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Original Research Article

Clinical and demographic profile of paediatric patients presenting with acute diarrhea

Apurva C. Shah, Devendra Sareen*, Dileep Kumar Goyal

Department of Pediatrics, Geetanjali Medical College and Hospital, Udaipur, Rajasthan, India

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***Correspondence:**
Dr. Devendra Sareen,
E-mail: drdevendrasareen@gmail.com

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ABSTRACT

Background: Diarrhea is a public health problem globally, being the 2nd leading cause of death in children under 5 years. Dehydration as well as malnutrition are also serious consequences of diarrhea. This study was carried out with an aim to focus on the clinical and demographic profile of diarrheal patients of pediatric age.
Methods: Infants and children aged 6 months to 5 years were analysed for age and gender distribution, chief complaints, feeding practices, nutritional status and assessment of dehydration; from January 2018 to June 2019 in the Department of Pediatrics of a Tertiary Care Teaching Hospital.
Results: Total 150 patients were analysed. Almost 50.67% group A and 41.34% group B patients belonged to toddlerhood. Male preponderance was also noted. Along with diarrhea, vomiting was noted in 22 group A and 21 group B and fever in 19 group A and 29 group B patients. Approximately 41-45% patients had no malnutrition and 55-60% had no dehydration in both the study groups.
Conclusions: There is lack of awareness regarding dog bite and its management among the rural people fever and vomiting were most frequently associated with diarrhea. A little less than half of the study participants had some-dehydration. Nearly half of the patients belonged to toddler age group. Majority of the patients were exclusively breast-fed for six months.

Keywords: Acute diarrhea, Dehydration, Fever, Malnutrition, Toddler, Vomiting

INTRODUCTION

Diarrhea is defined as, 'passage of three or more loose or liquid stools per day or more frequent passage than is normal for the individual.[1,2] It is one of the biggest public health problems globally. All children tend to suffer from diarrhea at some time during their childhood. WHO has estimated that globally there are nearly 1.7 billion cases of childhood diarrheal disease every year and that it remains the 2nd leading cause of death in children under 5 years worldwide.[2] Sometimes, diarrhea my co-exist with vomiting, fever, abdominal pain etc. depending upon its etiology. Diarrheal diseases can also lead to significant malnutrition and dehydration. Repeated attacks of diarrhea, infections, poor hygiene etc. may be responsible for such outcomes.[3] Basically, each diarrheal episode deprives the child of nutrition along with fluid loss, thus aggravating the severity of malnutrition and dehydration.

Thus, at the tertiary care centre, a study was conducted with an aim to focus on the clinical and socio-demographic profile of infants and children presenting with acute diarrhea. The results from this study will help in better understanding of acute diarrhea in pediatric age group of a particular geographical region.

METHODS

It was a prospective, observational clinical study that began after obtaining an approval from Institutional Ethics Committee. It was conducted at the Department of Pediatrics of a Tertiary Care Teaching Hospital for a

period of 1.5 years from January 2018 to June 2019. The sample size was 150; with 2 groups A and B having 75 patients each.

A written consent of patient's parents or guardian was obtained on an informed consent form in their respective vernacular language. It was followed by data collection a case record form. Only those infants and children who fulfilled inclusion criteria such as those aged between 6 months - 5 years, suffering from acute diarrhea and presenting to the Pediatric Department at this set-up for treatment; were included in the study. Those with co-morbid conditions or admitted to the PICU were excluded. Here, patients were divided into 2 groups according to the probiotic preparation being administered. Accordingly, their clinical and demographic profile were also noted and studied in 2 groups. Various parameters analysed were age and gender distribution, chief complaints, feeding practices, nutritional status and assessment of dehydration. The statistical analysis was done using Microsoft Excel Office 365 and SPSS (version 21.0).

RESULTS

Socio-demographic profile of patients

Age distribution

Figure 1 shows that in the age range of 6 months - 5 years; Mean, Median and Mode age for group A patients were 2.19±1.31, 2 and 3 years respectively. A majority of 38 (50.67%) were toddlers. Similarly, for group B patients; Mean, Median and Mode age were 2.46±1.41, 2.4 and 1 year respectively. Here also, 31 (41.34%) patients were toddlers. The remaining were infants and pre-school children.

