

EPIDEMIOLOGICAL RESEARCHES IN FOOD POISONING CAUSED BY SALMONELLA AT HUMANS - FIRST PART OF THE STUDY

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Abstract

Man can get an infection with Salmonella by eating contaminated food (in most cases) or contaminated drinking water. Products of animal origin, mainly eggs and meat products, are the main food sources, but the bakery products, fruits, vegetables, and chocolate have caused outbreaks of Salmonella epidemiological.

Key words: Salmonella, infection, month, season.

INTRODUCTION

The European Centre for disease prevention and Control (ECDC REPORT) and the European Food Safety Authority (EFSA) reported in 2007 in the 27 Member States of the European Union (EU), a number of 151 cases of 995 salmonellosis in humans, representing an incidence of 31,1 cases per 100000 inhabitants.(4) However, it is obvious that the number of cases in humans is strongly underestimated and non reported (7).

Some of the cases arising from the above man has been detected within those 3131 outbreaks of food-borne epidemiological representing 64.5% of the total number of outbreaks of food-borne epidemic with known origin.

Salmonella epidemiological outbreaks have affected 22705 victims, of which 14% were hospitalized, and 23 have died. Salmonella Enteritidis and Salmonella Typhimurium have been the cause of 95% of the epidemic outbreaks with serotype.

An additional concern for public health is the emergence of resistance to antibiotics of cases of salmonellosis in humans, the phenomenon of antibiotic use in the production of foodstuffs of animal origin. (11)

MATERIALS AND METHODS

The data used in this paper come from the "General clinical observation sheet" of patients hospitalized at the Clinic of Infectious Diseases Oradea. Have been taken in the study only cases of food poisoning caused by Salmonella spp., in Bihor County on a four-year period (2008-2011).

RESULTS AND DISCUSSIONS

Table 1.

The prevalence of food toxiinfection caused by *Salmonella* spp. from patients interned in the Clinic of Infectious Diseases Oradea depending on year (2008-2011)

Year	Total interned patients	Total interned patients with <i>Salmonella</i>	%
2008	4.229	54	1,27
2009	4.067	51	1,25
2010	3.478	94	2,70
2011	3.553	67	1,88
Total	15.327	266	1,73

As can be seen in 2008 and 2009 the total number of patients interned with food toxiinfection (ti.) caused by *Salmonella* spp. in the Clinic of Infectious Diseases Oradea presents very close values. In 2010 the number of cases has increased over previous years, with a number of 94 cases. In the year 2011 shall be recorded a slight decrease from the previous year, the number of cases being 67.

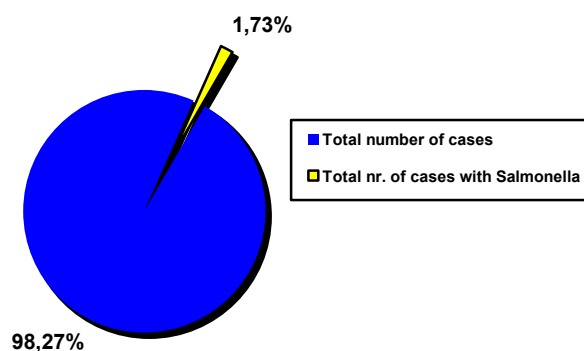


Fig. 1. The prevalence of food toxiinfections caused by *Salmonella* spp. from patients hospitalized in the Clinic of Infectious Diseases Oradea (2008 – 2011)

Out of a total of 266 patients interned 15327 (1,73%) were diagnosed with ti. *Salmonella*.

