



Journal Homepage: -www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/5202
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/5202>



RESEARCH ARTICLE

A STUDY ON PREVALENCE AND SEASONAL VARIATION OF DIARRHEAL DISEASES AMONG UNDER-FIVE CHILDREN OF JHANSI, UTTAR PRADESH, INDIA.

Nitin Tiwari, Renu Agarwal and Anil Kumar Malhotra.
 Department of Community Medicine, ML B Medical College, Jhansi (U.P.).

Manuscript Info

Manuscript History

Received: 17 June 2017
 Final Accepted: 19 July 2017
 Published: August 2017

Key words:-

Diarrhea, under- five children. Seasonal variation.

Abstract

Background: Diarrheal disease forms one of the two major killer diseases in children under five years of age in the developing world. Data on the prevalence and related factors of diarrhea in Bundelkhand region is quite scanty. A community-based cross sectional study was undertaken among 301 under-five children of field practice area Medical College Jhansi during 2015-16, to find out the burden of diarrheal diseases and the effect of seasonal variation on the pattern of diarrheal diseases.

Methods: Cross sectional study was carried out using pre-tested interview schedule.

Results: Overall period (last 2 weeks) and point (24 hrs) prevalence rates of diarrheal diseases among children under-five age were calculated which came to the order of 36.1% and 12 % respectively. Prevalence of diarrhea decreased significantly with increasing age and was found to be higher during summer months.

Conclusion: The burden of diarrheal disease in Bundelkhand region is quite high, like places in the developing world. The age pattern and seasonal pattern of the diarrheal disease also resembles that found in studies across India and the developing world.

Copy Right, IJAR, 2017,. All rights reserved.

Introduction:-

Diarrheal disease is the second leading cause of death in children under five years old. It is both preventable and treatable. Each year diarrhea kills around 5,25, 000 children aged less than five years. Globally, there are nearly 1.7 billion cases of childhood diarrheal disease every year [1]. Thus diarrheal disease is a major killer in addition to diseases like ARI, Measles and other such infections. In India, presently the diarrheal morbidity stands at 1.07 million cases and mortality stands at 2040 in these children.[2] In India, diarrheal diseases contribute to 10 percent of under five deaths in some state of the country. 1.2 lakhs children die due to diarrhea annually in the country. Diarrheal deaths are usually clustered in summer and monsoon months and the worst affected are children from poor socioeconomic situations.[3] The effect of diarrheal mortality remains high in children and hence in continuation of the efforts in 2014, 2015 and 2016, it has been decided to organize an Intensified Diarrhea Control Fortnight (IDCF) in 2017, for prevention and control of deaths due to dehydration from diarrhea across all States & UTs. [3] Prevalence of diarrhea in last two weeks preceding NFHS-IV, 14.2% in rural, 15.2% in urban area and overall 15.0%. [4]

Corresponding Author:- Dr. Nitin Tiwari.

Address:- Department of Community Medicine, MLB Medical College, Jhansi (U. P) -284128.

Being on a rocky plateau, Jhansi experiences extreme temperatures. Winter begins in October with the retreat of the Southwest Monsoon and peaks in mid-December. Spring arrives by the end of February and is a short-lived phase of transition. Summer begins by April and summer temperatures can peak at 47 degrees in May. The rainy season starts by the third week of June (although this is variable from year to year). Monsoon rains gradually weaken in September and the season ends by the last week of September. In the rainy season, the average daily high temperature hovers around 36 degrees Celsius with high humidity. In summer Jhansi experiences temperatures as high as 45-47 degrees and in winter the temperatures fall as low as 0-1 degrees and it will be interesting to note what affects these climatic conditions produce on a prevalence of diarrheal episodes in children.[5].

However, the literature about diarrheal diseases and its seasonal variation is very scanty, which prompted us to undertake this study. Keeping this in view present study was undertaken to find the magnitude of diarrheal diseases in under-five children in Bundelkhand region and to study the pattern of diarrheal diseases across the four seasons.

