

**Acute and Chronic Diarrhea among Hospitalized infants
aged (1-12) months**

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Abstract

The study aims to determine the relationship of acute and chronic diarrhea with some of child' characteristics as age, gender, feeding type as well as to find out the relationship between diarrhea (acute and chronic) and Nutritional status of hospitalized infants aged (1-12) months in Al- Batool Teaching Hospital for Maternity and Children from 1st of November 2011 till the 1st March 2012. A total of 85 hospitalized infants aged (1-12) months presented with diarrhea. About(51.76%) of cases affected with acute diarrhea and (48.24%) of cases affected with chronic diarrhea. The present study showed that male children (55.06%) affected with acute and chronic diarrhea were more than that of female children with no significant difference. More than one half of the study sample (52.94%) affected with acute and chronic diarrhea were ranging between (1 - 6) months with no significant difference. The results of this study showed that half of the study sample affected with acute and chronic diarrhea were bottle fed infants with no significant difference. Finally the results of the study found that majority of cases affected with acute diarrhea were well- nourished infants as compared to those affected with chronic diarrhea were malnourished infants with a highly significant difference.

Key words: Acute diarrhea, Chronic diarrhea, Feeding, Malnutrition.

الاسهال الحاد والمزمن عند الاطفال الرضع الراقدين في المستشفى بعمر (1-12) شهر

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الخلاصة

تهدف الدراسة الحالية الى تحديد علاقة الاسهال الحاد و المزمن مع بعض الخصائص المتعلقة بالطفل الرضيع كالعمر و الجنس ونوع الرضاعة المقدمة للطفل بالإضافة الى ايجاد العلاقة بين حالة الاسهال سواء كان حاد او مزمن مع الحالة التغذوية للطفل الرضيع. طبقت الدراسة على عينة من الاطفال الرضع بعمر (1-12) شهر في مستشفى البتول التعليمي للولادة و الاطفال منذ الاول من تشرين الثاني 2011 و لغاية الاول من اذار 2012. وكان العدد الكلي للعينة 85 طفل رضيع راقدا في المستشفى بسبب الاصابة بالاسهال. اظهرت الدراسة الحالية ان (51,76%) من الاطفال الرضع كانوا مصابين بالاسهال الحاد بينما (48,24%) منهم كانوا مصابين بالاسهال المزمن . نسبة الاصابة بالاسهال الحاد و المزمن كانت اكثر عند الذكور (55,6%) من الاناث مع عدم ايجاد علاقة ذات معنى احصائي. ايضا اثبتت هذه الدراسة ان اكثر من نصف عينة الدراسة (52,94%) أعمارهم كانت تتراوح بين (1-6) أشهر مع عدم ايجاد ارتباط ذات معنى احصائي. لقد لوحظ ان اغلب الاطفال الرضع في عينة الدراسة كانوا معتمدين على الرضاعة الاصطناعية و لم تثبت الدراسة عن ايجاد ارتباط ذات معنى احصائي بين الاصابة بالاسهال الحاد او المزمن مع نوع الرضاعة الخاصة بالطفل الرضيع بعمر (1-12) شهر. اخيرا لقد تبين من هذه الدراسة بأن اغلب الحالات المتأثرة بالاسهال الحاد هم الاطفال الذين يتمتعون بحالة غذائية جيدة . بالمقارنة مع اولئك المتأثرين بالاسهال المزمن فهم كانوا مصابين بسوء التغذية مع وجود علاقة ذات ارتباط معنوي عالي بين الاسهال المزمن و سوء التغذية.

الكلمات المفتاحية :- الاسهال الحاد ,الاسهال المزمن, الرضاعة , سوء التغذية.