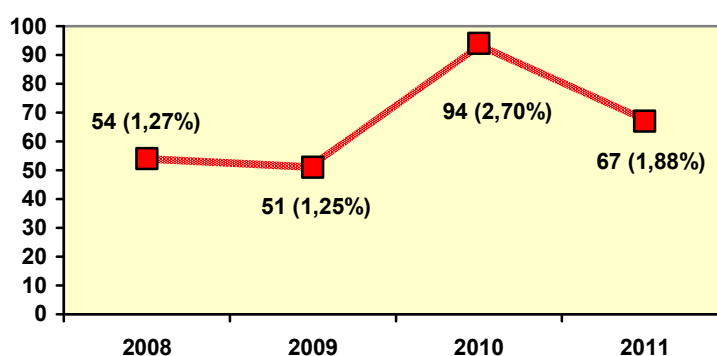


Fig. 2. The evolution of the prevalence of food toxiifections caused by *Salmonella* spp. from patients interned in the Clinic of Infectious Diseases Oradea on the period 2008 – 2011

In the period under review the prevalence of annual toxiifections food with *Salmonella* spp. has varied between 1.25% and 2.70%. The lowest value was recorded in 2009, and the largest in the year 2010. During the four years the number of cases of toxiifections food products of *Salmonella* spp. varies according to the months as it is rendered in table 2. and fig. 3.

Table 2.
Month's distribution of food toxiifections caused by *Salmonella* spp. recorded in the Clinic of Infectious Diseases Oradea (2008 – 2011)

Month	The number of cases registered with caused by food-borne <i>Salmonella</i> spp.	%
January	19	7,1
February	10	3,8
March	10	3,8
April	13	4,9
May	15	5,6
June	43	16,2
July	23	8,6
August	53	19,9
September	20	7,5
October	22	8,3
November	17	6,4
December	21	7,9
Total	266	100,0

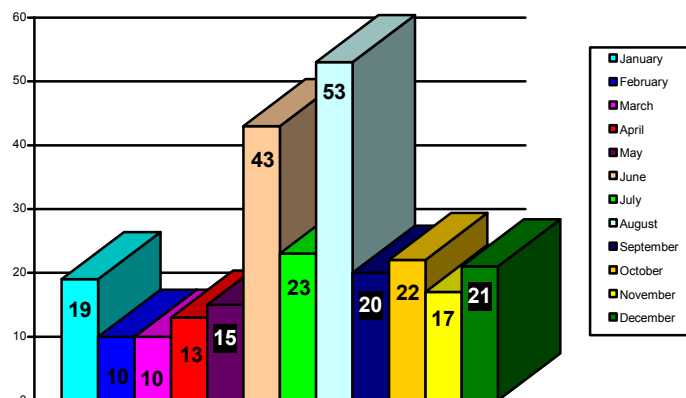


Fig. 3. Month's distribution of food toxiifections caused by Salmonella spp. recorded in the Clinic of Infectious Diseases Oradea during 2008 – 2011

On distribution on month caused by Salmonella is elevated in June (16,2%) and August (19.9%). The months in which they recorded the fewest cases of ti. with Salmonella are February and March (3.8%).

Table 3.

Distribution of cases of food toxiifections caused by Salmonella spp. based on months (years) at patients interned in the Clinic of Infectious Diseases Oradea (2008 – 2011)

Year	2008		2009		2010		2011	
	Nr.	%	Nr.	%	Nr.	%	Nr.	%
January	2	3,7	4	7,9	2	2,1	11	16,4
February	1	1,8	1	1,9	2	2,1	6	9,0
March	1	1,8	-	-	3	3,2	6	9,0
April	-	-	2	3,9	3	3,2	8	12,0
May	4	7,4	3	5,9	6	6,4	2	2,9
June	1	1,8	18	35,3	6	6,4	18	26,9
July	4	7,4	9	17,7	8	8,5	2	2,9
August	9	16,7	1	1,9	41	43,6	2	2,9
September	3	5,6	6	11,8	6	6,4	5	7,5
October	4	7,4	3	5,9	12	12,8	3	4,5
November	12	22,3	1	1,9	1	1,1	3	4,5
December	13	24,1	3	5,9	4	4,2	1	1,5
Total	54	100,0	51	100,0	94	100,0	67	100,0

