

# A Retrospective Prevalence of Food Borne Diseases Among Patients Attending Adissu Gebya Health Center Adiss Ababa Ethiopia From (2008 E.C---- 2011)

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## Abstract

Food-borne diseases incorporate a varied spectrum of illnesses and that are common in developing countries including Ethiopia. The World Health Organization estimated that in developed countries, up to 30% of the population suffers from foodborne diseases each year, whereas in developing countries up to 70% of cases of diarrheal disease are associated with the consumption of contaminated food per year. Animal products such as meats, fish and their products are generally regarded as high-risk commodity in respect of pathogen contents, natural toxins and other possible contaminants. In Ethiopia, the widespread habit of raw beef consumption is a potential cause for foodborne illnesses besides, the common factors such as overcrowding, poverty, inadequate sanitary conditions, and poor general hygiene. In Ethiopia, as in other developing countries, it is difficult to evaluate the burden of food borne pathogens because of the limited scope of studies and lack of coordinated epidemiological surveillance systems. In addition, under-reporting of cases and the presence of other diseases considered to be of high priority may have overshadowed the problem of foodborne pathogens. Therefore, this study was focus on reported retrospective common food borne pathogens specifically Salmonella spp. Listeria spp., Staphylococcus spp. and Campylobacter spp. in the selected study area which is Adissu gebya health center Addiss Ababa Ethiopia.

**Keywords:** Clostridium botulinum, typhoid cholera, Ethiopia, foodborne pathogen, Listeria spp., Salmonella spp.

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## INTRODUCTION

Food borne diseases are the result of ingesting contaminated foodstuff and any form of diseases caused by multiple of microorganisms to those caused by chemical hazards (Islam *et al.*, 2010). The global burden of food borne diseases and its impact on development and trade is currently unknown in both industrialized and developing countries (Scallan *et al.*, 2011). However developing countries tend to suffer from the largest share of the burden of food borne diseases. The world health organization (WHO) estimated that in developed countries up to 30% of the population suffer from food borne diseases each year, where as in developing countries up to 2 million deaths are estimated per year ( Roberts *et al.*,2011). Food borne diseases are common in developing countries including Ethiopia, because of the prevailing poor safety laws, weak regulatory systems, lack of financial resources to invest in safe equipment and lack of education for food handlers (Fein *et al.*, 2011). The epidemiology of food borne diseases is changing. New pathogens have emerged, and some have spread worldwide (Jackson *et al.*, 2010). The threats of new food borne diseases are occurring for a number of reasons, through the globalization of the food supply, the inadvertent introduction of pathogens into new geographic areas, through travelers ,refugees and immigrants exposed to unfamiliar food borne hazards while abroad, through the changes in microorganisms ,through changes in the human population(the number of highly susceptible persons is expanding worldwide because of ageing, malnutrition, HIV infection and other underlying medical conditions),and changes in life style . It is well documented that raw or under processed seafood provides important epidemiological pathways for food borne diseases transmission (WHO 2002).This study will assess the retrospective prevalence of food borne disease in the selected study area which is Adissu gebya health center.

Food borne disease is major public health concern worldwide today. However the actual impact and a magnitude in the health are not exactly not known because of small proportion or causes are not exactly reported (Chang *et al.*, 2009). Absolutely believed and proven that food is the most crucial and vital substance for the normal activity of each body cell. Some people may die because of disease through contaminated food, water, poor sanitation, lack of vitamin and poor personal hygiene (Koro *et al.*, 2010). Food is the most causes of illness in the world today (WHO, 2014). Example food borne disease causes Child mortality and morbidity in developing countries with an estimate of 3 billion episodes and 1.5 to 2 million deaths annually (Wray and Davies, 2001). Food borne disease causes many serious health problems to human around the world. For instance, about 4 million people are died due to diarrhea each year (Pham *et al.*, 2010). The problem is happening due to lack of food sanitation, pure water, poor environmental sanitation, improper use of toilet, and lack of personal hygiene among food handlers many people are died due to food borne disease (Gilliss *et al.*,

2013). Each year as many as 600million or almost one in10 people in the world fall ill after consuming contaminated food (WHO,2014). African region has highest burden of food borne diseases. More than 91 million people fall ill and 137000die each year. Food borne diseases specially Gastroenteritis is one of the most common illnesses in Ethiopia, and it is a leading cause of death among people of all ages in the country. Consumption of raw beef is commonly practiced in Ethiopia. Generally, illegal slaughtering of animals in open fields, unhygienic slaughter practices in the abattoirs, and wide-spread tradition of consumption of raw meat (Kitfo dulet and Kurt) are potential risk factors in the country. And the selected study area is an area where consumption of raw beef is practiced. Then the study will emphasizes on the prevalence of the common food borne diseases due to consumption of contaminated food.

