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A SIMPLE GASTROENTERITIS DYNAMICS IN KEBBI STATE, NORTHWESTERN NIGERIA

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ABSTRACT: *This paper presents a simple Gastroenteritis dynamics in Kebbi state, northwestern Nigeria based on age-range and gender in Kebbi state using the data obtained from the Epidemic Control Unit, Ministry of Health, Kebbi State. The results appropriately revealed that Gastroenteritis is more common amongst females especially within the age-range of 1-10 years and confirms that there is no contradiction to the existing researches of the prevalence of the disease within this age group. The study draws attention to the health hazards posed by Gastroenteritis in the studied area. The urgent need for a decisive control intervention to stem this problem cannot be overemphasized.*

KEYWORDS: Age-Range, Gastroenteritis, Gender, Malthusian Model.

INTRODUCTION

Gastroenteritis is a medical condition characterized by inflammation of the gastrointestinal tract that involves the stomach and the small intestine resulting in some combination of diarrhea, vomiting, and abdominal pain and cramping [1]. Although unrelated to influenza, it has also been called stomach flu or gastric flu. The major causes of this illness include limited access or poor quality of water, poor food hygiene and sanitation among others. The bacterial pathogens usually responsible include rotavirus in children and Campylobacter or norovirus in adults [2,3,4]. Transmission may occur due to consumption of contaminated improperly prepared foods or water or via close contact with individuals who are infectious.

Approximately, about 1.3 million children die before their 5^{th} birthday with most of these occurring in the world's poorest nations. Most of these deaths are preventable. In Nigeria and many developing countries, there has been little or no change in child mortality rate for over the past decades [5,6]

Elliott [7] and Webber [8] estimated that three to five billion cases of gastroenteritis occur globally on an annual basis mainly affecting children and those in the developing world. More than 450,000 of these cases are caused by rotavirus in children less than 5 years of age. According to the Center for Disease Control and Prevention (2011), in 1980, gastroenteritis from all causes caused 4.6 million deaths in children, with the majority occurring in the developing world.

In Nigeria, significant effort has been made in the past two decades towards the reduction of childhood morbidity and mortality through introduction of policies like improved immunization coverage, provision of good health facilities and increase in the number of health personnel. Despite these efforts, childhood mortality rate is still high. Recent data report infant and under-5 mortality rates of 88 and 14 deaths per 1000 live births respectively [9-12].

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Inadequacy of local epidemiological data hinders the development of appropriate intervention strategy; most reports in Nigeria are from hospital-based studies and in spite of their limitations have been a useful tool [13, 14].

Table 1: THE DISTRIBUTION OF GASTROENTERITIS AMONG AGE-GROUP IN KEBBI STATE

Age Group								
Year	**<1**	**1-10**	**11-20**	**21-30**	**31-40**	**41-50**	**>50**	**Total**
2008	12	45	29	21	17	13	20	157
2009	18	51	19	17	21	15	31	172
2010	71	95	105	79	88	67	74	579
2011	61	109	119	99	93	89	145	715
2012	39	71	89	58	51	42	72	422
Total	201	371	361	274	270	226	342	2045

The death toll of gastroenteritis has been either under-reported or over-blown by different media accounts. As researchers, the onus lies on us to give professional/scientific and unbiased accounts of the gastroenteritis situation in Kebbi State of Northwest of Nigeria. Furthermore, it is important to note that reports of gastroenteritis vary disproportionately between the northern and southern parts, with a high incidence rate reported in northern states.

The aim of this study is to present the crescendos of Gastroenteritis in Kebbi state, northwestern Nigeria and to examine the dependency in terms of age group and gender.

MATERIALS AND METHODS

Study Design and Centre

Cross sectional descriptive study, designed to detect and determine the prevalence of gastroenteritis among populate in the study area, admitted at the Federal Medical Centre Kebbi state, Nigeria between 2008 to 2012. Kebbi State is a state in north-western Nigeria with its capital at BirninKebbi. The State was carved out of Sokoto State in 1991. Kebbi State is bordered by Sokoto State, Niger State, Dosso Region in the Republic of Niger and Benin Republic. It has a total area of 36,800 km². The dominant religion of the people is Islam; Kebbi State has diverse ethnic groups, the dominant among which are Hausa, Fulani, Kabarawa, Dakarkari, Kambari, Gungawa, Dandawa, Zabarmawa, Dukawa, Fakkawa and Bangawa. These ethnic groups speak diverse languages and dialects, with Hausa language spoken across the state. Kebbi State is made up of four emirate councils (Gwandu, Argungu, Yauri and Zuru). Kebbi State is divided into 21 Local Government Areas (LGAs), The Local Government Areas are: Aliero, Arewa, Argungu, Augie, Bagudo,Birnin-Kebbi, Bunza, Dandi, Danko-wasagu, Fakai, Gwandu, Jega, Kalgo, Koko/Besse,Maiyama, Ngaski, Sakaba, Shanga, Suru, Yauri and Zuru.

Table 2: THE DISTRIBUTION OF GASTROENTERITIS AMONG GENDER

Year	**Male**	**Female**

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2008	68	89
2009	77	95
2010	275	304
2011	346	364
2012	197	225
T0tal	963	1082

The study was carried out retrospectively using data retrieved from ward register and the hospital's Medical Records Department, between 2008 and 2012. Data extracted from the records included age and sex. The calculated values were compared using Malthusian population growth model with the actual data obtained from the hospital. Analysis involved calculating simple percentages, proportions and constructing charts and tables.