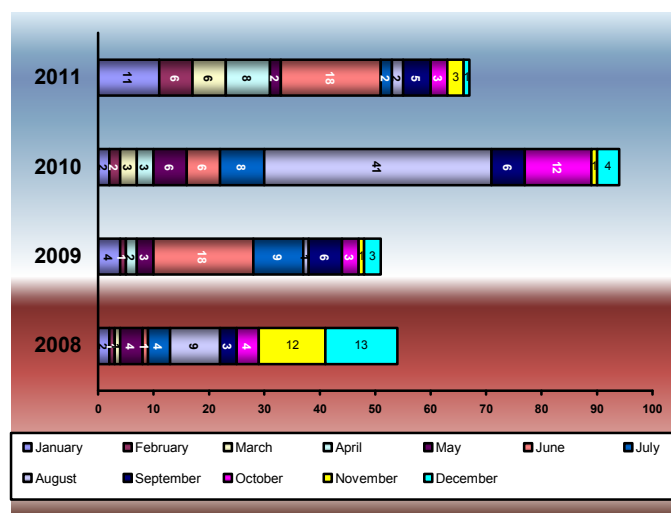


Fig. 4. Distribution of food toxii infections caused by *Salmonella* spp. according to months/years in patients hospitalized in the Clinic of Infectious Diseases Oradea (2008-2011)

Analysis on and the distribution of cases of toxii infections food with *Salmonella* spp. spread over months, the patients placed in the Clinic of Infectious Diseases in Oradea, were found the following peaks (table 3, fig. 4):

2008: December (24.1%), November (22.3%), august (16.7%). In the year

2009: June (35.3%), July (17.7%), September (11.8%). In the year

2010: august (worth 43.6%), October (12.8%).

In 2011: June (26,9%), January (16.4%), April (12.0%).

Table 4.

Change in the average number of cases with food toxii infections caused by *Salmonella* spp. on month, in patients hospitalized in the Clinic of Infectious Diseases Oradea (2008-2011)

Month	Minimum	Maximum	Middle variations
January	2,1	16,4	14,3
February	1,8	9,0	8,2
March	1,8	9,0	8,2
April	3,2	12,0	8,8
May	2,9	7,4	4,5
June	1,8	35,3	33,5
July	3,0	17,7	14,7
August	2,0	43,6	41,6
September	5,6	11,8	6,2
October	4,5	12,8	8,3
November	1,1	22,3	21,2
December	1,5	24,1	22,6

During the four years the number of cases of food toxiinfections caused by *Salmonella* spp. varies on month as is presented in table 4. Note that variations of more than 30 percent recorded in June and August.

Table 5.

Distribution of cases of food toxiinfections caused by *Salmonella* spp. depending on the season, in patients hospitalized in the Clinic of Infectious Diseases Oradea (2008-2011)

Season	Nr.	%
Spring	38	14,3
Summer	119	44,7
Autumn	59	22,2
Winter	50	18,8
Total	226	100,0

Distribution of cases of food toxiinfections caused by *Salmonella* spp. depending the season is as follows: 38 cases spring (14.3%), 119 (44,7%) summer cases, 59 cases fall (22.2%) and 50 cases in winter (18,8%). So during the four years the number of cases of toxiinfections food with *Salmonella* spp. is a sine curve with peak summer (44,7%). (Fig. 5.)