Introduction

Diarrhea remains a leading cause of death in children younger than five years around the world. A recent report estimated nearly 2 million children die every year from diarrhea, of which more than half of the episodes are exacerbated by undernutrition (1). Although young infants have fewer episodes of diarrhea per year than older infants and children, they more quickly develop dehydration and have higher rates of case fatality than older children; diarrhea remains a leading cause of death in non breast-fed infants (1). Diarrhea has many definitions but in epidemiological studies it is defined as a passage of three or more loose of watery stool in 24 hours period. It may be acute watery (which is usually less than 14 days) most of them usually last up to 7 days without visible blood. Persistent or Chronic diarrhea are defined when the duration of diarrhea lasts for more than two weeks (3). A persistent diarrhea may begin as watery or as dysentery, it may lead to weight loss and if looses of stool is big enough, it may cause dehydration (2). Diarrheal morbidity remains unchanged and accounts for as much as 30% of hospitalizations (4) On the other hand, persistent diarrhea is still a major problem and associated with strong negative impact on nutritional status. The interaction between diarrheal diseases and nutritional status are complex and synergistic (4). Factors that increase the risk of diarrhea include failing of breast feeding exclusively for the 1st 4 months of life, offering bottle feeding with breast feeding or bottle feeding alone ,with poor sterilization of the bottle and the milk, poorly stored milk and food at hot days, the use of contaminated water for preparation of milk and food (5). The mother should be advised to breast feed her baby for 2 years to reduce the risk of diarrhea (5). Malnutrition especially sever one increase the duration of diarrhea and leads to persistent diarrhea (6). Under weight children (<80%) of their expected weight and marsmus (< 60%) of expected weight, Kwashiorkor (60%-80%) of the expected weight with edema all found to be associated with persistent diarrhea (6). Regarding the age, the most common episodes occurred in the 1st 2 years of life and it highest in the 6-11 months age group (2). Persistent diarrhea seriously affects nutritional status, growth, and intellectual function.

Meeting these challenges is profoundly important, particularly in developing countries (2). The aim of the study is to determine the relationship of acute and chronic diarrhea with some

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of child's characteristics as age, gender, feeding type as well as to find out the relationship between diarrhea (acute and chronic) and Nutritional status of hospitalized infants aged (1-12) months .

Patients and Methods

A prospective study was conducted in Al- Batool Teaching Hospital for Maternity and Children from the 1st of November, 2011 to the 1st of March, 2012. A sample of 85 infants aged (1-12) months complaining of diarrhea was collected randomly from pediatric wards in the hospital.

The Data were collected by direct interviewing of every child's mother via a using a simple questionnaire containing some of questions about child's age, gender, type of current feeding, duration of diarrhea, number of diarrheal episodes as well as weight scale for each infants. The diagnosis of diarrhea was recorded from patient`s records. Weight of the infant was recorded at the time of data collection. Infants were weighed with minimal clothes. The World Health Organization's definition of diarrhea as three or more loose stools per day was used (7).

All the statistical analysis were done by using pantium-4 computer through the SPSS (Version 14) to analyzing data. The statistical data analysis was done by using **Chi-square (χ^2 . test)** for testing the contingency coefficient (causes correlation ship). The 0.05 level of significance was used as a criterion to determine if there was a significant difference between state of diarrhea (acute or chronic) and any of infant characteristics. The weight for age Z-score categories was done according to WHO criteria, between (≥ -1 to $\leq +1$ Z scores) is within normal (Well-nourishment), below the line -2 Z score is underweight, below the line -3 Z score is severely underweight (Malnourishment) (8,9).

Results

The present study shows that infants affected with acute diarrhea (51.76%) were more slightly than those affected with chronic diarrhea (48.24%) as shown in figure (1). And more

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than one half of the study sample (52.94%) were fell within (1-6 months) age group and the rest (47.06%) were fell within (7-12 months) age group and as shown in figure (2).

Regarding the gender distribution, figure (3) shows that higher percentage of the study sample were males and they accounted for (55.29%).

Table (1) shows that higher rate (52.3%) of infants affected with acute diarrhea, their ages were ranging between (7-12) months. As compared to infants affected with chronic diarrhea, the higher rate (58.5%) was among those aged (1-6) months, and the results did not indicated a significant difference ($p > 0.05$).

This study shows that there was no statistically significant difference between males and females in proportions affected with acute diarrhea (47.7% vs. 63.4%) and chronic diarrhea (52.3% vs. 36.6%) with no significant difference ($p > 0.05$) as shown in table (2).

The present study showed that more than one half (50.6%) of patients with diarrhea whether acute or chronic have received bottle feeding alone. As compared to (17.6%) of infants with acute or chronic diarrhea have received mixed feeding and results of the study did not indicated a significant difference ($P > 0.05$), and as shown table (3).

