites, NH4, NO3, pH, sulfates, chlorides, COD (Chemical Oxygen Demand) and wells water conductibility, and the comparison of the results with norms of the directive for drinking water in 2016. Two points of water sampling were selected for the study, from wells in both areas, in relation to the distance from landfill waste. The first point was 50 meters away and the second 100 meters away from landfill waste. High levels of ammonium are indicative of sewage discharges and livestock liquid waste. The concentration of ammonium in the first well in Vlora was significantly higher than 0.5 mg/l (the rate of Albanian standard). During the monitoring of both wells in study, nitrate levels were found lower than Albanian standard norms for drinking water. We observed a higher level in the first well in Vlora, while other areas' results were within permitted levels, and this is explained by the fact that nitrates are the main nutrients for aquatic life, therefore its intensive development brings about the reduction of the nitrates. Permanent risk of pollution from waste processing, livestock excrement and pesticides of the area brings pollution to groundwater and wells water. A constant monitoring of these waters is required and it its usage for drinking and cooking purposes should be avoided.

Introduction

In our country, solid waste may be classified into three main categories: it is mainly constituted by waste of human life activity (such as urban waste), industrial waste (different types and quantities of all kinds), and inert construction/ demolition waste (from construction activity).

We have employed an inappropriate "practice" with regard to the processing of urban waste in our country until now, by collecting them in inappropriate places with a technique and an elimination technology already primitive, that mostly consists in burning (as both self-ignition and ignition by people). Their deposition in landfills is made meeting no criteria of waste management, regarding their separation by type and categories.

Specialists of the Institute of Public Health have made an inspection in Vlora and they have estimated a high risk of environmental pollution in the landfill located in the area of "Pylli i Sodës". In this garbage collection center (landfill), household wastes, solid waste from various industries, agricultural waste etc. are deposited. The main materials deposited in this area are: plastic, metal cans, glass bottles, used paper and other materials such as inert from construction-reconstruction, etc.

A lack of waste collection management in waste separation at source, non-realization of recycling processes and composting by hygiene-sanitation technique, increases the risk of environmental pollution: air quality pollution, pollution of territory, pollution of surface water and groundwater and pollution of the sea water. There are no appropriate studies for the level of the pollution delivered as a result of the burning of waste and its impact on human health.

Acceptable levels of physical and chemical parameters according to Regulation "Drinking Water Quality" in 2016 are shown below in Table 1.

Table 1. Acceptable levels of physical and chemical parameters according to "Drinking Water Quality" Regulation in 2016

Parameters	Norms of drinking water
pH (unit pH)	6.5-9.5
Conductivity (µS/cm)	2500
Calcium (mg/l)	200
Suspended solids	Not allowed
Turbulence	Without changes
Total alkalinity (mg ekv/l)	-
Carbonates (mg/l)	-
Bicarbonate (HCO3 mg/l)	-
Ammoniac (mg/l)	0.5
Nitrites (mg/l)	0.5
Nitrate (mg/l)	50
Total hardness (German)	10-20
Phosphate (mg/l)	0.4-2.5
Organic matter (mg/l)	1-3
Chlorides (mg/l)	250
Sulfate (mg/l)	250
TDS (mg/l)	500
Magnesium (mg/l)	50

This study consists in measuring the levels of a set of indicators of pollution in populated areas near these landfills, mainly for surface water and sea water quality, and the impact on population health. This assessment will indicate the pollution caused on environment, the health of employers who work on landfill, population health who live near this area, and surrounding areas. This study will assist in making recommendations to relevant structures developing the right policies regarding the regulation of different collection points of urban waste.

Therefore, the aim of this study was to test and evaluate the water of wells situated near landfill wastes in Tirana and Vlora. Specifically, the study aims to determine the physical and chemical parameters of wells water near landfill waste and:

· Sampling of wells water near landfill wastes areas in Vlora and Tirana.

