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Review Article

Effect of Sociodemographic Factors and Feeding Practices on Diarrhoea Diseases among Children under Five in Makurdi Benue State Nigeria

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Abstract

Background: Diarrhoeal disease is the second leading cause of death due to infectious diseases among children under the age of 5 years worldwide, with developing countries bearing the most of the burden. The study was aimed at determining the effect of Sociodemographic and feeding practices on prevalence of diarrhoeal disease in infants less than six months of age in Makurdi, Benue State.

Methods: Structured questionnaire was used to collect information from 300 mothers of infants attending selected Child Welfare Clinics in Makurdi, Nigeria. The chi-square test was used to determine the association between having diarhoea in the last two weeks and Sociodemographic and infant feeding practices.

Results: Women who reported their infants had diarhoea in the previous two weeks were 21 (7.0 %). Factors that were significantly associated with diarhoea in the previous two weeks were not attending antenatal care in last pregnancy, drinking from bottle with a teat giving water use of infant formula and non- exclusive breastfeeding. Age of the infant, mother's age, education of the mother and number of previous deliveries were not significantly associated with diarhea disease in the two last two weeks.

Conclusion: The prevalence of diarhoea is relatively low among infants attending under five clinics in Makurdi. However feeding practices significantly affects prevalence of diarhoea disease. There is need to step up efforts in encouraging exclusive breastfeeding in the first six months through health education during antenatal care.

Introduction

Diarrhoeal disease is the second leading cause of death due to infections among children under the age of 5 years worldwide [1,2]. Approximately 10% of the 6.9 million deaths among children under the age of 5 years in 2011 were attributed to diarrhoeal disease [3-5]. Developing countries bear the major burden with about 90% of all diarrhoeal related deaths occurring in these children in Low and Middle Income Countries (LMIC) [6-8]. Nigeria has a child mortality rate of 128 deaths per thousand live births of which 69 per thousand live births occur in infants. Diarrhoea is the leading cause of deaths with 21% of infants experiencing diarrhoea [7]. Everyday Nigeria loses 2,300 children under the age of 5 years of age making the country the second largest contributor to under 5 mortality in the world [9].

About 88% of diarrhoeal disease is as a result of contaminated water, inadequate hygiene in food preparation and faecal disposal [7,8]. Simple interventions can be used to prevent or treat diarrhoea and these include exclusive breastfeeding, oral rehydration therapy, zinc and vitamin A supplementation with a resultant reduction in mortality by 25% if properly practiced [1,4]. There is an increase in the incidence of diarrhoeal disease in the second half of an infant's life due to weaning practices and weakened inborn immunity [1]. However, children under 6 months are also at risk of diarrhoeal disease with risk factors which include low educational status of the mother, lack of exclusive breastfeeding, parity of the mother amongst others [1,7].

There are inadequate previous studies on this subject in Makurdi and the rest of Benue State. The findings of this study will guide health workers who provide health education to mothers of infants as well as to policy makers saddled with the responsibility of preventing childhood morbidity and mortality in the state. This study was aimed at determining the risk factors for diarrhoeal disease in infants less than six months of age in Makurdi, Benue State which is meant to fill the gap in knowledge about such a study in Benue State, Nigeria.

Methods

Study setting

This study area was carried out in Makurdi. Makurdi is the state capital of Benue State; it is located in North Central, Nigeria. It lies between latitude 7.73^0 and 8.32^0. It has a population of about 300,377 people (NPC 2006). Majority of the population are traders and farmers.

The study was conducted in three major Child Welfare Clinics in Makurdi metropolis. These centers are the Child Welfare Clinic of the Benue State University Teaching Hospital, Child Welfare Clinic of the State Epidemiology Unit, and the Child Welfare Clinic of the Family Support Clinic. These clinics were set up and mandated to among other things, monitor the growth of under-five children, administer routine immunization, health education including demonstrations and attend to minor ailments of children under-five years. A sample size of 271 mothers and infants was calculated using the exclusive breastfeeding rate of 22.9% [24] obtained from a previous study. However, 300 mother-infants pairs were recruited for the study.