Methodology:-

Study Design: An observational, descriptive, cross sectional study

Study Duration: from May 2015 – April 2016

Sample Size: Sample size required was carried out using lowest prevalence of diarrheal diseases available in the literature (15%) [4]. Keeping in view, proportion P= 15% and assuming confidence level of 95% and absolute precision of 5%, the minimum required sample size was calculated using the formula [6]:

$$N = Z^2_{1-\alpha/2} \frac{P(1-P)}{d^2}$$

$$Z^2_{1-\alpha/2} = 1.96 \quad = (1.96)^2 \times 0.15 (1-0.15) (0.05)^2$$

$$P = 15\% \quad = 196$$

$$d = 5\%$$

Assuming 15% of the non-response, the minimum sample size was 225.

Sampling Procedures: The study carried out using systematic random sampling. Total 230 under-five children of field practice area of Medical College Jhansi enrolled for the study. House hold visits conducted at the end of each season and the details about any current episode of diarrhea (Previous 24 hours) and any past episodes of diarrhea (last 15 days) recorded. The effects of seasonal changes on these episodes also determined.

Data analysis: The data collected and analyzed using Epi-info 7.2.0.1 Software package. Data expressed as percentages, proportions and the difference in proportions measured by Chi-Square test.

Results:-

To study the burden of diarrheal diseases and the effect of seasonal variation, total 230 under-five children had enrolled and socio-demographic profile of these children evaluated. Majority of under-five children belong to age group of 36-48 months and these were 68(29.6%) followed by 24-36 months 61(26.5%). Most of the children were boys 124(54.0%) followed by girls 106(46.0%) [Table1].

Out of 230 children, 36.08% had diarrhea within last two weeks and 12 % within 24 hours [Figure 1].

Association of diarrhea with socio-demographic determinants of children, highly significant association was found with age of under-five children. This shows that increase in diarrhea in under-five children was found when there was a gradual shift from breast milk to other types of food. Other determinants like child sex, religion and caste were not found statistically significant.[Table 2].

The seasonal distribution of diarrheal cases in under-five children (within last two weeks) shows a peak during the summer and a slight rise in starting of winter although the cases of diarrhea distributed throughout the year [Figure2].

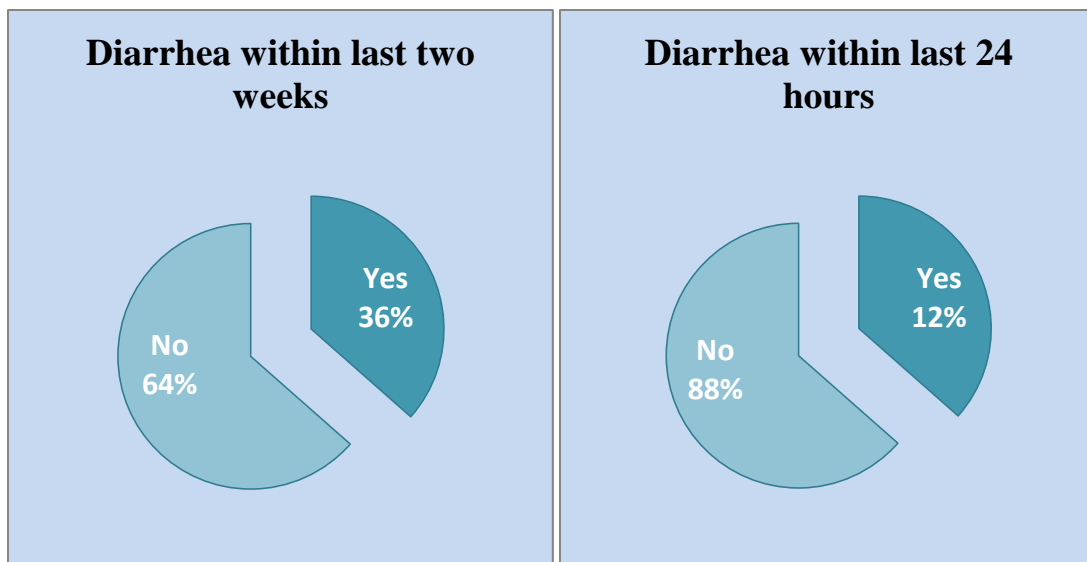
Table1:-Distribution of under-five children by age and sex

