

## Risk Factors for Bloody Diarrhea in Children Under Five Years of Age Residing in Hilla City

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### Abstract:

Bloody diarrhea in young children is usually a sign of invasive enteric infections that carries the risk of serious morbidity and death. This study was conducted on children who are newborn to age five years and who complain of the cases of bloody diarrhea in the city of Hilla. In the period of 15 May 2010 to 15 August 2010, stool samples were collected for three of the primary health care centres in the city. This study was aimed to diagnose the spread and the causes that are related to bloody diarrhoea for children who are below five years old in HillaBabil. The number of samples were collected up to 226 samples. 124 samples were for male children (54, 86%) and 102 samples for females (45,13%). All stool samples were performed by microscopic examination in laboratory culture. *Entamoebahistolytica* are the highest cause of bloody diarrhea. They were the incidence of total samples 47.7% , followed by *Shigella* infection rate was 33.6%, while 13.3% of *Entoemba coli* and 1.7% *Salmonella*. The low economic and social conditions of families may be the cause of the increase of infections in the children of Hilla.

**Keywords:** *Entamoebahistolytica*, *Entoemba coli*, diarrhea, Hilla city.

### 1.Introduction

Diarrhea is a common problem in children. This disease case of frequent stools with watery or loose stools more than three times within a period of less than 24 hours. Stool sometimes contains blood or mucus, so it becomes bloody diarrhea and causes deaths in children. This happens in developing countries for more than 11 million deaths under the age of five. Diarrhea causes death in all countries of the world by 19% [1]. In 1992, the UNICEF outlined that 2.4 million child deaths occurred due to diarrhea which was the second cause of deaths globally [2]. In the world nearly 1 million deaths every year in children under five years of age are attributed to diarrhea [3]. The common infectious causes of bloody diarrhea are *Entamoebahistolytica*, *Escherichia coli*, *Salmonella* and *Shigella* spp. [4, 5]. Among important risk factors associated with bloody diarrhea are unhealthy drainage of the body and lack of hygienic conditions for disposing of human excrement. The use of river water and lack of concern for personal hygiene and artificial feeding [6] is one of the risks of causing this. Compared with watery diarrhea, hemorrhagic diarrhea generally lasts longer and causes intestinal damage and dehydration, sepsis, fever and abdominal cramps [7]. The present study is an attempt to shed light on the extent and risk factors of bloody diarrhea among children aged less than five years. There are three of the primary health care centres in Hilla city with following objectives: To determine the extent of bloody diarrhea among users of services in Hilla city. To identify certain risk factors associated with bloody diarrhea among less than five years old children. Determine the age –infected cases of diarrhea and bloody diarrhea in children and most important causes and effect of breast –feeding when the infant on the prevalence of diarrhea and its complications and compared with children who use artificial feeding.

## 2. Materials and Methods

During the peak of the diarrheal season (May -August) 2010 , all children under five years old of age who were admitted with bloody diarrhea to three primary health care centres in Hilla city .Two hundred and twenty six child with bloody diarrhea were taken as samples from feces and sent to the laboratory for examination. Diagnosis was also taken with the installation of the required information from the mother directly, such as child's age, sex, place of residence and economic situation of the people of the child and type of feeding, natural or artificial.

### 2.1. Parasite detection

Smears of feces using 0.9% normal saline was examined microscopically for the presence of leucocytes and red blood cells and *E. histolytica* and *Giardia lamblia* cysts and trophozoites.

### 2.2. Bacteria detection

Stool specimens were collected following standard procedure [6]. Samples were then inoculated immediately on Mac Conkey and Salmonella –Shigella agar plates (oxoid). The inoculated plates were incubated at (37°C) aerobically for 24 hours .The plates were then examined for the presence or absence of visible bacterial colonies.

## 3. Results

The total number of children which were collected fecal samples from 226 children with bloody diarrhea and sever other symptoms such as fever and abdominal pain and vomiting with these different symptoms and severity from child to another. This study included children reconstruction newborn to age five years and obtained this information from three centres for primary health care in the city of Hilla, dispersed to placed relatively far apart. Table (1) age, sex, shown percentage, which shows that the percentage of infected males (54.86%) was higher than the female, while females (45.13%) from total number. The prevalence of diarrhea in children less than 1 year was found to be significantly higher ( $p < 0.01$ ).

**Table 1.** Samples distribution according to age & sex.

Age (years)	Male		Female		Total	
	No.	%	No.	%	No.	%
<b>Less than 1</b>	52	59	36	40.9	88	38.9
<b>1-3</b>	42	55.2	34	44.7	76	33.6
<b>3-5</b>	30	48.3	32	51.6	62	27.4
<b>Total</b>	124	54.86	102	45.13	226	100

Shown in Table (2), types of pathogens for diarrhea and bloody diarrhea in children and age groups. The study showed that the most important causes of bloody diarrhea is parasitic and bacterial infection were the most important causes of *Entamoebahistolytica*, followed by *Shigella* and *Entamoeba coli* and *Giardia lamblia* and *Salmonella*, have been the cases were in children under one year of age, mostly caused by parasitic *E. histolytica* 66%, followed by bacterial infection (*Shigella*) 29.5% and (*E.coli*) 4.5%. Either confined between ages (1-3) years of cases were attributed, respectively, then *E.histolytica* 39% ,*E coli* 26.3%, *Shigella* 23% and *Giardia* 5.2%. As for ages (3-5) years was the cases to *Shigella* 51%, and *Ehistolytica* 25.8%, followed by *E.coli* 9.6%, followed by *Giardia* and *Salmonella* 6.4%.

