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The Impact Of Socioeconomic Status, Environmental Factors And Seasonality On Under 5 Diarrhoea In Wukari Lga.

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ABSTRACT
Factors that influence the prevalence of under five diarrhoea in the ten wards of Wukari Local Government Area of Taraba State were investigated. Diarrhoea has been a life threatening disease. It is estimated that 151,700 children die annually in Nigeria due to childhood diarrhoea. A field survey and Secondary data were used for this study . The study population was under five children who were residents in the study area during the survey period. In this study, 405 parents or caregivers who have children under 5 at the time of the survey were selected using a random sampling techniques. Structured questionnaires were used to collect information from the 405 respondents and the data were entered and analyses as primary data. Secondary data from HMIS, DSNO and Hospital M&E data were also obtained and analyzed.
The factor that influence the prevalence of diarrhea among under five children in the study area were identified.The socioeconomic characteristic of the respondent obtained indicated 75% of respondents earn < N20,000 per month while 79% have no formal education. Other variables such as age of the child, unprotected water source and storage, toilet facilities, feeding and breast feeding practices were found to be positively associated risk factors for childhood diarrhea. This study also revealed that diarrhoea episode occurs during the dry and hot seasons of the year. Lives can be saved with correct management of childhood diarrhea. Health care services and management of diarrhea in children is not adequate, even among those seen in health facilities. More efforts to improve health seeking behavior and quality of care for childhood diarrhea in both health facilities and at community level is an urgent priority for both prevention and control. This is achievable through the implementation of the WASH policy. The results of this study have critical policy implications for health intervention programs and emphasize that promoting women education levels and the delivery of improved sanitation and hygiene through efficient educational programs and financial empowerment to parents/caregivers is a priority.

Keyword: *Impact, Socioeconomic Status, Environmental Factors, Seasonality, Under 5 Children Wukari*

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I. Introduction;

Diarrhoea is defined as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). However, frequent passing of formed stools is not diarrhoea, nor is the passing of loose, "pasty" stools by breastfed babies.

Diarrhoea diseases collectively constitute a serious public health challenge globally, especially as the leading cause of death in children coming second after respiratory diseases. Childhood diarrhoea affecting children under the age of five accounts for approximately 63% of the global burden (WHO, 2019). The prevalence of diarrhoea diseases varies greatly with the seasons and a child's age. The youngest children are most vulnerable with prevalence being highest in the first two years of life, though declines as the child grow older. Diarrhoea is responsible for killing around 525 000 children every year. Worldwide, diarrhoea diseases are reported as the leading cause of mortality among children aged five years and below (UNICEF, 2018). In Africa, Asia, and South America, diarrhoea accounts for one in eight deaths among children younger than 5 years (Keddy et al., 2016; Kotloff, et al., 2017) and an estimated 16% of child deaths in Nigeria annually (Charyeva et al., 2015). In Ogun State, Nigeria, diarrhoea is one of the three diseases (the others being typhoid fever and cholera) which together are the second most prevalent water-related disease (Omole et al., 2015).

Diarrhoea can last several days, and can leave the body without the water and salts that are necessary for survival. In the past, for most people, severe dehydration and fluid loss were the main causes of diarrhoea deaths. Now, other causes such as septic bacterial infections are likely to account for an increasing proportion of all diarrhoea-associated deaths. Children who are malnourished or have suppressed immunity as well as people

living with HIV are most at risk of life-threatening diarrhoea. Accurate and timely detection of the aetiology of these diseases is very crucial for better treatment and management

Diarrhoea is usually a symptom of an infection in the intestinal tract, which can be caused by a variety of bacterial, viral, parasitic and fungal organisms. Infection is spread through contaminated food or drinking-water, or from person-to-person as a result of poor hygiene. Each year,third world countries of Asia, Africa and Latin America, record approximately five million deaths of children under five years of age from acute diarrhoea. About 80 per cent of these deaths are in the first two years of life (Lucas & Gilles, 2009). In the developing world as a whole, about one-third of infant and child deaths are due to diarrhoea and approximately 70 per cent of diarrhoea deaths are caused by dehydration.