RESULTS

A total of 1703 (83.3%) patients were diagnosed with gastroenteritis in the hospital during the time of study out of 2045 (Excluding adults greater than 50) that were seen during the study period. Of this, 201 (11.8%) are infants (< 1), 371 (21.8%) are of the age 1–10, 361 (21.2%) of them are of age 11-20, 274 (16.0%) are of age 21-30, 270 (15.9%) are of age 31-40, 226 (13.3%) are between age 41-50. 963 of them were males and 1082 were females with a male: female ratio of 0.9:1. In Table 1, the pattern of infection real that the infection was highest in the year 2011 and least in the year 2008. It was discover from Table 2 that more females (52.9%) were more infected than male (47%). This might be as a result of their low exposure to western education compared to their male counterparts who are meticulous on the consumption of unhygienic food and fruits. Most of those infected were children 371 (21.8%) of age 1-10 years.

After developing a first order differential equation (the Malthusian model based on the assumption that the rate of spread of an infectious disease is proportional to the population of the infected which eventually was systematically used from the data obtained from the Epidemic control unit, Ministry of health, Birnin kebbi, Kebbi state which was analyzed and the rate of growth of the infections based on age group and gender was obtained. From the data obtained, fluctuation was a major factor which was a point of interest while on the calculated data, there was a steady pattern in the results, and this is as a result of the exponential constant (Figure 1).

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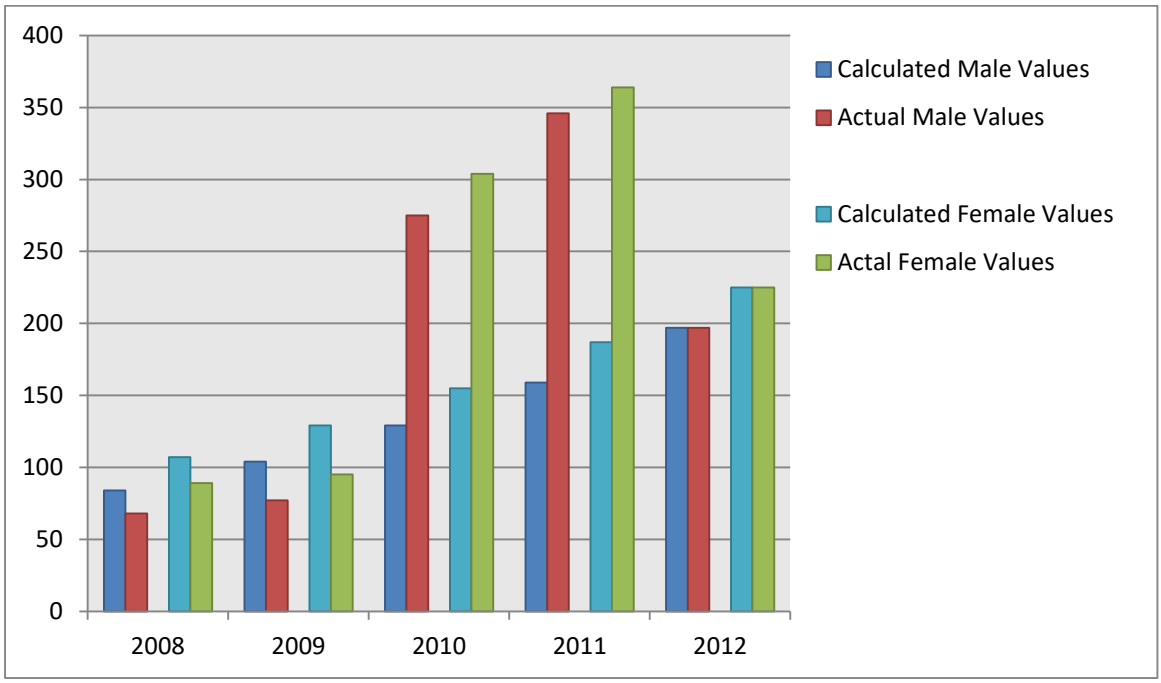

Figure 1: the malhusian and actual distribution of gender cases

DISCUSSION

Gastroenteritis still remained an important cause of mortality despite the wide use of oral rehydration therapy. This portrayed a probable lack of application of the methods of diarrhoea control. Since the rotavirus accounts for majority of the cases of severe acute gastroenteritis globally, methods to reduce the incidence of acute gastroenteritis by this organism must target the reduction in the load or virulence of the microbe [15]. Vaccination had been shown to be more effective than other control measures such as improvement in water supply, sanitation and hygiene [16]. Thus, inclusion of a rotavirus vaccine in the routine national immunization schedule might reduce the mortality from this disease.

Improving basic education, especially female education, has a powerful influence on both mortality and fertility. Kebbi state grapples with low girl-child education. Statistics from the Federal office of statistics (2004) shows that, literate women constitute only 20% from the Northwest [17]. This ugly trend has over the years continued to deepen the educational and health inequality between male and female in the state. This dehumanizing ignorance has continued to plague most rural dwellers in the state as they see no need for enrolment of the girl-child in schools.

CONCLUSION

The results appropriately revealed that Gastroenteritis is more common amongst females especially within the age-range of 1-10 years. To reduce these spread of disease, preventive strategies such as proper distribution of clean and healthy water outlets all over the state, innovative and high quality health promotion programs on the prospects of adopting and

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maintaining a state of healthy lifestyle, improved hygiene and sanitation should be implemented in the community.

The study draws attention to the health hazards posed by Gastroenteritis in the studied area. With the knowledge of the major causes of the spread of this disease among children in Kebbi, the urgent need for a decisive control intervention to stem this problem especially among female children cannot be overemphasized.

The medical officers in the facility should be equipped with the relevant skills to ensure early diagnosis and prompt management of children presenting with emergencies; equipment and supplies to improve the management of the cases should also be put in place.

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