Now a day, food borne disease is infectious disease in the world. The significance of this was finding out the prevalence of food borne disease. It helps to design intervention as to distribution of food borne disease in the society.

## **2. Research methodology**

### **2.1 Description of the Study Area**

The study was conducted in Adissu gebya health center which was located in Addis Ababa the capital city of Ethiopia. The health center was in Gullele, sub city which was one of the 10 sub cities of Addis Ababa. The district was located in northern part of the city, near the Mount Entoto and the study was going to be conducted in Gulele sub- city Adissu gebya health center which was located in Addis Ababa city administration with total population of 368,774 i.e. 2.2 % of the population comprises those under the age of 5 years and 34.5% were in the reproductive age (15-49). Its average temperature is 20 C ° and its altitudinal range is 2.326 M.A.S.L and also its 9.0386 latitude and 38.8383 can be mapped closest to Adiss Ababa city government administration.

### **2.2 Study Design**

Adissu gebya health center was selected from the list of health center in gulele sub city because it was one of the nearest health centers in my village. The study design has looked back the diagnosed data from the Health Center. Retrospective data which were recorded in the health center was source of the data.

### **2.3 Study Population**

The study populations have included all food borne disease patient visiting Adisu Gebya health center during the past four years. Additionally, the researcher have used purposive sample for the sampling size, because purposive sample includes the entire patient.

### **2.4 Source of Data**

The study has used secondary data which was collected from the health Center Diagnostic data. The data for this study was collected by considering demographic character such as ages and sexes of outpatient who were submitted and examined stool samples for infection of food borne diseases.

### **2.5 Data analysis methods**

After the collection of the necessary information from the study area, Each and every record data was carefully examined. Also data analysis was made by using Microsoft excel method. The collected data were organized and analyzed based on their respective categories such as year and days of when the diagnosis done. Based on sexes and age groups and result were presented using tables and analysis was made using simple descriptive statistical or statically method such as percentage.

## **3. RESULT**

A total of 14,848 patients were examined for food borne disease during last four years (2008-2011 E.C) in adissu gebya health center. Out of these 1463 found to be infected with food borne disease. From these 670(45.8%) were males and the rest 793(54.2%) were females.

**Table 1 :-The overall prevalence of food borne disease patients AGHC.**

Year	Sex	Total examined	Percentage (%)	No of food borne diseases	Percentage (%)
2008	Male	2207	58.1	192	44
	Female	2050	48.2	245	66
	Total	4257	100	437	100
2009	Male	1700	47.9	149	36.3
	Female	1851	52.1	261	63.7
	Total	3551	100	410	100
2010	Male	1676	45.9	178	47.2
	Female	1976	54.1	199	52.8
	Total	3652	100	377	100
2011	Male	1745	51.5	127	53.1
	Female	1643	48.5	112	46.9
	Total	3388	100	239	100

As shown in the above table the people who were examined for food borne disease at AGHC were decreased from the year 2008 to 2011 E.C. The prevalence of food borne disease was 572 in the year 2009 E.C and it shows the highest prevalence time and also the second highest prevalence was shown by 2010 E.C which is 542.

**Table 2 :-Distribution of food borne disease among different age group in Adissu gebya health center.**

Year	Age group								Total
	<15		15-30		30-45		>75		
	No	%	No	%	No	%	No	%	
2008	120	27.5	118	27	117	27	82	18.8	437
2009	142	35	78	19.02	134	33	56	14	410
2010	85	23	140	37.1	85	23	87	23.1	377
2011	75	31.3	65	27.2	73	31	26	11	239

The above table shows distribution of food borne disease among different age group. In this finding in the year 2010 food borne disease highly prevalent among age 15-30 which is 37.1% and 23.1 in the age >75 .