In Nigeria, infant mortality rates are twice as high in rural settings as they are in urban ones due to poor hygiene and poor sanitation, also of about three million infant births in Nigeria, approximately 170,000 result in deaths that are mainly due to poor knowledge and management practices of childhood diarrhoea (UNICEF, 2022). Several factors are likely to contribute to the high rate of diarrhoea morbidity and mortality in children under-five years; these include poverty, female illiteracy, poor water supply and sanitation, poor hygiene practices and inadequate healthcare services (Park, 2019). Malnutrition is another established risk factor for mortality among children with diarrhoea disease. This may be due to inadequate case management. A malnourished or immune suppressed child faced with diarrhoea will have little chance of survival than the non-malnourished

The consistency and the volume of stool constitute how to classify diarrhoea. World Health Organization, WHO (2014) classified diarrhoea as acute or persistent based on its duration.

An episode of diarrhoea that lasts less than two weeks is acute diarrhoea, while diarrhoea that lasts more than two weeks is persistent. Calogero et al., (2000) further classified diarrhoea according to its typology into Secretory diarrhoea, osmotic diarrhoea and exudative diarrhoea.

Secretory diarrhoea results from active distortion in the intestinal epithelium stimulated by the presence of toxin, chemical or nutritional product in the intestinal lining.

Osmotic diarrhoea is caused by the presence in the intestinal lumen of osmotically active solutes that have higher osmotic concentration and are poorly absorbed by intestine such solutes are magnesium sulphate or magnesium hydroxide.

Exudative diarrhoea is associated with damage to the mucosa lining leading to outpouring of mucus, blood and plasma protein among other substances.

Diarrhoea is a symptom of infection caused by some groups of micro-organisms namely; Viruses, bacteria and protozoa or parasites (Lucas & Gilles, 2009). The main agents are grouped in the following ways: Viruses (e.g. *Rota virus*); Bacteria *(e.g. Shigella, Escherichia coli, Vibrio cholerae, non typhoid Salmonella , campylobacter spp),* Parasites *(e.g. Entamoeba histolytica, crytosporidium and giardia lamblia)* and fugal (e.g *condida albican, candida tropicalis*). (Talwar, et al., 2019) *(*PubMed 2022).

II. Material And Methods ;

The study was carried out in wukari LGA which is one of the sixteen LGAs in Taraba State. Wukari is made up of two wards ; wukari I, comprising of Akwana, Chunku, Hospital Kente and Rafin-Kada. Wukari II, is made up of Avyi, Bantaje, Jibu, Puje and Tsokundi. Applying (Taro, 1976) method for sample size determination of the 374,800 population , a minimum of 400participant made up to 420 who had under 5 children during the period of the research were enlisted. Structured and pre-tested questionnaires were issued to them to obtained primary data. Secondary data were obtained from health management information system (HMIS), disease surveillance and notification officers (DSNO) and hospital monitoring and evaluation (M and E) unit. The data were collected and analyzed in percentage

III. Result

Of the 420 participants issued with the questionnaires, 405were retrieved while the remaining participants could not be traced.

Table 1: History of diarrhoea in U-5s reported by respondents from the various wards

Wards	No of diarrhoea reported
Wukari I	
Akwana	31
Chonku	21
Kente	30
Hospital	36
Rafin-Kada	29
Wukari II	
Avyi	32
Bantaje	40

Jibu	41
Puje	36
Tsokundi	32
Total	328

Table 2: Data on Socioeconomic characteristics of the respondents in the study area

Variables	Numbers	Percent
Age		
1-15	8	1.96
16-30	67	16.5
31-45	201	49.6
46-60	121	29.9
61 and above years	8	1.96
Sex		
Male	44	11
Female	361	89
Marital Status		
Single	41	10.1
Married	253	62.4
Divorced	24	5.9
Widow	35	8.6
Single parent	34	8.4
Widower	18	4.4
Educational Status		
Able to read and write only	259	64
formal Education	85	21
No formal education	61	15
Income of Respondent per month in Naira		
₦ 1-20,000.00	305	75.3
₦ 21,000.00-40,000.00	48	1.8
₦41,000.00-60,000.00	20	5
₦61,000.00-80,000.00	20	5
₦81,000.00-100,000.00	8	1.9
100,000.00 and above	4	1
Occupation		
Trading	52	13
Farming	84	21
Civil service	44	11
Artisan	20	5
house wife	205	50
House hold size		
1-2	34	9
3-5	101	25
6-9	230	56
10 and above	40	10