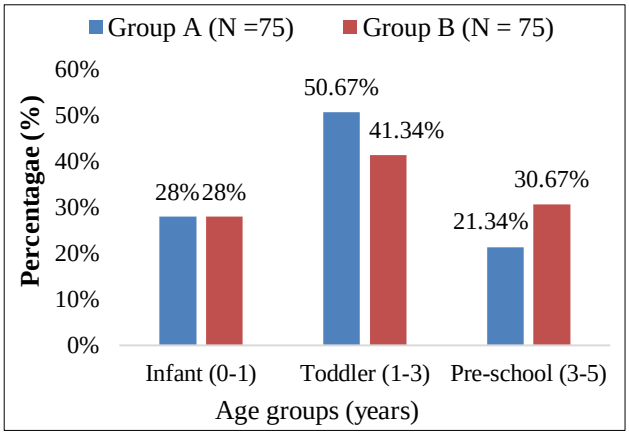

Figure 1: Age distribution of patients.

Gender distribution

Table 1 shows that out of 75 patients in group A, 38 (50.67%) males exceeded 37 (49.34%) females, with male : female (M : F) ratio of 1.02 : 1. Similarly in case of group B patients, the M: F ratio was 1.14: 1 with 40 (53.34%) males and 35 (46.67%) females.

Table 1: Gender distribution of patients.

Gender	Group A		Group B	
	Total no. of patients (N = 75)		Total no. of patients (N = 75)	
	(n)	(%)	(n)	(%)
Male	38	50.67	40	53.34
Female	37	49.34	35	46.67
Total	75		75	

Other complaints associated with acute diarrhea.

As shown in table 2, maximum 22 (29.34%) presented with vomiting followed by 19 (25.34%) with fever in group A patients. Among 75 patients of group B, 21 (28%) and 29 (38.67%) patients presented with vomiting and fever respectively. 35 group A and 32 group B had abdominal distention, refusal to feel and decreased urinary output.

Table 2: Chief complaints of patients presenting with loose stool.

Chief complaints	Group A		Group B	
	Total no. of patients (N = 75)		Total no. of patients (N = 75)	
	(n)	(%)	(n)	(%)
Vomiting	22	29.34	21	28.00
Fever	19	25.34	29	38.67
Abdominal distention	09	12.00	10	13.34
Refusal to feed	13	17.34	12	16.00
Decreased urinary output	13	17.34	10	13.34

Details of vomiting

Duration of vomiting

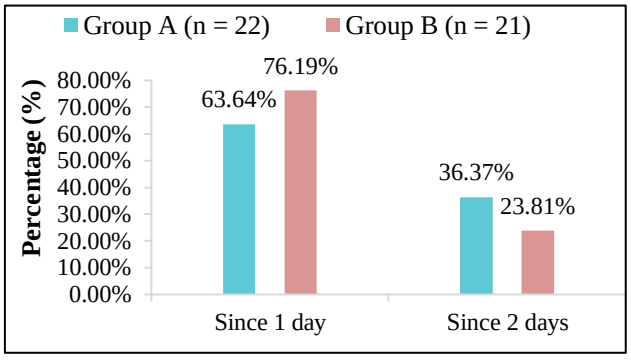

Figure 2: Duration of vomiting among patients presenting with loose stool.

Figure 2 shows that in group A, 14 (63.64%) patients had vomiting since 1 day whereas 8 (36.37%) had vomiting

since 2 days. Similarly, in group B, 16 (76.19%) patients had vomiting since 1 day and 5 (23.81%) had since 2 days.

Frequency of vomiting

Out of 22 patients in group A, frequency was 1/day in majority i.e. 14 (63.64%) patients while in group B, it was observed in 11 (52.38%) patients. Remaining 8 group A and 10 group B patients had a frequency of 2 or more than 2 vomiting/day (Table 3).

Table 3: Frequency of vomiting per day among patients presenting with loose stool.

