

## THE MORBIDITY OF FOOD POISONING IN BIHOR COUNTY BETWEEN JANUARY 2005 AND AUGUST 2010

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### **Abstract**

**Introduction:** The study aims to describe the morbidity of food poisoning in Bihor county between January 2005 - August 2010.

**Material and Methods:** The material consisted of 249 cases of food poisoning from the outbreaks recorded, the methodology being developed by INSP Bucharest.

**Results:** 30 food poisoning outbreaks have been recorded, of which 22 were within families, with 92 people, and 8 were collective, affecting 157 people, plus 344 isolated cases. The incidence was higher in urban areas. The age of persons mainly affected ranged between 15-60 years. 55% of the cases were mild in terms of severity, while 18% were serious forms. Among the types of food that caused the infection we can mention: cakes, meat and egg products, cheese, dishes cooked in the household. Salmonella was identified in 37.75% of the cases.

**Conclusions:** It is necessary to intensify informative actions and give increased attention to food hygiene.

**Key words:** morbidity, food, poisoning, hygiene, education, prevention

### **INTRODUCTION**

After all the records, food poisoning continues to affect a significant proportion of the world population today, given the existence of predisposing factors (Savu C., N. Georgescu, 2004). More recently, in developed countries, factors such as the following are being incriminated: the multiplication of food establishments that sell products for external consumption, an increased tendency to eat outside the home, the existence of a range of menus that are diversifying at an extremely fast pace, the habit of buying and cooking food a few days before its consumption (Trickett J, 2001). The determinant factor is the consumption of food contaminated with microbial pathogens or their toxins, the severity of the disease being dictated by the aetiology of the disease and the ingested dose (Bocsan IS, 1999). The time between eating the infected food and the onset of symptoms is an excellent clue as to their cause (Jacoby DB, Youngson RM, 2005).

The infection reservoir may be represented by animals, birds, insects, rodents, while humans may also become a primary or secondary source of

infection in food contamination (Friis R, TA Seller, 2009). The aetiology is multi-causal, being represented by bacterial pathogens that multiply in food and / or to secrete toxins potentially harmful to human body. Currently it is widely recognized that *Salmonella* spp remains the leading cause of such diseases (Oliver DJ, 2005, Eley AR, 1996, Resiga E,2008), followed by *Staphylococcus aureus*, others *Enterobacteriaceae*, sporulate germs. The elderly, infants and those with impaired immune systems are more likely to have a severe illness.(Mukherjee A, 2006; Curtis L, P Lawley, 2003 ). As in 2010, in Bihor county, a massive influx of food poisoning cases has been registered, we intend to observe the dynamics of morbid phenomena caused by this public health problem.

#### **MATERIAL AND METHODS**

The study was conducted on a material consisting of 249 patients, hospitalized in the Infectious Diseases Department of Oradea Pneumology Hospital, between January 2005 - August 2010, coming from centres of contagion and having been discharged with the diagnosis of food poisoning. The necessary data were obtained using the database of Food Hygiene and Epidemiology Departments within the Public Health Administration Bihor. The interpretation of results and the formulation of conclusions were made by collating information from descriptive retrospective longitudinal epidemiological surveys, dietary surveys conducted by interview, patient observation sheets and test results, provided by specialised laboratories.

#### **RESULTS AND DISCUSSION**

##### **1. Annual distribution of food poisoning outbreaks in Bihor county, in the period 2005 - August 2010**

Between January 2005 and August 2010, in Bihor county, 30 outbreaks of food poisoning were recorded, of which 22 were family outbreaks and 8 represented collective outbreaks. If between 2005 and 2009 one may notice a progressive decrease in the number of food poisoning outbreaks, in 2010 we witnessed a sharp increase in the number of outbreaks, exceeding the number registered in any previous years taken into consideration for the purpose of this study (Fig.1).