Variables		Frequency (N=230)	Percentage (%)
Age (years)	Less or equal to 6months	27	11.74
	7-12months	25	10.87
	13-24months	42	18.26
	25-36months	61	26.52
	37-48months	68	29.56
	49-60months	7	3.04
Sex of child	Female	106	46.09
	Male	124	53.91

Table 2:-Association of Age and Sex of under-five children with diarrhea

Variables	Diarrhea		Chi square	d.f.	P-value
	Yes	No			
Age of child					
Less or equal to 6months	16	11	20.8	5	0.001*
7-12months	10	15			
13-24months	22	20			
25-36months	11	50			
37-48months	21	47			
49-60months	3	4			
Sex of child					
Female	33	73	2.09	1	0.15
Male	50	74			

* P-value < 0.05 is statistically significant, d.f = degree of freedom



a) Within last two weeks

b) Within last 24 hr.

Figure 1:-Prevalence of diarrhea in under-five children

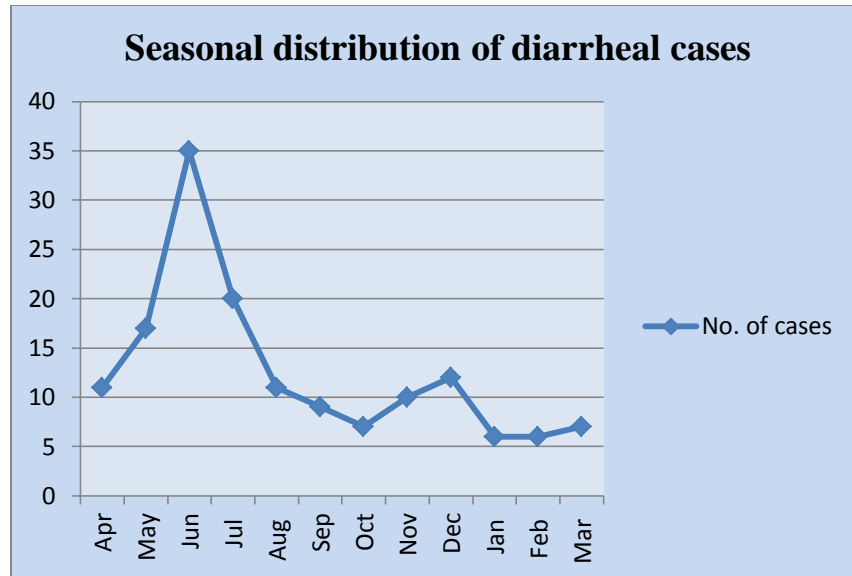


Figure 2:-Seasonal distribution of diarrheal cases in under-five children

Discussion:-

Overall period (last 2 weeks) and point (24 hrs) prevalence rates of diarrheal diseases among children under-five age calculated which came to the order of 36.01% and 12 % respectively. The study revealed a higher prevalence of diarrhea in under-five children than NFHS-IV [4], Ahmed et al. study [8] Banerjee B et al [9] and Gilany A H E L et al [10].