Frequency of vomiting (per day)	Group A		Group B	
	Total no. of patients (n = 22)		Total no. of patients (n = 21)	
	(n)	(%)	(n)	(%)
01	14	63.64	11	52.38
02	05	22.72	06	28.57
>02	03	13.64	04	19.04
Total	22 (out of 75)		21 (out of 75)	

Details of fever

Duration of fever

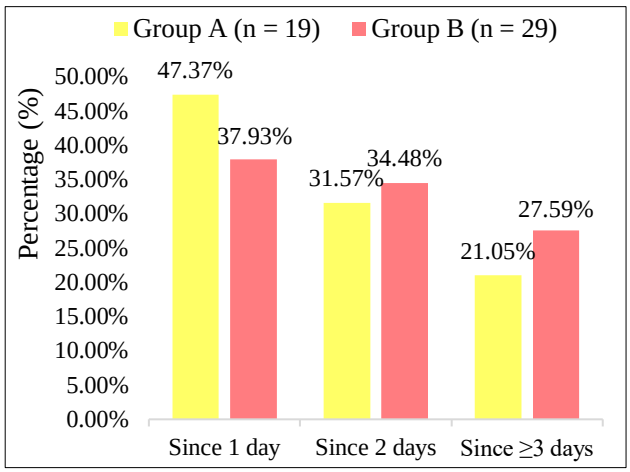

Figure 3: Duration of fever among patients presenting with loose stool.

Figure 3 shows that a majority of 9 (47.37%) group A and 11 (37.93%) group B patients had fever since 1 day. Fever since 2 days was noted in 6 (31.57%) and 10 (34.48%) group A and B patients respectively. As fewer as 4 (21.05%) group A and 8 (27.59%) group B patients had fever since ≥3 days.

Feeding practices

Breast-feeding history: All 150 patients included in the study were given breast-feeding for a variable duration of time.

Exclusive breast-feeding: Exclusive breast-feeding (EBF) for 6 months was given in a large no. of group A and B patients i.e. 39 (52%) and 44 (58.67%) respectively. Few others were given for 4, 5 or 7 months (Table 4).

Table 4: Duration of exclusive breast-feeding among diarrheal patients.

Duration of exclusive breastfeeding (months)	Group A		Group B	
	Total no. of patients (N = 75)		Total no. of patients (N = 75)	
	(n)	(%)	(n)	(%)
04	14	18.67	06	8.00
05	16	21.33	19	25.34
06	39	52.00	44	58.67
07	06	8.00	06	8.00
Total	75		75	

Total duration of breast-feeding

Almost 27 (36%) and 23 (30.67%) patients in group A and B respectively had continued breast-feeding during the study. In remaining 48 (64%) and 52 (69.34%) group A and B patients respectively, breast feeding was carried out till 1, 1.5 or 2 years (Table 5).

Table 5: Total duration of breast-feeding among diarrheal patients.

Duration of breastfeeding (year)	Group A		Group B	
	Total no. of patients (N = 75)		Total no. of patients (N = 75)	
	(n)	(%)	(n)	(%)
Continuing	27	36.00	23	30.67
Till 01 year	22	29.34	21	28.00
Till 1.5 years	24	32.00	30	40.00
Till 02 years	02	2.67	01	1.34
Total	75		75	

Bottle feeding

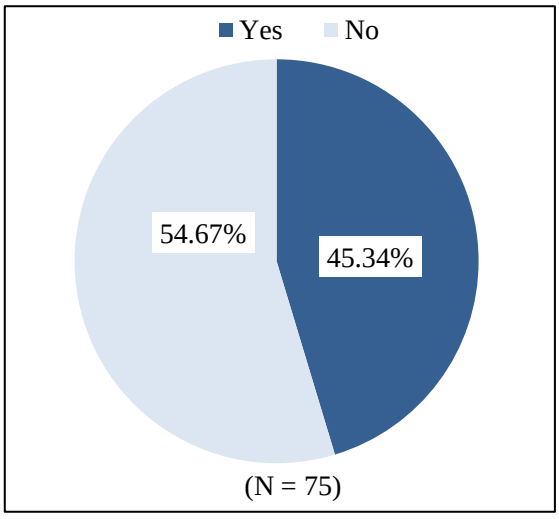

Figure 4: Bottle feeding among group A patients.

