



## IMPACT OF DIARRHEA ON NUTRITIONAL STATUS OF CHILDREN BETWEEN AGE GROUP 2 TO 60 MONTHS

**Dr Poorva Gohiya**

Associate Professor, Department Of Pediatrics, Gandhi Medical College, Bhopal

**Dr Varsha Kumari \***Senior Resident, Department of Pediatrics, LN Medical College, Bhopal  
\*Corresponding Author**Dr Rashmi Dwivedi**

Professor &amp; HOD, Department of Pediatrics, LN Medical College, Bhopal

**ABSTRACT****AIM:** To identify the impact of diarrhea on the overall nutritional status and development of children and vice-versa.**METHODS:** This hospital based cross sectional study included all children 2 months to 60 months admitted from January to December 2016 in a tertiary care centre in Central India with chief complaints of loose stools in the last 7 days. A pre-tested questionnaire and face to face interviews was used as the data collection tool.**RESULTS:** Data showed 14.9% cases were wasted, 36.2% were underweight and 15.4% were stunted comprising about 36% of our total study group. Of the total cases that died due to diarrhea, 69% were malnourished. Presence of stunting as well as wasting cannot be explained by a single episode of diarrhea and suggests their inverse relationship.**CONCLUSION:** Malnutrition is a major cause of morbidity and mortality in this area and also repeated episodes of diarrhea can have negative impact on the child's physical growth and development.**KEYWORDS :** Diarrhea, malnutrition, stunting, wasting**INTRODUCTION**

Diarrhoea is a global problem, but is especially prevalent in developing countries in conditions of poor environmental sanitation, inadequate water supplies, poverty and limited education. It is well known that diarrhoeal disease is one of the leading causes of illness and death in young children in developing countries. Diarrhoea is defined as at least three or more loose stools in 24 hours. However it is the recent change in consistency and character of stools rather than the number of stools that is more important. The term 'diarrheal diseases' is used for a group of diseases in which the predominant symptom is diarrhea.<sup>[1]</sup>

Diarrhoeal disorders in childhood account for a large proportion (9%) of childhood deaths with an estimated 0.71 million deaths per year globally, making it the second most common cause of child deaths worldwide<sup>[2]</sup>. In developing countries, children under three years old experience on average three episodes of diarrhoea every year. Each episode deprives the child of the nutrition necessary for growth. As a result, diarrhoea is a major cause of malnutrition, and malnourished children are more likely to fall ill from diarrhoea<sup>[3]</sup>.

**MATERIAL AND METHODS**

This was a hospital based cross sectional study, in which all children in the age group of 2 months to 60 months were included from January 2016 to December 2016 who were admitted with chief complaints of loose stools in the last 7 days. A pre-tested questionnaire was used as the data collection tool and face to face interviews were conducted on mothers of children. Children of age less than 2 months or more than 60 months, diarrhea lasting for more than 7 days at the time of admission, episodes of loose stools less than 3 per day, patients being treated on OPD basis and those with non-consenting caregivers were excluded from the study.

**STATISTICAL ANALYSIS-** All the data were analysed using IBM SPSS ver.20 software. Results on continuous measurements were presented on Mean SD (Min-Max) and results on categorical measurements were presented in Number (%). Significance was assessed at 5% level of significance. Chi-square/Fisher Exact test was used to find the significance of study parameters on categorical scale between two or more groups. Student t test and ANOVA were used to compare the mean of quantitative variables. Null hypothesis of discrepant results was declined when p-value were less  $\leq 0.05$ .

**RESULT****Distribution of Cases of Diarrhea according to Type of Feed and Nourishment.**

Our study revealed 248(69.7%) cases were taking top feeds while only 108(30.3%) were on exclusive breast feeding. Of those on EBF, only 31.3% were less than 6 months old. 56(15.7%) top fed children were malnourished as compared to 30(8.4%) who were on EBF.

The study showed 36.8% of those on top feeds had no dehydration while 32.9% had severe dehydration/shock. Out of 108 exclusively breast fed children, 62(17.4%) had no dehydration and 46(12.9%) had severe dehydration/shock.

**Table 1: Distribution of Cases of Diarrhea according to type of Top Feed and Nourishment.**

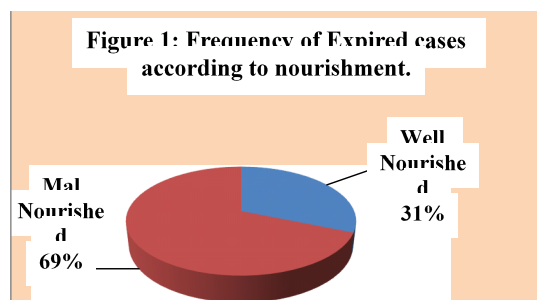
Top Feeds	Well Nourished N (%)	Mal Nourished N (%)	Total N (%)	X <sup>2</sup> Value	P Value
Animal Milk	173(48.6%)	48(13.5%)	221(62.1%)	0.861	0.353(NS)
Formula Feeds	19(5.3%)	8(2.2%)	27(7.6%)		
Dilution					
Undiluted	59(16.6%)	23(6.5%)	82(23.0%)	2.10	0.148(NS)
Diluted	133(37.4%)	33(9.3%)	166(46.6%)		
Method					
Katori Spoon Feeding	51(14.3%)	17(4.8%)	68(19.1%)	0.314	0.575(NS)
Bottle Feeding	141(39.6%)	39(11.0%)	180(50.6%)		