Table 3: Environmental Characteristics Of respondents In The Study Area

Variables	Numbers	Percent
House floor		
Local mud house	129	32
Bungalow cemented/tiled	276	68
House Location		
Sub urban slumps	142	35
Government reserve area GRA	32	8
Close to farmland	85	21
Close to stream or river	146	36
Do animal leave in the house ?		
Yes	323	81
No	55	12
Can't Say	27	7

How do you dispose refuse?				
Burning	21		5.2	
Pit		22		5.4
Open field		237		58
Garbage can		125		30.9
Is latrine available?				
Yes		336		83
No		61		15
Cant' say		8		2
Source of water for drinking.				
Pipe/protected well		153		38
Unprotected well /stream	251		62	
Water collection container/storage				
Pot		166		41
Plastic container	94		23	
Jerry can		145		36
Which period of month did your child have diarrhoea ?				
January-March	162		40	
April- June		28		7
July- September	86		21	
October-December		129		32

Figure 1: Breast Feeding Methods as Reported By the Respondent

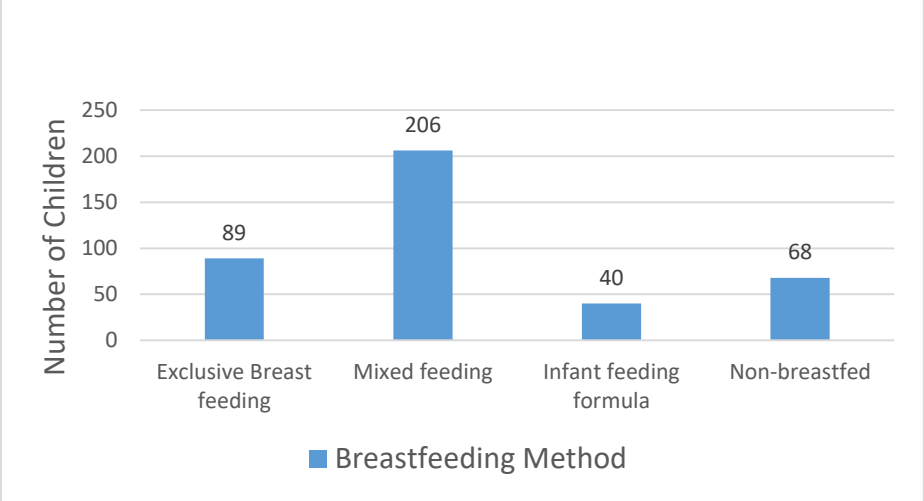
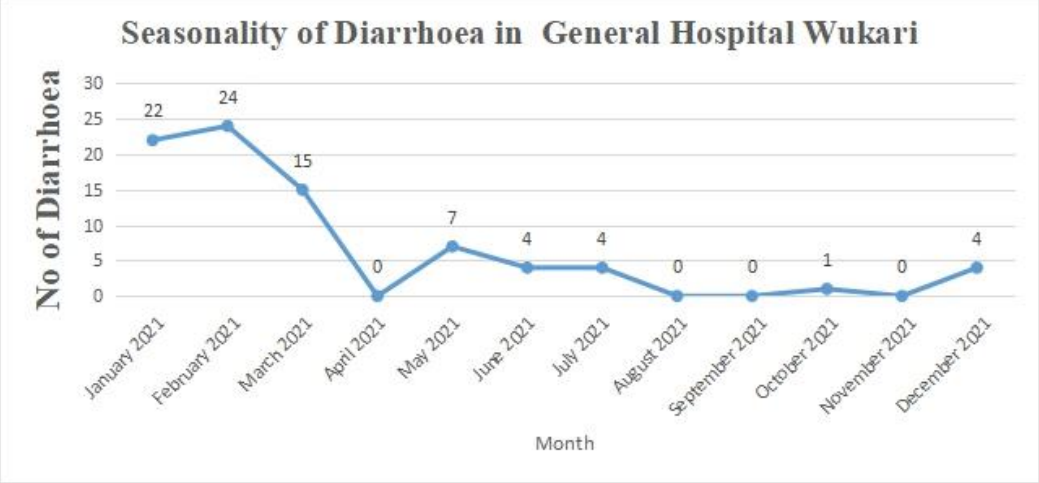
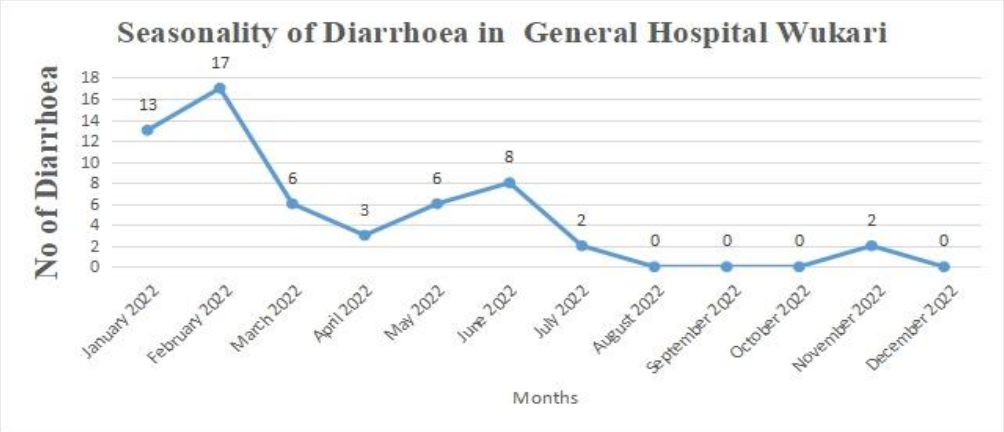