Figure 4 indicates that in group A, a majority of 41 (54.67%) patients were not given bottle feeding while the remaining 34 (45.34%) were given. As shown in figure 5, almost 45 (60%) patients were not given bottle feeding whereas 30 (40%) were given in group B.

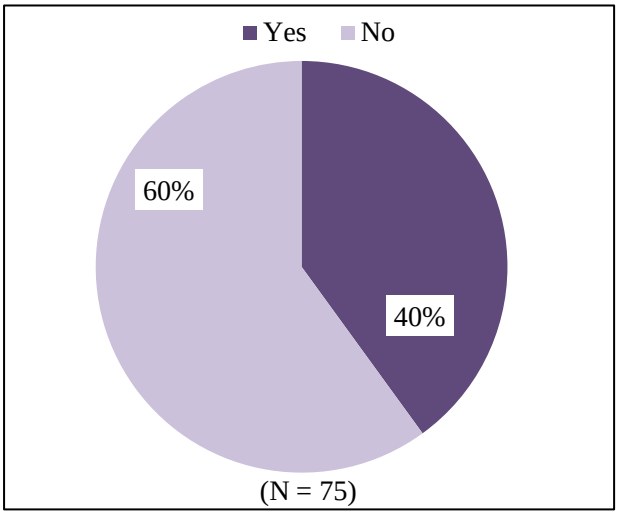

Figure 5: Bottle feeding among group B patients.

Nutritional status

A total of 34 (45.34%) and 31 (41.34%) patients in group A and B respectively had no malnutrition. According to the severity of malnutrition, remaining 41 (54.67%) group A and 47 (62.67%) group B patients had mild and moderate malnutrition as shown in Figure 6.

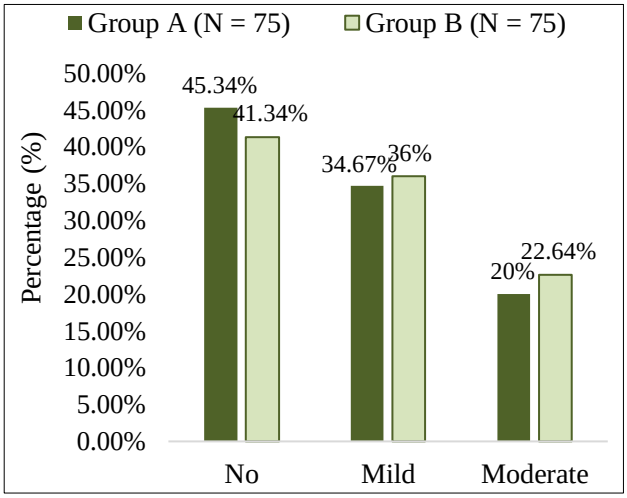

Figure 6: Severity of malnutrition among diarrheal patients.

Assessment of dehydration

Maximum patients i.e. 44 (58.67%) of A and 42 (56%) of B group had no dehydration whereas remaining 31 (41.34%) and 33 (44%) patients had some dehydration respectively as shown in Table 6.

In group A, maximum 25 patients had no dehydration and malnutrition while 16 had no dehydration but mild malnutrition. Some dehydration with no malnutrition was noted in 9 patients while 10 and 12 patients of some dehydration had mild and moderate malnutrition respectively as shown in Table 7. In group B patients with no dehydration; 23, 17 and 2 patients had no, mild and moderate malnutrition respectively. In patients with some dehydration, 15 patients had moderate malnutrition while 10 had mild and 8 had no malnutrition (Table 8).

Table 6: Degree of dehydration among patients presenting with diarrhea.

Degree of dehydration	Group A		Group B	
	Total no. of patients (N = 75)		Total no. of patients (N = 75)	
	(n)	(%)	(n)	(%)
No	44	58.67	42	56.00
Some	31	41.34	33	44.00
Total	75		75	

Table 7: Severity of malnutrition and degree of dehydration in group A.

Group A patients			
Severity of malnutrition	Degree of dehydration		Total no. of patients (N = 75)
	No	Some	
	(n)	(n)	
No	25	09	34
Mild	16	10	26
Moderate	03	12	15
Total	44	31	75

Table 8: Severity of malnutrition and degree of dehydration in group B.