· Determining and evaluating the levels of suspended matter, turbulence, phosphates, nitrites, NH4, NO3, pH, sulfate, chloride, COD (Chemical Oxygen Demand) and conductibility in wells water.

· Comparison of the results with the norms of drinking water directive of 2016.

Methodology

This is a cross-sectional study and is based on monitoring a set of indicators of surface water pollution, groundwater and the sea water, land and health of people living in the study areas. Methods used for the determination and examination of physical and chemical indicators of the wells were based on EU recommended methodology. The study has identified two points of wells sampling in the two study areas, according to the distance from landfill waste. The first point was situated at a distance 50 meters away and the second 100 meters away from landfill waste. The study was limited to a monitoring of these indicators, organized and fulfilled fully in accordance with the EU instructions and EU technical methodology. The methods used for analyzing the indicators involved in the study were those of state standard (SSH), ISO Measurement of pH (pH unit): SSH ISO 10523/08. Measurement of electrical conductivity (ìS/cm): SSH EN 27888/01. Determination of nitrite (mg / l): SSH ISO 6777/ 1984. Determination of nitrates (mg/l), method with brucine. Determination of phosphates (mg/ l): SSH EN ISO 6878/2004. Determination of ammonia (mg/l): Nesler reactive method. Determination of sulfates (mg/l): barium chloride method. Determination of organic matter (mg/ l): SSH 2639-15 / 1989 parameters of water discharge must be within standard norms. The duration of the study was 12 months (**starting in May 2016**).

The measured values of these pollutants and their impact on health will be compared with the EU standard recommended values.

Results

The results of the parameters evaluated in the study are shown in Table 2 below.

Table 2. Content of nutrients in landfill of Vlora

Parameters	SO_4 - mg/L	Cl mg/L	NO_3 - mg/L	NH_4 + mg/l	NO_2 - mg/l	PO_4 3- mg/L
mple no 1	100	49.6	24.6	0.98	0.038	1.02
mple nro2	102	35.4	12.3	0.01	0.060	0.98
orm	250	250	50	0.5	0.5	0.4-2.5

Figure 1. Parameters results of N-NO_3, SO_4 and PO_4 in Vlora

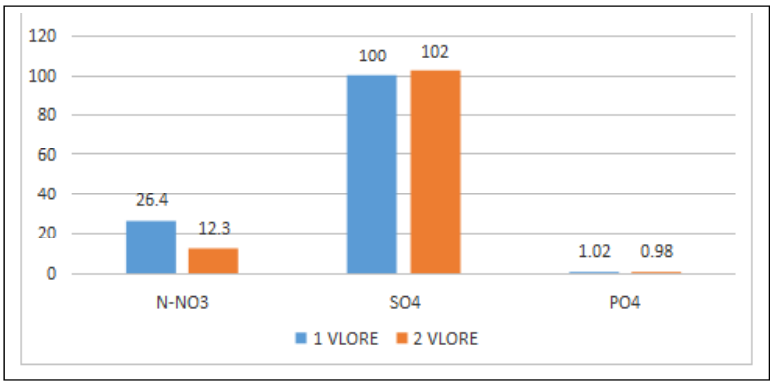


Table 3. Content of nutrients in landfill of Sharra, Tirana

Nutrients	Sample no 1	Sample no 2	Norm
N-NO_2 - mg/L	0.0033	0	0.5
N-NH_4 + mg/L	0.05	0.06	0.5
N-NO_3 - mg/L	1.76	2.2	50
SO_4 - mg/L	61	61	250
$PO4_3$- mg/L	1.45	0.46	250