Study design

It is a descriptive cross-sectional study to determine the prevalence of diarrhoea diseases in the previous two weeks and the associated factors.

Study population

The study was conducted among 300 mothers of children 0-6 months, visiting the under-five clinics in Makurdi, Benue State comprising Family Support Programme (FSP) Clinic, State Epidemiological Unit, and the Benue State Teaching Hospital. The inclusion criteria include subjects should be the biological mothers of the infants and the infants should be less than 6 months old.

Sample size estimation

The sample size was determined using the formula for estimation of a single proportion as given below [25]:

$$n = \frac{(Z_1 - a)^2 \, P(1-p)}{d^2}$$

Where n= Minimum sample size, Z_{1-a}=Constant at 95% confidence interval from two tables which is 1.96 for two tailed study, P= 25.3% representing proportion of under five children about with diarrhea [10-15] and =5% margin of error (0.05). The calculated sample size was 288 which were increased to 300.

Sampling technique

This study used a multi-stage sampling technique. There are five major Child Welfare Clinics in Makurdi. The Family Support Clinic, The State Epidemiology Clinic, Federal Medical Centre, General Hospital, North Bank, and the Benue State University Teaching Hospital. Three of the Clinics were selected by balloting. The clinics selected are the Family Support Clinic, State Epidemiology Unit, and the State Teaching Hospital. The pair of mother and infants (0-6 months) who presented to these Child Welfare Clinics within the period of the study and consented to participate in the survey were selected consecutively and proportionate to the relative number of under five attending the clinics.

Data collection

An interviewer administered, semi-structured and pre-tested questionnaire was used to collect data with the assistance of trained research assistants (Medical Students). The questionnaire obtained information on the mother's Sociodemographic and the other relevant variables. Data collection was done on clinic days between Mondays and Fridays. The research assistants had prior short training on interviewing skills, methodology of the study and ethical issues.

Data analysis

The filled questionnaires were examined for completeness and entered into spreadsheet and then exported to Statistical Package for Social Sciences (SPSS) version 20 for further cleaning and analysis. The main outcome variable was the prevalence of diarrhoea diseases in the last two weeks. The exposure variables include exclusive breastfeeding and other feeding practices, age of the infants, maternal age and educational attainment. Chi square (χ^2) test was used to

Table 1: Socio-Demographic Characteristics.

	N	Frequency
Mean Weight of the infants (Kg)	5.8 SD:1.5	
Mean Age of the children (months)	3.06 SD: 2.2	
Age of child (months)		
- **<1**	85	28.3
- **1-3**	125	41.7
- **4-6**	90	30.0
Age of mother (years)	26.2 ± 5.0	
Mothers age group (Years)		
- **≤ 24**	116	38.7
- **≥ 25**	184	61.3
Educational Qualification of Mother		
- **Primary or lower**	30	10.0
- **Secondary**	165	55.5
- **Above Secondary**	105	35.0
Educational Qualification of Mother		
- **Primary or lower**	30	10
- **Secondary or higher**	270	90
Religion		
- **Christianity**	291	97.0
- **Islam**	9	3.0
Mothers marital status		
- **Currently Married**	295	98.3
- **Not Married***	5	1.7
Number of previous deliveries before the present child		
- **None**	78	26.0
- **1-2**	142	47.3
- **≥3**	80	26.7
Total	**300**	**100**

*Include single, separated and divorced.

test for association between the outcome variable which is having had diarrhea in the last two weeks of the survey) and the exposure variables.

Ethical consideration

Ethical approval for the study was obtained from the Research and Ethics Committee of Benue State University Teaching Hospital, Makurdi. Signed informed consent of the mothers was obtained after explaining the aims and objectives of the study and what their participation entails. In order to guarantee anonymity of each participant, the names of the respondents, addresses and identification information were excluded.