**Table 2.** Distribution of diarrhea cases, bloody diarrhea according to causes.

Age	<i>Entamoebahistolytic</i>	<i>Shigella</i>	<i>E.coli</i>	<i>Giardia</i>	<i>Salmonell</i>	Total
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(year )	a				a				a			
	No.	%	No	%	No	%	No	%	No.	%	No.	%
<1	58	66	26	29.5	4	4.5	0	-	0	-	88	38.9
1-3	34	39	18	23.6	29	26.3	4	5.2	0	-	76	33.6
3-5	16	25.8	32	51.6	6	9.6	4	6.4	4	6.4	62	27.4
<b>Total</b>	108	47.7	76	33.6	30	13.27	8	3.5	4	1.7	226	100

Table (3) rates shows of cases that causes amoebic dysentery of acute diarrhea and for the same age groups for both sexes.

**Table 3.**Distribution of Amoebic dysentery according to age and sex.

Age (years)	Male		Female		Total	
	No.	%	No.	%	No.	%
<b>Less than 1</b>	44	75.8	14	24.13	58	53.7
<b>1-3</b>	18	52.9	16	47	34	31.4
<b>3-5</b>	10	62.5	6	37.5	16	14.8
<b>Total</b>	72	66.6	36	33.3	108	100

Table (4) shows the impact of the type of breast feeding on incidence of diarrhea in children. In which the study explained and through the table above, that cases of diarrhea in breast-feeding was much lower than the cases of artificial feeding (milk powder). Through the descent in Table (5), shows also that types of feeding are mixed (natural and on bottle) and infant formula are high rates of diarrhea, especially children under one year. We found that diarrheal disease was associated with early initiation and maintenance of breastfeeding [8, 9].

**Table 4.**Distribution of cases of diarrhea caused by *Shigella* dysentery according to sex and age.

Age (years)	Male		Female		Total	
	No.	%	No.	%	No.	%
<b>Less than 1</b>	14	46.6	16	53.33	30	39.47
<b>1-3</b>	22	64.7	12	35.3	34	44.74
<b>3-5</b>	6	50	6	50	12	15.79
<b>Total</b>	42	27.63	34	22.36	76	100

**Table 5.**Distribution of cases of diarrhea by types of feeding.

Age (year)	Type of feeding						Total	
	Natural		Mixed		By bottle		No.	%
	No.	%	No.	%	No.	%		
<b>Less than 1</b>	12	15.7	26	34.2	38	50	76	40.2
<b>1-3</b>	46	52.27	14	15.9	28	31.8	88	59.7
<b>Total</b>	58	35.3	40	24.4	66	40.2	164	100

#### 4. Discussion

This study aimed to knowledge and identify the main factors causing severe diarrhea and bloody diarrhea in newborns and some factors that affected these cases. The importance of

this disease was when it is companion with acute respiratory infection and malnutrition, which lead to death of many children in developing countries [10, 11]. Bloody diarrhea was more frequent in the first category of children in this study (table1) which is under one year of age, as it amounted to 40% and this result is compatible with the findings of the other studies conducted on other Iraqi cities like Kirkuk and Tikrit [12]. By observing table (2) we find that cases of amoebic dysentery are the leading cause of bloody diarrhea of children under one year of age, with 66% of total cases for this age group due to *Entamoebahistolytica* as well as for second category (1-3) years, as the percentage of cases 39%. The third category (3-5) years, was the first cause of diarrhea which is the bacteria (*Shigella*) as 51% of all cases of this category. These bacteria are the cause of the second and important for bloody diarrhea in children [13]. Amoebic dysentery cases were more frequent among males than females (table3), this results is agreement with many studies. Bloody diarrhea occurs through many pathogens, including intestinal bacteria and parasitic protozoans such as *E. histolytica*, which causes diseases to more than 50 million people worldwide and over 100,000 deaths annually [14, 15]. Bloody diarrhea caused by bacterial infections of stomach and intestine, is caused mainly by *Shigella*, *E. coli*, have also been shown to play a role in epidemiology of diarrhea in certain areas of the world. Many studies and scientists have included that *Shigella* is the main cause of most cases of diarrhea [16]. In table (4) there is no significant differences in sex and age of cases of *Shigella* for infants under one year of age and age (3-5) years. The significant differences only in age (1-3) years of the study showed that the incidence was in males for the second category 64% and females 35.3% [17]. In table (5) we find that breast feeding has the greatest impact in protecting children below one years of age from diseases such as diarrhea, were there significant differences are clear between natural breast-feeding and children fed milk powder in the proportion of cases of diarrhea in two types of breast. This is confirmed by [18] of the presence of antibodies in breast milk increases the child immunity against disease. As in the case of mixed breast was a high incidence of diarrhea, but less than artificial feeding. Mother's milk contains antibodies (immunoglobulin's) and also contains mucins that attach themselves to bacteria and viruses and remove them from the body of the child completely without side effects. It also contains CD14 and sialic acid and L-fucose that increase the immunity of the child against diseases [19, 20]. As a result of the presence of such substances in breast milk and there were clear differences in the proportion of cases of diarrhea among children breast feeding and industrial.

## 5. References

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