Figure 2. Parameters results of N-NO_3, SO_4 and PO_4 in Sharra, Tirana

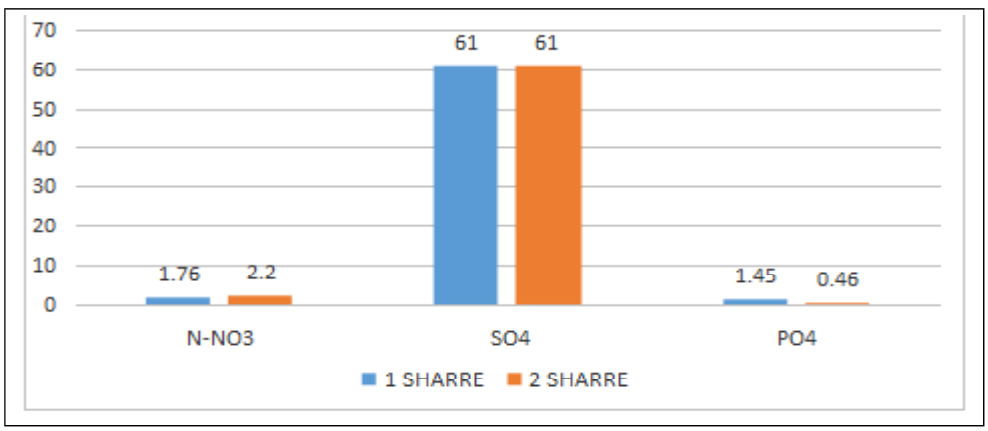
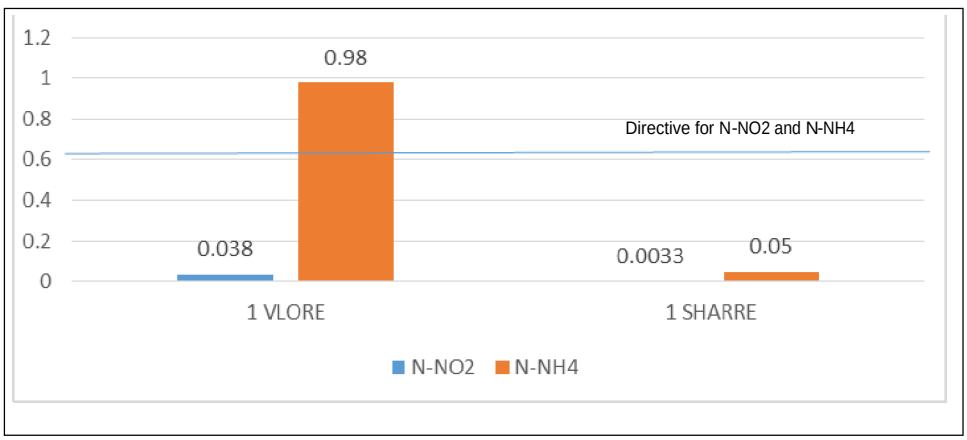


Table 4. Physical and chemical parameters in Vlora and Sharra landfills

Parameters	1 Vlora	2 Vlora	1 Sharra	2 Sharra	Norms of drinking water
pH (unit pH)	7.21	7.23	7.41	7.51	6.5-9.5
Conductivity (µS/cm)	900	1020	840	650	2500
Calcium (mg/l)	87.17	140.2	28.05	43.08	200
Suspended solids	8	3	3	0	Not allowed
Turbulence	4	1	1	0	Without changes
Total alkalinity (mg ekv/l)	8	9.5	8.6	4.45	-
Carbonates (mg/l)	0	0	0	0	-
Bicarbonates (HCO3 mg/l)	488	579.5	524.6	271.45	-
Ammoniac (mg/l)	0.98	0.01	0.05	0.06	0.5
Nitrites (mg/l)	0.038	0.060	0.0033	0	0.5
Nitrates (mg/l)	26.4	12.3	1.76	2,2	50
Total hardness (German)	21.9	21.5	13.3	16.1	10-20
Phosphates (mg/l)	1.02	0.98	1.45	0.46	0.4-2.5
Organic matter (mg/l)	2.4	2.6	0/68	1.04	1-3
Chlorides (mg/l)	49.6	35.4	56.7	49.6	250
Sulfates (mg/l)	100	102	61	61	250
TDS (mg/l)	450	510	420	325	500
Magnesium (mg/l)	42.5	8.5	40.7	43.7	50