Results

A total of 300 children between 0 and 6 months and their mothers were surveyed. Seven percent of the children had diarrhoea within two weeks preceding the study. Among mothers of children with diarrhoea, 7.8% were ≤ 24 years while, 6.5% were ≥ 25 years though the difference was not statistically significant.

Among infants aged 4-6 months, 9 (10.1%) aged had diarrhea disease. However, the relationship between diarhoea in the infants and their age group was not statistically significant (χ^2=3.17, P=0.205). Mothers that were aged 25 years and above had infants with more episodes of diarrhea disease than those aged 24 years and below, but the association was not statistically significant (χ^2=0.16, P=0.683). Similarly there was no significant associations between diarrhoea and mothers education (χ^2=1.68, P=0.6413) and number of previous deliveries (χ^2=0.23, P=0.890) (Table 1).

Mothers who had antenatal care in their last pregnancies had lower diarrhoea than those who did not (χ^2=4.70, P=0.030). Infants of mother who had health education during ANC had 9% diarrhoea prevalence compared to 2.6% of those who had no health education during ANC. Those who had health education also had significantly lower prevalence of diarrhoea (χ^2=4.701, P =0.030). A significantly higher proportion (13.6%) of children who were given water within 24 hours prior to the study had diarrhoea, compared with 3.6% of those who were not given water (χ^2=10.5, P =0.001), while 16.7%) of children given infant formula within 24 hours prior to the study had diarrhoea, compared with 4.9% of those who were not given infant formula. (χ^2=9.5, P =0.002). A significantly higher proportion (10.1%) of children who were not exclusively breastfed had diarrhoea, compared with 3.5% of those who were exclusively breastfed. A higher proportion (12.9%) of children who drank from a bottle with a teat the previous day had diarrhoea, compared with 5.2% of those who did not (χ^2=4.81, P=0.028) (Table 2) (Figure 1).

Table 2: Composite table showing distribution by having diarrhoea and selected factors.

	Had diarrhoea disease				χ^2	P – value
	Yes		No			
Variable	N	%	N	%		
Age of child (Months)						
< 1	7	8.2	78	91.8	3.17	0.205
1 – 3	5	4.0	120	96.0		
4 – 6	9	10.0	81	90.0		
Mother's age group (Years)						
≤ 24	9	7.8	107	92.2	0.16	0.683
≥ 25	12	6.5	172	93.5		
Educational qualification of Mother						
Primary or never been to school	2	6.7	28	93.3	1.68	0.641
Secondary	12	7.3	153	92.7		
Above Secondary	7	6.7	98	93.3		
Number of previous deliveries						
None	5	6.4	73	93.6	0.23	0.890
1 – 2	11	7.7	131	92.3		
> 3	5	6.2	75	93.8		
Mother had health education during ANC						
Yes	15	9.0	152	91.0	4.70	0.030
No	3	2.6	113	97.4		
Baby given water in previous 24 hours						
Yes	14	13.6	89	86.4	10.50	0.001
No	7	3.6	190	96.4		
Baby taken infant formula in the past 24 hours						
Yes	9	16.7	45	83.3	9.50	0.002
No	12	4.9	234	95.1		
Currently on EBF						
Yes	5	3.5	136	96.5	4.90	0.027
No	16	10.1	143	89.9		
Child drank from a bottle with a teat the previous day						
Yes	9	12.9	61	87.1	4.81	0.028
No	12	5.2	218	94.8		