**Table 3 :-Prevalence of botulism patients at adissu gebya health center.**

Year	Sex	No.of positive botulism	Percentage
2008	Male	19	30.2
	Female	37	69.8
	Total	56	100
2009	Male	25	37.3
	Female	42	62.7
	Total	67	100
2010	Male	19	45.2
	Female	23	54.8
	Total	42	100
2011	Male	23	57.5
	Female	17	42.5
	Total	40	100

As it was shown on the above table number of patients who were positive for botulism was high in the year 2009 which is 67 with 32.7% prevalence and the second high prevalent year was 2008 with 27.3%. Generally during the past four years 86 males and 119 females were positive of botulism with 42% and 58% prevalence respectively

**Table 4:- Prevalence of cholera patients at AGHC**

Year	Sex	No of positive cholera	Percentage
2008	Male	16	40
	Female	24	60
	Total	40	100
2009	Male	20	64.5
	Female	11	35.5
	Total	31	100
2010	Male	13	59.1
	Female	9	40.9
	Total	22	100
2011	Male	10	55.6
	Female	8	44.4
	Total	18	100

The above table shows that during the past four years 111 people were exposed for cholera and from them 59 were males and the remaining 52 were females with 53.2 % and 46.8 % prevalence respectively male and female.

**Table 5 Prevalence No. of positive Staphylococcal botulism patients at AGHC.**

Year	Sex	Number of positive staphylococcal food poisoning	Percentage %
2008	Male	28	52.8
	Female	25	47.2
	Total	53	100
2009	Male	23	39
	Female	36	61
	Total	59	100
2010	Male	34	64.2
	Female	19	35.8
	Total	53	100
2011	Male	22	61.1
	Female	14	38.9
	Total	36	100

The result showed that the no. of patients with positive staphylococcal botulism who visited AGHC in last four years were 201. From these the highest prevalence value 59(29.2%) was recorded in 2009.

**Table 6:- Prevalence of Typhoid food borne disease patients at AGHC**

Year	Sex	Number of positive of typhoid	Percentage
2008	Male	27	56.25
	Female	21	43.75
	Total	48	100
2009	Male	20	40
	Female	30	60
	Total	50	100
2010	Male	37	43.02
	Female	49	56.98
	Total	86	100
2011	Male	17	47.2
	Female	19	52.8
	Total	36	100

As the above table explains the number of positive typhoid at AGHC from 2008-2011 were 220. Out of these 86 (39.1%) was highest no. of patients observed in 2010.

**Table 7:- Prevalence of Positive Escherichia Gastroenteritis patients at AGHC.**

Year	Sex	Number of Positive Escherichia Gastroenteritis	Percentage
2008	Male	59	56
	Female	47	44
	Total	106	100
2009	Male	23	31
	Female	52	69
	Total	75	100
2010	Male	27	46.6
	Female	31	53.4
	Total	58	100
2011	Male	12	42.9
	Female	16	57.1
	Total	28	100

The above table indicated 267 patients were presented with E.Gastroenteritis in four years, in which the highest prevalence 106 (38%) was seen in the year 2008.

**Table 8 :-Prevalence of Yersinia patients at AGHC**

Year	Sex	Number of positive yersinia	Percentage
2008	Male	26	43.3
	Female	34	56.7
	Total	60	100
2009	Male	25	36.8
	Female	43	63.2
	Total	68	100
2010	Male	21	42
	Female	29	58
	Total	50	100
2011	Male	28	59.6
	Female	19	40.4
	Total	47	100

From this table, total no. of yersinia patients who were treated at AGHC in 2008-2011 were 225. From that the highest prevalence 68 (30.2%) were observed in 2009.

**Table 9 :-Prevalence of Salmonellosis food borne disease patients at AGHC**

Year	Sex	Number of salmonellosis food borne disease	Percentage %
2008	Male	17	23
	Female	57	77
	Total	74	100
2009	Male	13	22
	Female	47	78
	Total	60	100
2010	Male	27	41
	Female	39	59
	Total	66	100
2011	Male	15	44.1
	Female	19	55.9
	Total	34	100

Out of a total patients infected with food borne disease, 234 patients were presented with salmonellosis from which the highest prevalence 74(31.6%) was recorded by the year 2008.