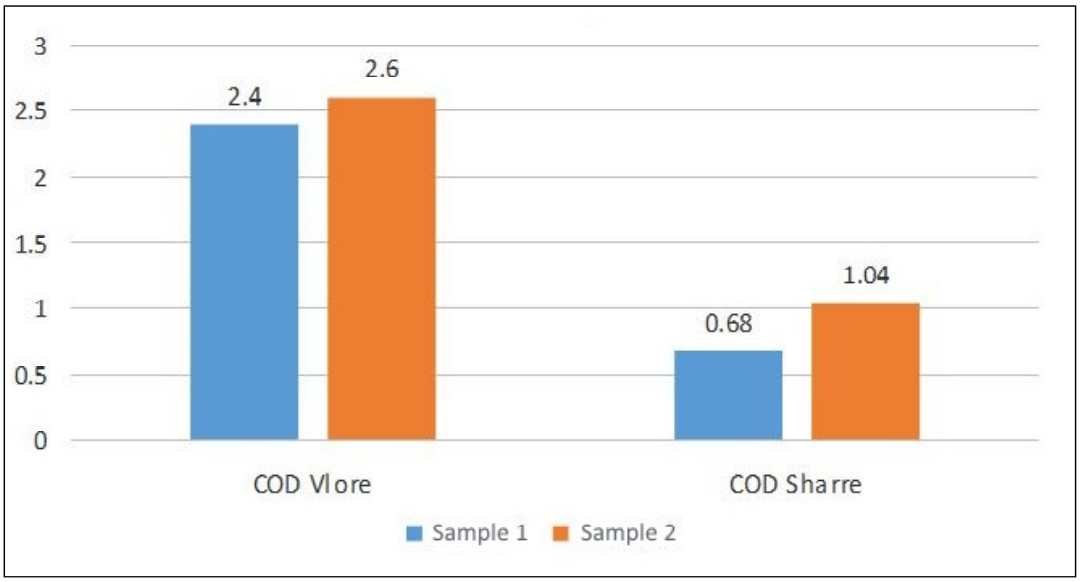
Figure 3. Parameters results of N-NO2 and N-NH4 in both areas, in wells within 50 meters distance from landfill



Sulfate ions SO4- and chloride ions Cl- measured in the study, and shown in Tables 2, 3 and 4, resulted within the acceptable levels of the Albanian standards.

COD (Chemical Oxygen Demand) values shown in Table 4, resulted higher in wells of Vlora, but within acceptable levels according to the Albanian standards.

Figure 4. Value of COD (Chemical Oxygen Demand) in mg/L in both areas



Discussion

Nitrates (N-NO_3-): Nitrate levels, measured in both wells during monitoring, are shown in Tables 2 and 3. They are several times lower than the norm set by Albanian standards for drinking water. The highest levels were noted in the first well in Vlora, while results recorded for other areas were within permitted levels, and this is explained by the fact that nitrates are the main nutrients for aquatic life and therefore its intensive development brings about the quantitative reduction of the nitrates.

Nitrites (N-NO_2-): Tables 2 and 3, nitrites in natural waters are an intermediate compound by microbial reduction of nitrates, or ammonium oxidation. Sources of nitrites can also be phytoplankton (excretions) and sewage discharges. At all points, nitrite levels were lower than the Albanian standard norms.

Ammonium (NH_4-N+): Tables 2 and 3. High levels of ammonium are indicative of sewage discharges and sewage and livestock liquid waste. Ammonia concentration on the first well in Vlora was significantly higher, compared to 0.5 mg / l of the Albanian standard rate.

Sulfate ions SO_4- and chloride ions Cl- measured in the study and shown in Tables 2, 3 and 4, resulted within the permitted values of the Albanian standards.