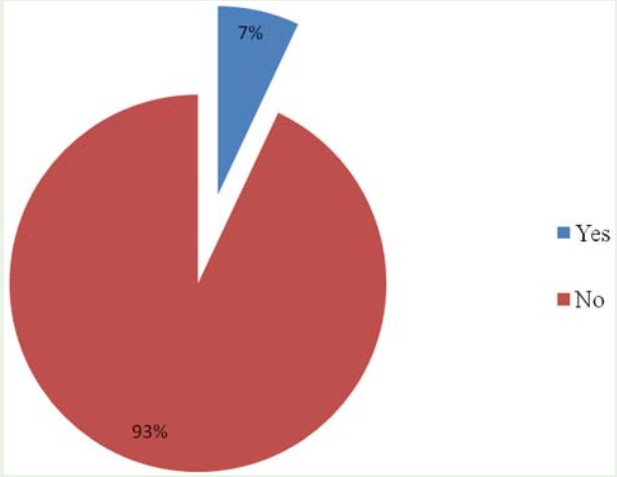

Figure 1: Proportion of infants who had diarhoea last two weeks.

Discussion

Seven percent of the 300 children between less than six months had diarrhoea. This is relatively low when compared with previous studies in Bangladesh (76.9%), Ethiopia (30.5%) and Sudan (25%) [16-19,20]. It is also lower than the estimates from the Nigeria Demographic and health survey (2013) which showed that two prevalence of diarrhoea among children under the age of five years was 9.5% in Benue state and national average was 10.2% [21] . Our finding may be due to relatively high exposure of mothers because of their urban residence. Most of the previous studies were community based and conducted in rural areas. Our finding may also be due to improvement in feeding practices particularly exclusive breastfeeding.

Mothers who attended antenatal care and received health education were significantly less likely to report diarrhoea among their babies. The reasons are obvious; exposure to antenatal and health education increases awareness on the importance of exclusive breastfeeding. Expectedly, mothers who were on exclusive breastfeeding had lower prevalence of diarrhoea among their infants. This finding is similar to many previous studies. Studies conducted in Ife and Jos Nigeria, showed that babies who were exclusively breastfed had fewer episodes of diarrhoea and other childhood morbidities [1,18]. Similarly, a review of studies conducted in Sub-Saharan Africa found that exclusive breastfeeding was significantly associated with lower risk of diarrhoea [14]. Babies on exclusive breastfeeding have higher immune status and less chance of acquiring infective agents from complementary feeds and feeding bottles. This was supported by other findings from our study, including the association between diarrhoea disease and use of feeding bottles and taking water.

Our study showed that Sociodemographic factors such as age of infants, age of mothers, and mother's education were not significantly associated with diarrhoea disease in infants. Previous studies have shown different findings. For instance a study conducted among orphans in Makurdi showed that age of infants was associated with prevalence of Giardia lamblia and Cryptosporidium parvum [19]. Similarly in Sudan age and social status were significantly associated with diarrhoea disease in infants less than six months [22]. In Bangladesh and Ethiopia, infants of educated mothers are less likely to have diarrhoea [16,20]. Our finding may be due to the fact that many avenues are available for mothers to prevent diarrhoea especially because of the urban location of our respondents. Some of the opportunities include radio and TV campaigns, and availability and utilization of antenatal services and under five clinics.

This study has a few limitations. The respondents were mostly urban residents and so the findings may not be a true representative of infants in state. In addition, it was a health facility based study and factors that hinder some mothers from bringing their babies to under five clinic, may also be associated with our outcome of interest i.e. diarrhoea. The definition of diarrhoea was limited to the previous two weeks. Even though this was meant to enhance recall, it excludes those who have had the disease earlier than two weeks; our study therefore, is liable to underestimating the real burden of diarrhoea disease among the study population.

Conclusion

The prevalence of diarrhoea is low among infants attending under five clinics in Makurdi. Diarrhoea was significantly associated with not having health education during ANC, drinking from bottle with a teat in the previous day prior to the study, given water in the previous 24 hours, use of infant formula, non- exclusive breastfeeding. Sociodemographic characteristics were not associated with diarrhoea. There is need to step up efforts in encouraging exclusive breastfeeding in the first six months through health education during antenatal care, media campaigns and community dialogues. More studies should be conducted targeting rural communities in the state.

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