Relative to relationship between nutritional status and state of diarrhea (acute or chronic). Table (4) shows that highest percentage (66.7%) of acute diarrhea cases were well-nourished infants. As compared to chronic diarrhea cases, majority of them (70.6%) were malnourished infants, and the results of study indicated a highly significant difference ($P= 0.001$).

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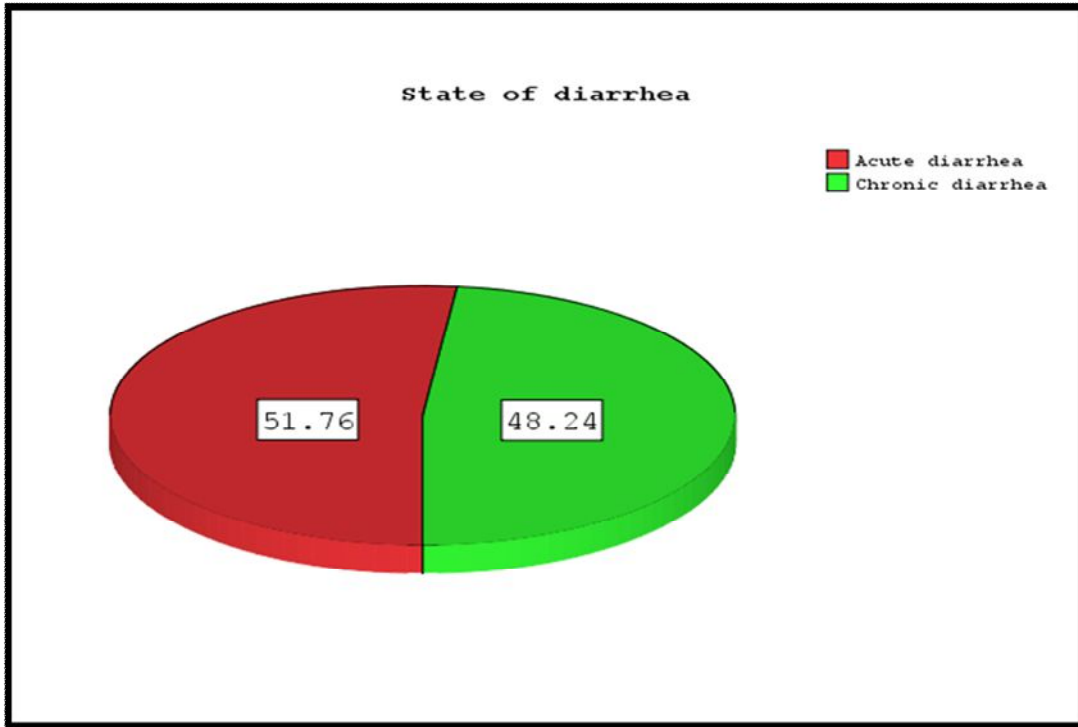