Recommendations

Due to continuous risk of groundwater pollution in these areas, it is necessary to monitor the wells at least once every 6 months.

Safe drinking water from the water supply system must be provided to the residents who live in these areas.

There is need to promote and enhance the education and awareness of the population about hygienic water importance and its use.

There is need to raise the population awareness about requirements of wells construction near their residences.
There is need to educate local residents on the necessity of the maintenance wells hygiene.
There is need to keep away the animals and poultry from wells areas in order to prevent water contamination from their excrements.
There is need to educate the population about waterborne diseases and their symptoms.

Summary box

What is known about this issue?
Urban waste continues to be a concern for the public health and environment quality, where liquid waste together with gases waste discharged in the nature significantly pollute the surrounding environment and create appropriate conditions for the presence of small animals and insects, that could serve as potential disease vectors.

What this study adds?
This report offers a clear picture of the real situation of groundwater pollution from landfills, agricultural and livestock activity.

What are the implications for public health?
Determination of physical and chemical parameters of groundwater is important to help create strategies about managing risk from groundwater pollution that may be consumed by the population living in the vicinity of waste collection points.

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Epidemiological report on gastroenteritis outbreak in Krujë, January 2016

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Abstract

One of most common and main routes for transmitting the diarrheal diseases is the "via water" or the "hydric" route. The spread of diarrheal disease takes advantage of the decrepit and obsolete drinking water supply network, its frequent interceptions with sewerage network, the insufficiency of drinking water supply in the system, the existence of not standardized family farm water wells and septic tanks, etc. On 18.01.2016 the Department of Public Health in Kruja was informed by the Emergency department of the Hospital of Kruja about some cases with digestive tract disorders, nausea and diarrhea without mucus, no blood and no fever. Between 18 and 25 January 2016 a total of 117 cases were registered. The respective epidemiological investigation led to the conclusion that the cause of this outbreak was the drinking water in the 4^{h} district of Kruja city. The detailed investigation showed that the cause of epidemiological outbreak was a leakage in a sewer pit situated nearby the drinking water tubes supplying this zone. Appropriate measures for repairing the defect were taken, the inhabitants of the zone were notified not to use the tap water until the normalization of the situation, and the continuous monitoring of the situation was commanded.

Introduction

The "hydro route" has been, and still is, the main and most common route for the transmission of diarrheal diseases in our country. Hydro epidemic outbreaks can be classified by the causative agent, and by exposure to the contaminated water. Some of these agents may be:

1 Infectious agents (bacteria, viruses, parasites, etc.).

2 Non-infectious agents – cyanobacteria (a type of algae), toxins, nitrates and many chemicals that pollute the waters, mainly during flooding disasters.

Depending on the exposure to the contaminated water, these outbreaks could be resulting from:

1 Drinkable water (tap water, well, bottle, ice).
2 Swimming pools water, fountains, spa, etc.
3 Lake waters, rivers, coasts and seas

Diarrheal diseases still constitute a major cause of infectious morbidity.

The symptoms depend on the type of the agent and may include abdominal cramps, nausea, and diarrhea with/without blood, rash, hives, eyes irritation, sore throat, pneumonia or systemic diseases in rare cases.

The main reasons of such epidemic outbreaks include the outdated and obsolete drinkable water supply network in almost all urban areas and the frequent intersections with sewage water. The insufficient quantity of drinkable water in the network and the existence of personal/domestic wells and septic sumps, not built according to appropriate standards, also could play a role in diarrhea episodes.

Investigation and results

The situation in Kruja City

On 18.01.2016 the Directorate of Public Health in Kruja was informed about some cases with digestive tract disorders, by the Emergency department of Kruja Hospital.

Most of the reported cases presented with nausea and a small number of patients experienced diarrhea without mucus, no blood and no fever. After a short epidemiological investigation and further examination of the residence places in which these people lived, the investigation experts came into the conclusion that the most plausible reason for this epidemic outbreak could be the contaminated drinking water.