These rates were highest in the age group of 6–11 months (59.3%) and were lowest among children aged 25–36 months (18%) similar to Ahmed et al. study [8] and Gilany A H E L et al [10]. This is due to declining in maternally acquired antibodies and the introduction of complementary foods. In higher age groups, the probably lower rate may be because the children have started adopting the environment and food habits and the immunological system has developed to a large extent. In another developing country Nigeria, ONIGA et al (1996) [11] also found diarrheal disease significantly higher among children aged 6 – 11 months. An association of diarrhea with socio-demographic determinants of children, highly significant association was found with age of under-five children on shifting the child from mother's milk to another type of food similar to the study of Ahmed et al [8]. This shows that there is an increase in diarrhea in under-five children changing feeding from mother milk to other means. Other determinants like child sex, religion and caste were not found statistically significant.

The month-wise distribution of diarrheal cases in under-five children (within last 15 days) shows two peaks i.e. during the summer months and other in winter months. The burden of diarrhea was found to be more during the summer months because of hot and humid weather like the ONIGA et al (1996) [11]. Summer is a breeding season for flies that act as mechanical vectors carrying enter pathogens to food and water. In winter the viral diseases are flare up including Rota virus infections. The cases of diarrhea distributed throughout the year in our study. In the study of R.L. Guerrant et al [12], conducted a study in North Eastern Brazil it was seen that prevalence of diarrhea was higher during the rainy season of October & drier months. In temperate climates, bacterial diarrhea occurs more often during the warm season and viral diarrhea, particularly diarrhea caused by rotavirus peak during the winter. In a tropical area, rotavirus diarrhea occurs throughout the year, increasing in frequency during the drier, cool months, and bacterial diarrhea peak during the warmer, rainy season. The incidence of persistent diarrhea follows the same seasonal patterns as that of acute watery diarrhea. [7]

Conclusion:-

The study revealed higher period (last 2 weeks) and point (24 hrs) prevalence rates of diarrheal diseases among under-five children which came to the order of (36.08%) and 12 % respectively. A Risk of diarrhea increases with the transition phase of breast-feeding to supplementary feeding and exposure to the external environment. Prevalence rates were highest in the age group of 6–11 months and were lowest among children aged 25-36 months. Prevalence of diarrheal disease was higher in summer months. There is an immense need for sensitization of caretakers of under-five children through health education and promotion. A community-based intervention program

needs to be carried out to educate families about appropriate care of under-five children and application of preventive measures against diarrhea during seasonal variation.

References:-

1. <http://www.who.int/mediacentre/factsheets/fs330/en/>
2. Govt of India (2006), health information of India (2005) Ministry of health & family welfare New Delhi.
3. <http://nhm.gov.in/nrhm-components/rmnch-a/child-health-immunization/idcf-2017.html>
4. http://rchiips.org/NFHS/pdf/NFHS4/UP_FactSheet.pdf
5. https://en.wikipedia.org/wiki/Climate_of_Uttar_Pradesh/Jhansi/en
6. Lwanga SK, Lemeshow S: Sample Size Determination in Health Studies: A Practical Manual. Geneva: World Health Organization; 1991. P 25.7.WHO.Readings on diarrhea, student Manual 1992.
7. WHO.Readings on diarrhea, student Manual 1992.
8. Ahmed F et al, Prevalence of diarrheal Disease, its Seasonal and Age Variation in under- fives in Kashmir, India Siraj International Journal of Health Sciences Vol. 2 No. 2 July 2008,126-133
9. Banerjee B, Hazra S, and Bandyopadhyay D. Diarrhoea management among under fires. Indian Pediatric 2004; 41: 1185 – 89
10. Gilany AH EI and Hammads. Epidemiology of diarrhoeal diseases among children under 5 years of age in Dakahlia, Egypt.Eastern Mediterranean Health Journal.2005; 11: 4
11. ONIGA. Infant feeding practices, socio economic conditions of Urban Ilorin, Nigeria. East Africa Med. J. 1996; 73 (5): 281 – 2
12. Sircar BK, Deb, BC, Sengupta P Goat, Mondal S, Saha MR, Sikdar SN. A longitudinal study of diarrhea among children in Calcutta communities. Indian Journal of Med Research 1984; 80: 546.