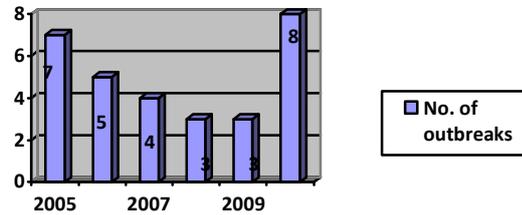


Fig.1. The distribution of food poisoning outbreaks in Bihor county, between 2005-August 2010

## 2. Annual distribution of food poisoning cases from outbreaks, by the type of the outbreak

In the period under investigation, 249 people were diagnosed with food poisoning, of which 92 from family outbreaks and 157 from collective outbreaks. If morbidity in family outbreaks marks a decline during the first two years of the interval taken into consideration (13 cases in 2006 as compared to 18 cases in 2005), in the case of collective outbreaks morbidity increases more than twice during the two years mentioned above (50 cases in 2006 as compared to 24 cases in 2005). In subsequent years, there is an oscillating tendency in the number of infections in both types of outbreaks, a common element being the trend towards increased morbidity in 2010, as compared to the previous year (Fig.2).

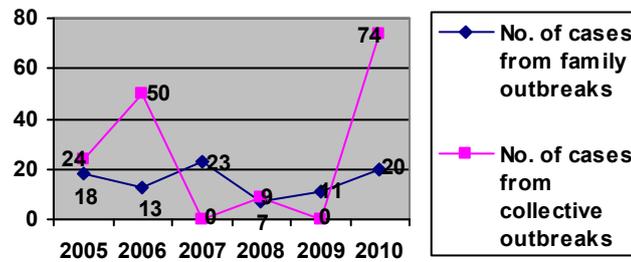


Fig.2. Annual distribution of food poisoning cases in outbreaks

## 3. Distribution of cases from food poisoning outbreaks, by area of origin, between January 2005 - August 2010

Disease distribution by areas of origin reveals a slight percent superiority (with 10.84%) in urban (55.42%) as compared to rural (44.58%) areas (Fig. 3).

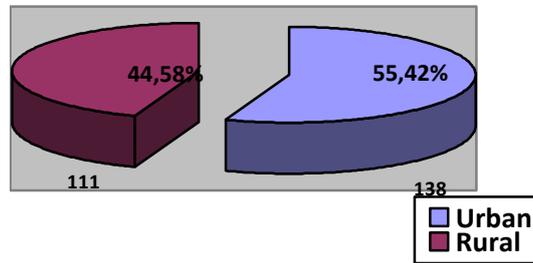


Fig.3. Distribution of cases of food poisoning outbreaks by area of origin

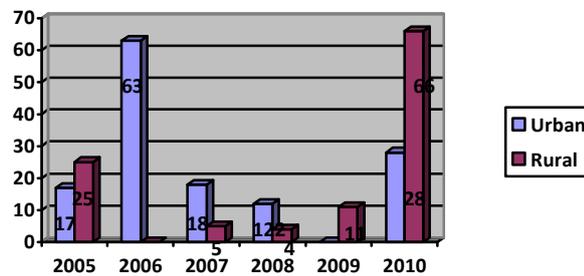


Fig.4. Distribution of cases of food poisoning outbreaks by area of origin

The annual distribution of disease by area of origin indicates that there were two peaks of infection, one in 2006, in an urban area, and another one in a rural region in 2010, but there were also years in which cases of food poisoning were not recorded in rural areas (2006) or in urban areas (2009) (Fig.4).

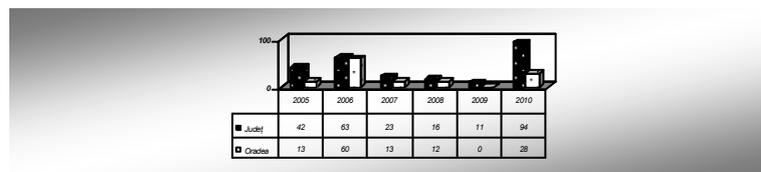


Fig.5. Comparative situation of cases from outbreaks in Oradea, as compared to the total registered in the county

The analysis of casuistry in the county residence city shows that, in each of the years studied, food poisoning outbreaks have occurred in Oradea, with the exception of 2009, and the number of food poisoning cases represents an

important percentage from the total number of diseases in Bihor county, in 2006 reaching even up to 95.23%. (Fig.5).