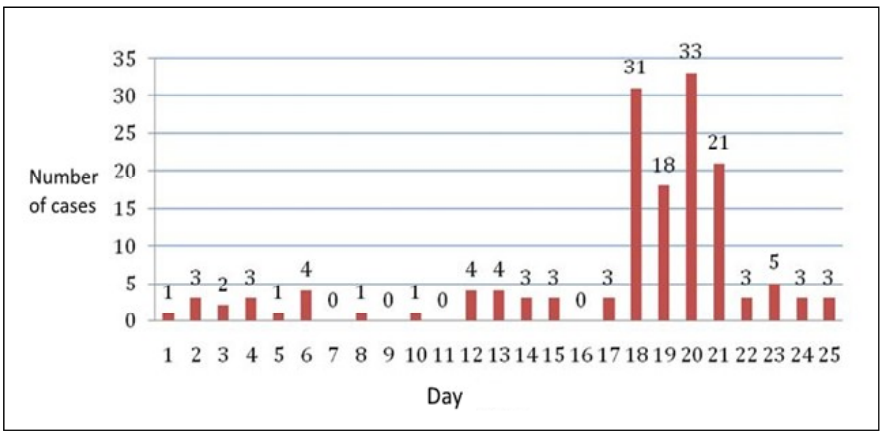
Case definition

A gastroenteritis case was defined as "a person who was/is resident in the District Nr. 4 during the past two weeks and has manifested the following signs: diarrhea (more than 3 loose, watery stools during last 24 hours), vomiting at least once a day, or cramps or nausea".

Observation and data collection and analyses suggested that the most affected area was district Nr.4 with a population of about 5300 inhabitants and a smaller area of the same district, with about 850 residents

The time trend of the cases (according to the case definition), starting from January 2016 (information taken from the emergency department of Kruja hospital), is presented in Figure 1.

Figure 1. Trend of the cases by days

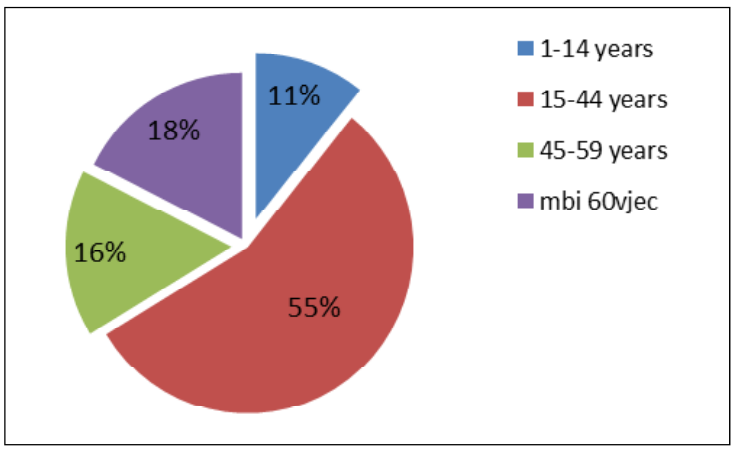


In this epidemic outbreak the total number of the recorded cases was 117, from the starting date, 18th of January, until 25th of January.

Observing the trend of the cases by days, it is noted the dates with the largest number of recorded cases were January the 18th and January 20th, implying that the causative agent or the problem started before these dates.