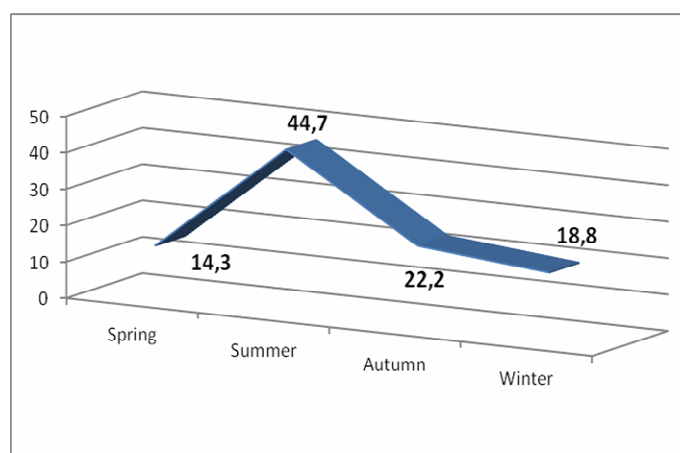


Fig. 5. Distribution of cases of food toxiinfections caused by *Salmonella* spp., depending on the season, in patients interned in the Clinic of Infectious Diseases Oradea (2008-2011)

After analyses carried out we can say that the number of cases of food toxiinfections caused by *Salmonella* spp. presenting a fluctuation, with most illnesses recorded during summer (June-August), which represents 44,7% of patients interned for a period of four years (2008-2011).

In fig. 5. it appears that period with the fewest instances of food toxiinfections caused by *Salmonella* spp. from 2008 to 2011 have been posted in the spring.

Table 6.

Distribution of cases of infection with toxiinfections food due to *Salmonella* spp. depending on the season/year in patients hospitalized in the Clinic of Infectious Diseases Oradea (2008-2011)

Year	Spring: March – April – Mai		Summer: June – July – August		Autumn: September – October – November		Winter: December – January – February	
	Nr.	%	Nr.	%	Nr.	%	Nr.	%
2008	5	9,3	14	25,9	19	35,2	16	29,6
2009	5	9,8	28	54,9	10	19,6	8	15,7
2010	12	12,8	55	58,5	19	20,2	8	8,5
2011	16	23,9	22	32,8	11	16,4	18	26,9
Total	38	14,3	119	44,7	59	22,2	50	18,8

In table 6. we note the following: in the year 2008 in the autumn period is recorded 19 cases in 2009 summer 28 cases in 2010 summer 55 cases and in 2011 all summer 22 cases of food toxiinfections caused by *Salmonella* spp. recorded in the Clinic of Infectious Diseases Oradea.

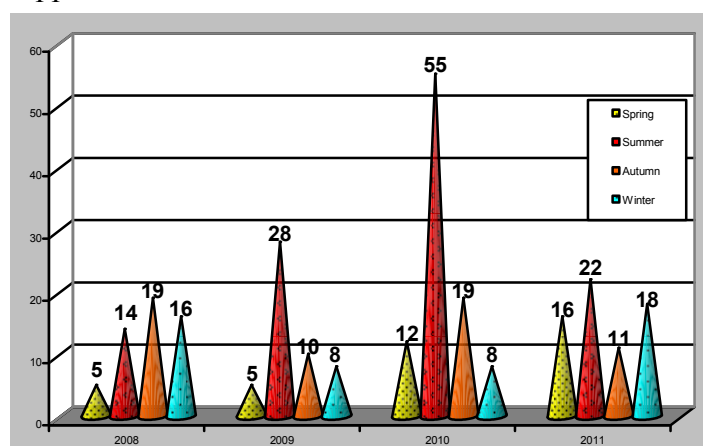


Fig. 6. Distribution of cases of infection with toxiinfections food due to *Salmonella* spp. depending on the season/year in patients hospitalized in the Clinic of Infectious Diseases Oradea (2008-2011)

In fig. 6. it appears that the highest frequency of food toxiinfections caused by *Salmonella* spp. were recorded in summer with the exception of 2008, when total 38 cases recorded the highest value note fall (19 cases).

CONCLUSIONS

Following the analysis carried out we find that the frequency of toxiinfections food products of *Salmonella* spp. is higher in summer, especially in the months of June and August. A possible cause can be increased difficulty to keep foods in optimal conditions (especially during transportation) due to higher temperatures in this period.

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