Figure (1): Distribution of the study sample according to state of diarrhea

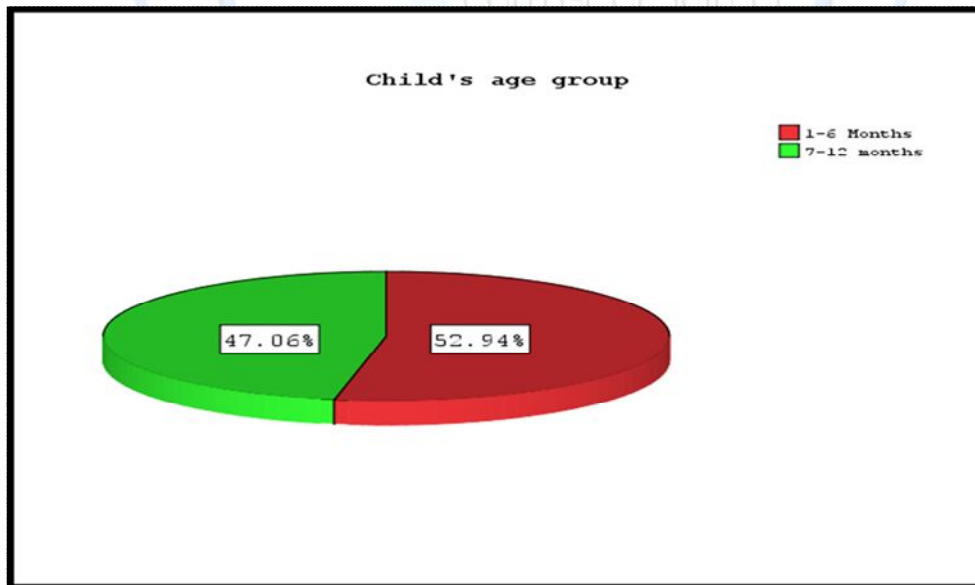


Figure (2): Distribution of the study sample according to Age groups

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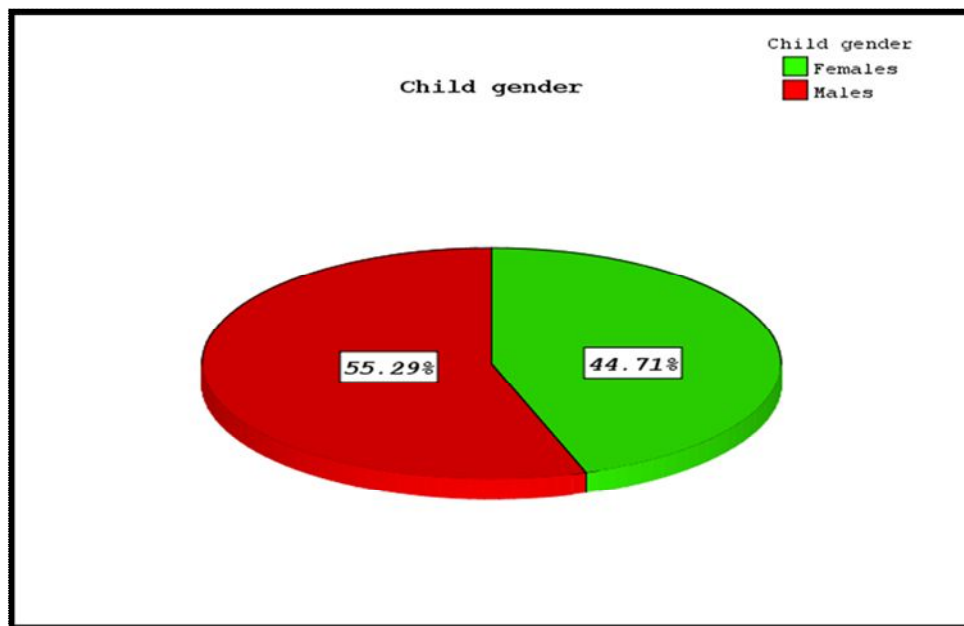


Figure (3): Distribution of the study sample according to Gender

Table (1): Relationship between state of diarrhea and child's age

Age group	State of diarrhea				Total	
	Acute diarrhea		Chronic diarrhea		No.	%
	No.	%	No.	%		
1-6 Months	21	47.7	24	58.5	45	(52.9)
7-12 Months	23	52.3	17	41.4	40	(47.1)
Total	44	100	41	100	85	(100)

P= 0 .108 (NS); NS= non significant

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Table (2): Relationship between state of diarrhea and child's gender

Child's gender	State of Diarrhea				Total	
	Acute diarrhea		Chronic diarrhea		No.	%
	No.	%	No.	%		
Males	21	47.7	26	63.4	47	55.3
Females	23	52.3	15	36.6	38	44.7
Total	44	100	41	100	85	100

P= .108 (NS); NS= non significant

Table (3): Relationship between state of diarrhea and feeding type

Type of current feeding	State of Diarrhea				Total	
	Acute diarrhea		Chronic diarrhea		No.	%
	No.	%	No.	%		
Breast feeding	18	40.9	9	22	27	31.8
Bottle feeding	19	43.2	24	58.5	43	50.6
Mixed feeding	7	15.9	8	19.5	15	17.6
Total	44	100	41	100	85	100

P= .170 (NS); NS= non significant

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Table (4): Relationship between state of diarrhea and Nutritional status