Figure 3: Seasonality of Diarrhoea in children Under 5 2021



Source; HMIS Monthly Report, 2021 IDSR

Figure 4: Seasonality of Diarrhoea in children Under 5 2022



Source; HMIS Monthly Report, 2022 IDSR

IV. Discussion

Socioeconomic status , environmental factor and seasonality of under 5 diarrhoea in wukari LGA were investigated through structured questionnaires to the respondent secondary data obtained from IDRS reporting platforms, HMIS,NDHS and health care facility record. The data generated from the basis of mitigation against diarrhoea disease among the age group. From (Table I) the reported cases of diarrhoea ranged from 21-40 in both wards in Wukari suggesting that the infection has uniformly spread in the Local Government area. Overcrowding, poor environmental hygiene, low income and low literacy levels are important factors the influence the prevalence of diarrhoea (Table 2). Household size of 6-9 person given 56% of the respondents earn was high. Again that 75.3% ≤ ₦20,000.00 is terrible. It is also alarming that only 4(1%) of the respondents earn a monthly income of ≥₦100,000.00 (Table 2). Studies have shown that children from poor and middle income household are at a high risk of diarrhoea disease compered of children from rich household (Apange et al,.2021) the economically disadvantaged individuals could not afford transport fare to health facilities or access balanced diet and are more likely to encounter malnutrition that precipitate and elongates the duration of diarrhoea in under 5 children (Black et al,. 2015). Considering the general economic hardship and hyperinflation, worsened by the recent removal of fuel subsidy, government in particular and concerned individuals will seriously need to intervene to address these issues

Concerning breastfeeding, this study revealed that about 89% of the mothers practiced exclusive breastfeeding for six months(Fig I). It is a known fact that the risk of developing severe diarrhoea is many times greater in infants who are not breast-fed than in those who are exclusively breast-fed (Rothstein, et al.,2019).