Group B patients			
Severity of malnutrition	Degree of dehydration		Total no. of patients (N = 75)
	No	Some	
	(n)	(n)	
No	23	08	31
Mild	17	10	27
Moderate	02	15	17
Total	42	33	75

DISCUSSION

The present study covered clinical and demographic profile of infants and children aged 6 months to 5 years and presenting with chief complaints of acute diarrhea to the Department of Pediatrics. In our study, analysis of socio-demographic profile of the study population showed that a large no. of patients belonged to the toddler age group in group A and B respectively. Accordingly, their Mean age±S.D were (2.19±1.31) and (2.46±1.41) years in group A and B respectively. Infants and pre-school children were relatively lesser affected in both study groups. This may vary in different geographical

regions owing to exposure of different pediatric age-groups to various etiological agents.

Gender distribution in our study showed male preponderance in both the groups as mentioned in table 1. A similar males exceeding females gender distribution was observed in Ratna SM et al study .[4] In other study by Vidjeadevan D et al, variations in male and female preponderance was observed.[5] Age group wise gender distribution in the present study had higher female than male gender among toddler age-group. Infants and pre-school children again had a greater number of males than females. Chen et al and Heuilan et al in their respective studies noted male predominance and majority of the patients (84%) were between 6 months to 2 years.[6,7]

Among the presenting complaints of diarrheal patients, vomiting as well as fever were noted in a majority. Similar such observations were noted in a study by Francavilla R et al, where 65% patients had vomiting and 51% study participants had fever associated with diarrhea.[8] This may be due to higher incidences of infective origin diarrhea among patients. Depending upon the loss of fluid, fewer patients in both, group A and B, also presented with symptoms of refusal to feed and decreased urinary output each. In the study conducted by Kumar M et al, after vomiting and fever, 21 (47.7%) with decreased oral intake and 12 (27.3%) with decreased urine output along with loose stools were noted.[9]

The feeding practices among study participants were also noted and analysed. Breast-feeding was given to all 150 patients. Exclusive breast-feeding (EBF) for an ideal 6 months was noted in highest no. of study participants in group A & B. Remaining patients showed EBF for 4, 5 or 7 months. The total duration of 1.5 years of breast feeding was noted in maximum 24 (32%) group A and 30 (40%) group B patients while in almost 36% and 30.67% patients of group A and B, it was still continued during the study period. Many studies have been performed for observing the effects of probiotics and feeding practices in diarrheal patients. Among human milk-fed infants, mixtures of probiotic and not single-strain products were effective in reducing late onset sepsis as well.[10]

In diarrheal patients of our study, nutritional status was also observed and the results showed that those 25 group A and 23 group B patients who had normal nutritional status had no dehydration as well. Similarly, moderate malnutrition noted in 12 group A and 15 group B patients had some dehydration. Contradictory to that, only 3 in group A and 2 in group B had moderate malnutrition but no dehydration. Literature also suggests that malnutrition can predispose a child to diarrhea and severity may be slightly higher in those patients causing fluid loss and dehydration.

The degree of dehydration on the basis of amount of fluid loss was also analysed. Since severe dehydration was under exclusion criteria, only those patients with no or some dehydration were noted. Majority patients had no dehydration. This is similar to the observations from Francavilla R et al study where control and placebo group had majority patients with no dehydration i.e. 25 and 26 respectively.[8]

In the present study, there were few limitations as well. They were: patients visiting pediatric out-patient department and ward were included. Those with co-morbid conditions or admitted in the PICU that were excluded can be considered in future studies. Identification of causative pathogenic agent was also not included due to economical constraints. It can also be carried out at regular intervals to study any variations in the pattern of clinical profile of such patients. Effectiveness of treatment in these patients can also be studied in future. Dehydration and malnutrition can also be prevented through patient education, availability of safe drinking water, adequate sanitation and hygiene.

CONCLUSION

In our observational descriptive study, we conclude that fever and vomiting were the complaints most frequently associated with diarrhea. A little less than half of the children under study had some-dehydration. Nearly half of the study population belonged to toddler age group. Majority of the patients were exclusively breast-fed for six months.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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