Nutritional status	State of diarrhea				Total	
	Acute diarrhea		Chronic diarrhea		No.	%
	No.	No.	No.	%		
Well nourished	34	66.7	17	29.4	51	60
Malnourished	10	33.3	24	70.6	34	40
Total	44	100	41	100	85	100

P=.0001 (HS); HS= high significant

Discussion

Diarrheal diseases remain the main cause of childhood mortality and morbidity in developing countries, although diarrheal deaths have significantly declined in recent years mostly due to the success in the implantation of oral rehydration therapy (ORT) as the principle treatment (10). In present study, most of infants affected with acute and chronic diarrhea fell within (1-6 months) age group, this comparable to study done by Al- Mayahi and Saleem (2005) (4) they found that the highest incidence of diarrhea was among infants aged (1-6) months. In current study, the rate of diarrhea was higher in male than in female children, this agreeing with other studies (11,12). In this study, most of patients with chronic diarrhea were less than 6 months of age. Reversibly most of patients with acute diarrhea were aged (7-12) months. These differences among infants less than 6 months with chronic diarrhea may be due to less capability of responding to infection because of age-related immunologic deficiencies. Also, longer lasting episodes of chronic diarrhea in this group may be explained by the differences in the diarrheal pathogens between younger and older children (13). Younger infants are more susceptible to infections with bacterial and parasitic pathogens that are responsible for majority of prolonged episodes of diarrhea (14). Child age was not significantly associated with the rate of diarrhea in the present study, this was shown in study

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done by Henrique and Nuno, in Portugal (2003) (15). No significant difference between male and female children was shown in this study, this was agrees with Al Mayahi and Saleem study (2005) (4). But was disagree with Calistus and Alessio study in Thailand (2006) . A Whereas there was a significant association between child's gender and diarrhea among studied children (16). This suggests that cultural factors or discriminate care seeking thresholds may be responsible for these differences (17). The current study showed that giving bottle feeding alone or with breast feeding increases the rate of having acute or chronic diarrhea and this was shown in study conducted by Molbak et al (1997) (12). In present study, there was no a significant difference between feeding type and state of diarrhea (acute or chronic).

This was comparable with Al Mayhi and Saleem study (4). About one third (31.8%) of diarrhea patients were breast fed and this may be explained by that actually most of these patients are not exclusively breast fed, and they may receive some additional water and rice water which acts as a vehicle for transmission of infection and this may explain the lack of complete protection of breast feeding against acute and chronic diarrhea in study cases. William et al found that exclusive breast-feeding was present only for 1.5 months. Therefore, breast-feeding is continued but other liquids or semisolids diet were introduced (13). The current study showed that most of acute diarrhea cases (66.7%) were among well nourished infants, this percentage was comparable with study done by Vinodini (1985), whereas (63.6%) of the incidence of acute diarrhea was among well children ($\geq 90\%$ of standard body weight) (18). This may be due to early diagnosis of acute cases of diarrhea and early admission the child to hospital to replace the lost fluids and starting with suitable treatment. As compared to chronic diarrhea cases, majority of them (70.6%) were malnourished infants and there was a highly significant relationship between chronic diarrhea and malnutrition.

This finding was comparable in retrospective study conducted by Reynaldo et al, whereas (23%) of Filipino children were mildly undernourished, (32.3%) were moderately undernourished and (28.7%) were severely undernourished, the total percentage of those malnourished affected with chronic diarrhea was (84%) (19). Because of persistent diarrhea is part of a vicious cycle between nutrition, poverty, poor hygiene, environmental contamination, inappropriate feeding

practices and early weaning (20). But disagrees with a study done by Masayo et al in Vietnam (2010). Whereas the relationship was not observed. Since the incidence of diarrhea has seasonal variation and the survey of Masayo et al was conducted in May (21).

Conclusions

1. No significant relationship was found between diarrhea (Acute and Chronic) and child's age, gender and feeding type.
2. A significant relationship was found between chronic diarrhea and malnutrition (low weight for age).

Recommendations

1. Health education is needed to increase awareness of health professionals and public about diarrhea specially in our society and give the mothers advice about proper way of sterilization of bottles and equipments of baby.
2. Train all health care staff in skills necessary to implement proper breast feeding.

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