**Table 2: Incidence of Diarrhea according to Underweight, Stunting & Gender.**

	Male	Female	Total	Chi <sup>2</sup> Value	P Value
<b>Underweight</b>					
No	109(30.6%)	118(33.1%)	227(63.8%)	2.877	0.090(S)
Yes	74(20.8%)	55(15.4%)	129(36.2%)		
<b>Stunting</b>					
No	145(40.7%)	156(43.8%)	301(84.6%)	6.146	0.004(HS)
Yes	38(10.7%)	17(4.8%)	55(15.4%)		

### Incidence of Diarrhea according to Wasting & Gender-

Study revealed that 53(14.9%) cases were wasted. Out 53 wasted cases, 31 were female as compare to 22 males. However there was statistically no significant difference in the incidence of diarrhea according to wasting & gender. ( $P>0.05$ )



### DISCUSSION

Out of 356 cases in our study, 30.3% were exclusively breastfed and 69.7% were on top feeds. This included animal milk as well as formula feeds. Out of 108 breast fed cases (30.3% of the total), 31.3% cases were less than six months of age. This indicates the low level of awareness regarding exclusive breast feeding in less than six months of age. Out of the 248 top fed children 23.8% were less than 6 months of age. Animal milk was taken by 62.1%, 46.6% had dilution and 50.6% used bottles for feeding. This is in accordance with various studies done worldwide that increased risk of diarrhea in regions with low rates of breast feeding and increased use of feeding bottles.[4,5,6,7,8,9]

Our study revealed the proportion of children that were underweight, stunted or wasted. In our study, out of 183 male patients, 20.8% were underweight, 10.7% were stunted and 6.17% were wasted. Out of 173 female patients, 15.4% were underweight, 4.8% were stunted and 8.7% were wasted. These findings indicate a negative impact of diarrhea on overall growth and development of children, which is in accordance with various other studies.[4,10,11,12,13,14]. It is also indicative of the low nutritional status of children in this part of the country. A total of 15.5% children were stunted and 14.9% were having wasting which cannot be explained by a single episode of acute diarrhea. Of the 16 cases that expired due to diarrhea and its complications, majority were malnourished. This can be theorised by the fact that malnutrition is a major cause of morbidity and mortality in this area and also it increases the risk of developing complications of various diseases. Repeated episodes of diarrhea can have long-lasting effects on a child's physical growth as well as development.

### CONCLUSION

Diarrheal diseases are prevalent amongst children of age less than 60 months. Since this age group marks the period of active growth of body, both mentally and physically, diarrheal episodes during this duration robs the body of the required nutrients and pushes the child into a vicious circle of illness and stagnant growth while increasing risk of severe complications including death.

### REFERENCES

1. Park K. Park's Textbook of Preventive and Social Medicine. 23rd Edition. Banarsidas Bhanot; 2016. p 221
2. WHO global health observatory  
[http://www.who.int/gho/countries/ind/country\\_profiles/en/](http://www.who.int/gho/countries/ind/country_profiles/en/)
3. Rethinking poverty: report on world Social Situation 2010 UN 2009  
<http://www.un.org/esa/socdev/rwss/docs/2010/fullreport.pdf>
4. Avisek Gupta, Gautam Sarker, Arup Jyoti Rout, Tanushree Mondal and Ranabir Pal. Risk correlates of diarrhea in children under 5 years of age in slums of Bankura, West Bengal. J Glob Infect Dis. 2015 Jan-Mar; 7(1): 23-29
5. Stanly AM, Sathiyasekaran BW, Palani G. A population based study of acute diarrhea among children under 5 years in a rural community in South India. Sri Ramchandra J Med 2009; 1:1-7.
6. Ahiadeke C. Breast-feeding, diarrhoea and sanitation as components of infant and child health: a study of large scale survey data from Ghana and Nigeria. J Biosoc Sci. 2000; 32(1):47-61.
7. Public Health News Center. Johns Hopkins University. Exclusive Breastfeeding

Training For Mothers Helps Reduce Diarrheal Disease Among Infants. The University. 2005.

8. Wanzahun Godana, Bezatu Mengiste. Environmental Factors Associated with Acute Diarrhea among Children Under Five Years of Age in Derashe District, Southern Ethiopia. Science Journal of public Health, Vol. 1, No. 3, 2013, pp. 119-124.
9. Mohammed Alshehri, Ismail Abdelmoneim and Hussah M Gilban. Analysis of diarrhea episodes in children reported at a primary health care centre in Abha city in the year 2002. J Family Community Med. 2004 Jan-Apr; 11(1): 35-38.
10. Ramakrishnan J; Roy G; Premarajan KC. Incidence and risk factors of acute diarrheal disease among under-five children in urban slums in Pondicherry-one year follow-up study. Indian Journal of Maternal and Child Health. 2011 Oct-Dec; 13(4):[11] p.
11. Patwari AK. Diarrhoea and malnutrition interaction. Indian J Paediatr. 1999; 66 (15Suppl):S124-34.
12. Gracey M. Diarrhea and Malnutrition: A Challenge for Pediatricians. J Pediatr Gastroenterol Nutr; 1996, 22(1):6-16.
13. Checkley W, Epstein LD, Gilman RH, Cabrera L, Black RE. Effects of acute diarrhea on linear growth in Peruvian children. Am J Epidemiol. 2003; 157 (2):166-75
14. Molbak K. The epidemiology of diarrheal diseases in early childhood: A review of community studies in Guinea-Bissau. University of Copenhagen, 2000.