#### 4. Distribution of food poisoning outbreaks by age groups

The analysis of food poisoning cases in terms of age groups shows that those aged between 15 and 60 years (74%) were affected most, followed by the age group 4-15 years (20%), extreme ages being much less affected (4 % between 0-4 years and 2% over 60 years) (Fig.6).

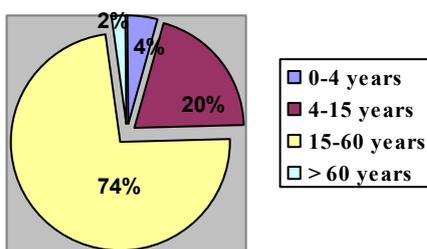


Fig.6. Percentual distribution of food poisoning outbreaks by age groups

#### 5. Distribution of disease outbreaks based on the etiologic agent identified

Out of the total of 294 cases diagnosed with food poisoning, recorded in the period January 2005-August 2010, the etiologic agent was revealed in 101 patients (40.56%), being represented by *Salmonella* in 94 cases (37.75%) of which 67 cases only in 2010 (71.27%), by *Proteus* in 6 cases (2.04%, also in 2010), 1 case with the golden *Staphylococcus* (0.4%). In most cases (148 cases, representing 59.43%), the causative agent remained unknown, as it could not be detected by laboratory tests. It can be observed that genus *Salmonella* is the most frequent etiologic agent involved in food poisoning outbreaks, *Salmonella DO* being identified in 79 cases (31.72%), while *Salmonella SP* was identified in the remaining 15 cases of salmonellosis (6.02%) (Fig.7).

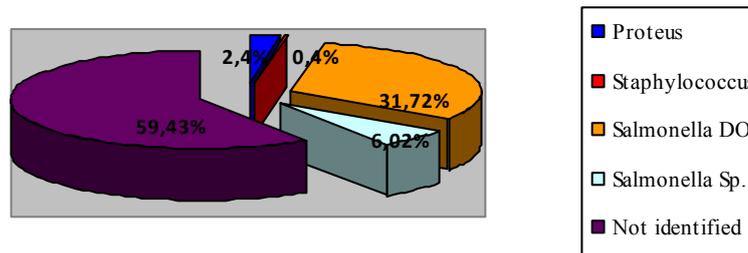


Fig.7. Disease distribution according to the etiological agent identified

### 6. Distribution of disease outbreaks in relation to the food incriminated

The following types of food, considered causative of food poisoning were, in decreasing order: meat products purchased in commerce or produced in private households, including fresh cooked giblets (72 cases, representing 28.9% of all illnesses); cakes produced in commercial units (60 cases, representing 24.09% of all illnesses), homemade cakes (33 cases, representing 13.25% of all illnesses), meals cooked in certain households (soup, baked beans, prepared meat , eggs and dairy products as ingredients, the number of 18 cases, representing 7.22% of illnesses), cheese, in all cases of disease having been purchased from individuals that are not registered in markets (16 cases, representing 6.42% of total cases); raw eggs products (mayonnaise), and minced meat (sausages, meat balls) which each have caused the infection of 14 people, each representing 5.62% of the total cases registered.