#### 4. DISCUSSION

The result of this study revealed that from a total of 14,848 patients who were examined for food borne disease at Adissu gebya health center from 2008-2011, 1463 patients were found to be infected with the disease; of this there was high prevalence of the disease among female patients than males. Because the females show a 57.4% prevalence whereas the males are with the prevalence rate of 42.6%.

It was found that lower values (16.3%) of the disease were obtained in the year 2011 whereas relatively high values (30%) were obtained in 2008, which indicated there was low prevalence of food borne disease in the

year 2011 when compared with that of in the year 2008. With regard to food borne disease distribution among different age group, the present study showed that age under 15 years was found to have high prevalence of the disease (27.3%) in the year 2008 and age under 15 years was found to have high prevalence of the disease (33%) in the year 2009 too. And, it was shown that the disease distribution was high among age under 15 years and low among age group greater than 45 years in the last four years, which indicated age under 15 years were the most affected age group while age greater than 45 years were the least affected one.

Out of 1463 patients who were found to be infected with food borne disease, 205(14.01%) patients were found to be positive for botulism with high prevalence (32.7%) in the year 2009 and low prevalence (20%) in the year 211; of which there were high number of females (58.04%) than males (41.96%) in four last years.

Out of 111 patients who presented to AGHC being positive for cholera, majority of the patients means 40 (36.03%) patients visited the health center in the year 2008 whereas least number of patients 18 (16.21%) patients visited the health center in 2011. This indicated that, there was less prevalence of cholera patients in 2011 compared to the remaining years. And the percentages of male patients were high in all the years as compared to female patients.

The finding of the study showed that out of a total of 1463 patients who were infected with food borne disease, 201(14%) patients were found to be positive for staphylococcus food poisoning in last four years in which the highest value 59(29.4%) was recorded in 2009 and the least value 36(18%) was obtained in 2011. This indicated that there were decreased number of staphylococcus patients from 2009-2011.

As shown from study result, out of a total patients infected with food borne disease, 234 patients were presented with salmonellosis from which highest number of patients 74(32%) of the patients visited the health center in 2008 while least number of patients 34(15%) visited the health center in 2011. This showed that there were some decrements of prevalence of the disease from 2008 to 2011. In contrast to this study in USA 1973 to 1987 of which Salmonella constituted 28% - 45% of the cases.

Out of total patients infected with food borne disease, 220 patients were presented with typhoid in the last four years from which the highest number 86 patients with prevalence of 39.1% presented to the health center in 2010 and the low prevalence disease 36 (16.4%) was seen in 2011. This indicated that the typhoid case was decreased from 2014/15-2015/16.

Two hundred sixty seven (267) patients were presented with *E.Gastroenteritis* in the last four years from which high number of patients means 106 (40%) were observed in 2008 and least number of patients 28 (10.5%) of the patients were seen in 2011. This showed that the prevalence *E.Gastroenteritis* was decreased in 2011 compared to with that of the remaining years.

It was found that there were 225 Yersima patients presented to AGHC in the last four years out of a total patients infected with food borne disease, from which highest number of patients 68 (30.2%) of the patients were treated in 2009 and the least number of patients 47 (21%) were treated in 2011.

In line with Adams M, 2008, Bacterial food borne illnesses are among the most wide spread global public health problems of recent times, and their implication for health and economy is increasingly recognized in AGHC. However, the true incidence of bacterial food borne illnesses are unknown for a number of reasons, including poor responses from victims during interviews with health officials, misdiagnosis of the illness, inadequate collection of samples for laboratory analysis and improper laboratory examination for food borne diseases (CDC,2011).

## Conclusion

This finding shows the prevalence of the disease were high among female patients than males and food borne disease distribution among different age group, the present study showed that age under 15 years was found to have high prevalence of the disease and age between 30-45 years was found to have high prevalence of the disease. In addition this result the major type of food borne disease were botulism, cholera patients, staphylococcal food poisoning, salmonellosis, typhoid, E.gastroenteritis, and yersima. Among this food borne disease E.gastroenteritis and salmonellosis was highly prevalent.

## Conflict of interests

The authors declare that they have no conflict of interests.

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