From (Table 3) on environmental factors, This Study showed that majority of the respondents (66%) use pit latrine and only 10% use water cistern. Children from households that have no latrine are more likely to develop acute watery diarrhea than children from households with a clean latrine. This finding was consistent with former studies in rural area of North Gondar in India (Getachew et al., 2018) where more diarrhoea cases were reported in areas where open defecation was commonly practiced. It is arguable that only 10% engage in open defecation most likely, the respondents may not be comfortable to disclose this practice to avoid embarrassment. After all, we come across excreta near house holds, uncompleted building and even around public places that have toilets as some people may prefer open deification due to congestion of available toilets.

Putting animals in the same home is a common practice in the study area and this could potentially be a source of contamination. Three hundred and twenty three (322) that is (81%) of respondents have animals in their houses or compound (Table 3). Human interaction with these animals could predispose children to infection especially diarrhoea and other zoonotic infections as supported by studies conducted in Debre Berhan in Ethiopia (Alelign et al., 2016), where diarrhoea cases were reported to be more prevalent in homes where domestic animal are reared.

Majority of the respondents 251(62%) source their drinking water from unprotected well or streams (Table 3), also a potential sources of contaminated water thereby leading to an increase in occurrence of diarrhoea diseases in children. Moreover, a study by (Alloysius et al., 2017) on bacteriological analysis of the well water samples in wukari showed a high level of bacteria load, the coliform count exceeded the acceptable limit which makes the water unsuitable for drinking and cleaning. Also, bacteria isolated from the various samples were mostly enteric organisms which are potential pathogens for diarrhoea disease and public health concern. Many studies have shown that improvements in drinking water and sanitation (WASH) decreases risks of diarrhoea and such improvements might include for example use of water filters, provision of high-quality pipe borne water, sewer connections and clean latrines A certain community was suffering from

infection due to Dracunculus Medinensis and were provided with pipe borne water and bore holes but maintenance culture was no instituted the community was almost getting free from the infect but when the water sources broke down and there was no maintenance, they reverted to getting water from the contaminated streams and the cycle of drancunculiasis continued there is need for consistent portable water supply.

On seasonality of diarrhoea in children, majority of the respondents reported episodes of diarrhoea in months of October to December and from January to March and these correspond with the dry and hot seasons, the last and first quarter of the year, with 40% and 38% respectively(Table 3). This could be attributed to water shortage, and unsafe source of water for drinking and food preparation during these periods (Bhagwat et al., 2019). It could be argued that most households in the rural and sub urban areas collect, store and use rain water for use during the rainy season thus accounting for lower occurrence of childhood diarrhoea in the rainy seasons, as against fetching from unprotected wells and stream during dry and hot season. A similar study in Ghana reported seasonality of diarrhoea peak occurring before the rainy season (May to August) (Anyorikeya et al., 2016) . However, another study in Plateau state of Nigeria differed from this research finding by showing U5 diarrhoea peaking prior to the high rainfall period and a second peak towards the end of the high rainfall (Jiwok et al., 2021).

Data collected from Secondary sources HMIS and IDSR platform show that seasonality of diarrhoea in under five pick during the dry and hot season of between November and January in General Hospital Wukari in 2021 and 2022 (Fig 2, Fig 3) the platform date were consistent the result from the primary data, because of water shortage poor hygiene practice and sanitation. In this peak period, People are forced to use well water coupled with poor water storage, water fetching practice and animals are left to roam around in these periods. The agreement between the primary and secondary data on seasonality of diarrhoea calls for urgent intervention targeted at the hot months of the year. Functional and consistently maintained borehole or other source of safe or portable water will drastically reduce diarrhoea in under 5 in wukari LGA

V. CONCLUSION

Under-five children diarrhoea is significantly high and has been identified as the major cause of mortality and morbidity worldwide (WHO 2022). This study showed that prevalence of diarrhea among children under five years of age in Wukari is a big problem. Various important socioeconomic, environmental and behavioral risk factors that lead to the occurrence of diarrhea in children under five were identified and needed to be focused on. Childhood diarrhoea is higher in low and middle income communities like wukari which are highly associated with lack or inadequate clean water for drinking as well as poor sanitation and hygiene practices.

Adequate measures should be part in place to militate against under 5 children in wukari LGA. Armed with the fact that the peak of diarrhoea are the hot season of the year, concerted effort should target intervention at these peak period to minimize under 5 diarrhoea in wukari LGA.

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