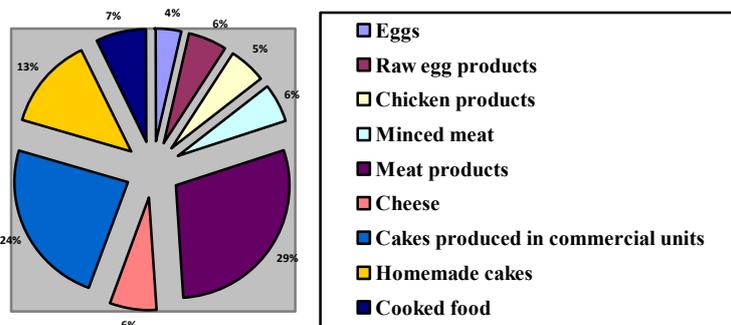


Fig.8. Disease distribution according to incriminated food

A total of 13 persons were infected as a result of eating chicken prepared in various ways, representing 5.22% of the total, while on the last place there

were the nine cases resulting from the consumption of eggs as such (cooked, roasted, fried), representing 3.61% of the total number of cases. (Fig.8).

### 7. Distribution of cases from outbreaks, in terms of clinical forms of disease

The numerous cases of food poisoning, recorded during the studied period (137 cases, representing 55% of all illnesses), were mild clinical forms (moderate); 67 cases, i.e. 27% of the total were easy, in which some patients, after initial rehydration in hospital, followed outpatient or home treatment; 45 patients, representing 18% of those affected, presented severe symptoms, sometimes difficult to control, which in 2010 ended in the death of a 5 year-old patient (Fig.9).

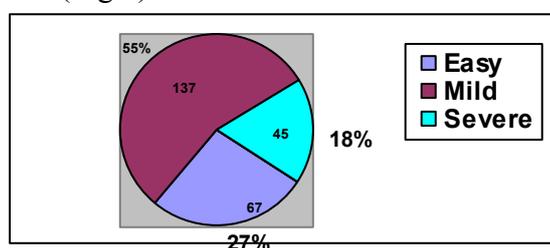


Fig.9. Distribution of cases according to the severity of clinical forms

### 8. Distribution of cases discharged with food poisoning in Bihor county between 2005 - August 2010

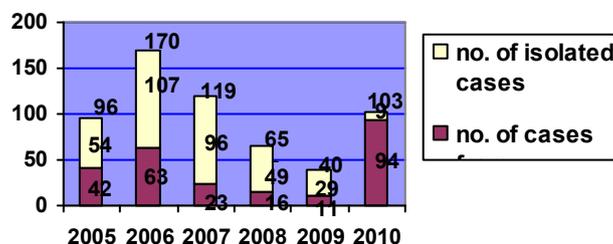


Fig.10. The distribution of discharged cases with food poisoning in Bihor county in the period 2005-2010

Besides the cases from outbreaks (249 cases), 344 of isolated food poisoning cases were recorded between 2005 - August 2010, which results in a number of 593 cases. The peak of the morbidity curve occurs in 2006 (170 cases), due to the large number of sporadic cases (107), followed by a progressive decrease in the number of infections by 2009. In 2010, by the end of August a total of 103 food poisoning cases were registered, of which

9 were isolated cases and 94 came from outbreaks, the highest number of collective infections during the entire period studied (Fig. 10).

## CONCLUSIONS

The results of this study indicate that food poisonings continue to represent a threat for the population in Bihor county. The infections were almost three times more common in the family environments as compared to collective environments in terms of outbreaks number; however, the affected population was much larger in collective outbreaks. The morbidity dynamics registers annual variations, which are sometimes significant, with constantly evolving trends. The types of food, identified as causal factors of disease in this study, are those involved in the pathogenesis of most food poisoning (meat products, cakes, eggs, chicken products). With the exception of 2010, in each of the years studied, the number of cases of sporadic illness has exceeded the number of cases in outbreaks. In almost 60% of cases the causative agent of food poisoning remained unknown. The affected persons were predominantly adults, the poisoning occurring most commonly after consumption of food in collectivities. Further action is required for the better information and instruction of people belonging to all age-groups, regarding ways and means of protection against illness. Increased attention is required for details regarding food hygiene and food preparation in the family, as well as for compliance with hygiene rules for food preparation and serving of meals. Preventing food poisoning requires data, information, vigilance and close supervision.

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