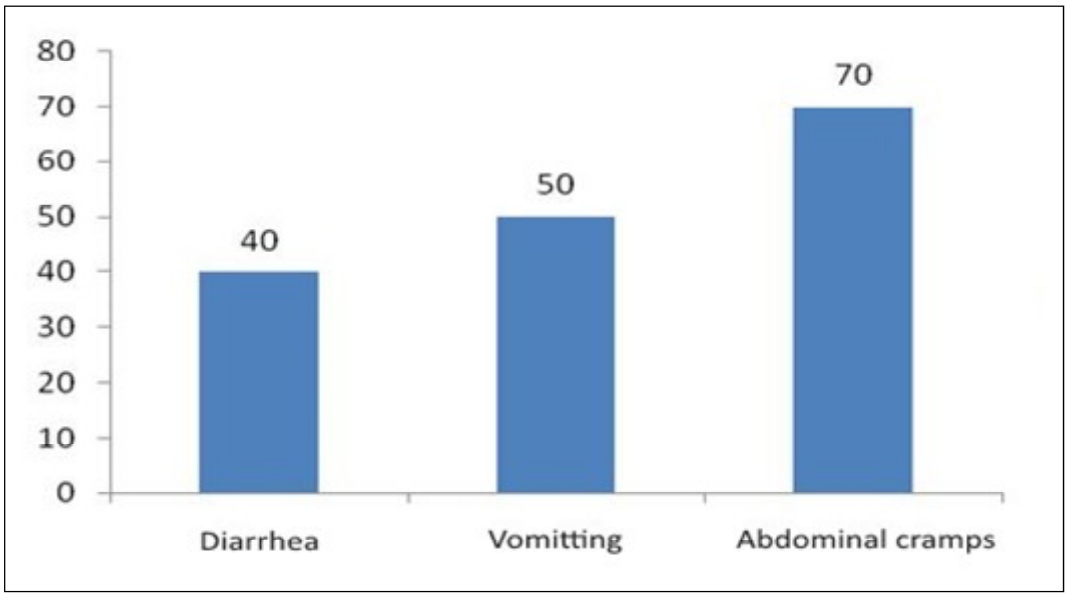
The distribution of cases by age-groups is shown in Figure 2 below. It may be noticed that the highest percentage belongs to the 15– 44 years age-group (accounting for 55% of total cases) and 11% or 8 cases belong to child ages (0-14 years old).

Figure 2. Distribution of cases by age groups



No patient presented with fever. The distribution of the patients by diseases signs was as follows: 40% had diarrhea (more than 3 times a day) with bad smell, without mucus and without blood, 50% have reported vomiting and 70% of cases reported cramps (Figure 3).

Figure 3. Distribution of cases by symptoms



None of the patients was hospitalized. Instead, they received only emergency treatment and left the hospital. Of all cases reported in emergency, only 4 patients have later returned to the hospital for further treatment.

At the investigation that took place in the contaminated area, the affected residents were contacted and by the data collected, a standardized questionnaire was filled-in.

This questionnaire contained questions related to clinical signs and lifestyle, type of water consumed, if they had consumed water outside the house and where, when and why, how many family members were affected, etc.

After the data were analyzed, it was noted that all the persons interviewed had consumed tap water for drinking at home, cooking and sanitary needs. None of them referred to have noticed changes in the water quality (odor, color, taste) over the past two weeks.

None of affected patients had consumed food outside their homes.

The microbiological laboratory of local Directorate of Public Health did not take human samples (stool).

The investigating team took only 6 samples because the affected patients had already undergone treatments with antibiotics. The content of these samples (rectal swabs), after being tested for enterobacteria in the laboratory of the Institute of Public Health, resulted negative for any enteropathogenic bacteria.

Conclusions

Based on the epidemiological analysis of the situation, the event is related to a common source of water for all the inhabitants of this area, and the only existing common source is tap water.

As suggested by the specialists of DPH of Kruje, there had been some problems (leakages) in a sewer pit nearby the drinking water pipes that supplied the area.

Public health response

After the verification of the event, its causes and the spread of its effects, respective measures were taken for the normalization of the situation, through carrying out appropriate interventions and repairs in the water distribution

network. After the intervention in the network by the Krujë Enterprise of Water Supply and Sewage, the situation of the population became normal again.

Residents of the affected area were informed not to consume tap water until further notice.

In the final meeting with the participation of the director of DPH, local epidemiologist, healthcare center doctor and director of Kruja hospital, it was emphasized that the situation had to be kept under observation.

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