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Effect of Health Education on Knowledge of Prevention of Under-five Diarrhoea among Mothers Attending Immunization Clinic in Ibadan Metropolis

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Abstract: Maternal and child health constitute significant indicators of the overall health status of a nation and Nigeria remains a country with low maternal and child health indices. High maternal and child morbidity and mortality rate and ratio, among others have repeatedly dwarfed Nigeria's quest to advance and maintain a steady record in the United Nation Development Programme annual Human Development Index Report. Morbidity and mortality associated with under-five diarrhoea make up significant proportion of the poor child health record in the country despite the fact the disease can be prevented and managed using easy and cost-effective strategies. Adequate knowledge of this disease and its control, beyond mere awareness, is crucial to realizing drastic reduction in diarrhoea related sickness and death among children. Health education has overtime proven to be a potent tool in impacting health knowledge which is in turn vital to bringing about attitudinal change thereby resulting in positive health behaviour necessary for prevention of diseases, as well as for the protection and promotion of personal and community health. Previous empirical evidence has shown that mothers of under-five children in Ibadan metropolis have poor level of knowledge on diarrhoea prevention and control. It is in the bid of finding solution to this problem that this study was designed to investigate the effect of health education on knowledge of prevention of under-five diarrhoea among mothers in Ibadan metropolis, Oyo State, Nigeria. The pretest-posttest quasi experimental non-equivalent groups design using 2×2×4 factorial matrix was adopted and a sample of 196 participants was drawn for the study. Data was collected using self-developed and validated questionnaire with a reliability coefficient of 0.76 on the Cronbach alpha scale and analyzed using ANCOVA at 0.05 alpha level. The result revealed that the Health Education intervention tagged diarrhoeal control education was highly effective in improving the knowledge of mothers on under-five diarrhoeal prevention. Adoption of the intervention programme and getting its contents across to others using information, education and communication materials and the mass media was recommended.

Key words: diarrhoeal control education, knowledge, prevention, under-five diarrhoea

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1. Introduction

Maternal and child health constitute significant indicators of the overall health status of a nation and Nigeria remains a country with low maternal and child health indices. High maternal and child morbidity and mortality rate and ratio, among others have repeatedly dwarfed Nigeria's quest to advance and maintain a steady record in the United Nation Development Programme annual Human Development Index Report. Morbidity and mortality associated with under-five diarrhoea make up significant proportion of the poor child health record in the country. Diarrhoea remains a serious public health concern globally, despite the popular, easy and cost-effective recommended strategies. It is widely recognized to be the second leading cause of childhood morbidity and mortality in many developing countries, particularly in sub-Saharan Africa. According to United Nation International Children Fund and World Health Organization (UNICEF and WHO, 2009), the disease is responsible for nearly one in five child deaths (about 1.5 millions child`s deaths each year) which account for 16% of all under-five deaths every year. Diarrhoeal morbidity was estimated to be 2.5 billion of acute episodes annually, affecting growth and cognitive development of children below five years and resulting in illness of longer than two weeks duration in 10% of cases (Checkley, Buckley & Gilman, 2008).

The major sign and symptom of diarrhoea is evident in the passage of three or more loose or watery stools in a 24-hour period. It connotes an increase in daily stool fluidity, frequency or volume from what is considered to normal. It can be acute or chronic, and may also contain blood as in dysentery. Diarrhoea can result from a wide range of factors, which include infection such as bacterial, protozoa and viral infections, examples are rotavirus, cholera, and typhoid enteritis which are transmitted through faecal-oral route. It can also result from non-infective origin such as dietary indiscretions and problems of mal-digestion and mal-absorption (UNICEF and WHO, 2009).

The alarming prevalence of diarrhoea is however not a global phenomenon but highly concentrated in the poorest regions of the world especially in sub-Saharan Africa and South Asia. About half the world's deaths due to diarrhoea occur in just five mostly poor and populous countries: India, Nigeria, Democratic Republic of the Congo, Pakistan and Ethiopia. The concentration of deaths due to diarrhoea among children from the poorest countries reflects a broader trend of uneven progress in reducing child mortality. Although far fewer children are dying today than 20 years ago: about 12.6 million child deaths in 1990 compared with 6.6 million in 2012 (UNICEF, 2012). This dramatic reduction in diarrhoeal mortality is traceable to rapid expansion of basic public health and nutrition interventions. However, evidence abound that this progress has little effects on morbidity rate which still remains very high (2.5 billion cases per year) especially in sub-Saharan countries of which Nigeria is one (Kosek, 2003; Checkley, 2008).

In Nigeria, available reports indicate that more than 194,000 Nigerian children die of diarrhoea annually (UNICEF, 2012). WHO (2006) submitted that an estimated 94% of the disease burden is attributable to the environment and associated with risk factors such as unsafe drinking water, lack of sanitation and poor hygiene. However, Ogunrinde, Raji, Owolabi and Anigo (2011) observed that poor weaning methods which promote bottle feeding and insanitary environment also make children susceptible to infections including diarrhoea. In addition to these, some parents adhere strongly to superstitious beliefs and traditions and accept incorrect facts with respect to the causes and management of diarrhoea. These superstitious beliefs hamper diarrhoea prevention and management thereby increasing incidence and prevalence of the disease.

Medical interventions in the present and coming centuries are prevention, rather than curative-oriented. As

such, advocacies and efforts are targeted at preventing, rather than curing diseases. Prevention has been defined as anticipatory action taken to reduce the likelihood of some future undesired event or condition or to increase the likelihood of some future desired event or condition (WHO, 1998). In the context of this study, diarrhoea prevention refers to efforts and strategies aimed at reducing the incidence of diarrhoea. Notable strategies have been found to reduce the likelihood of occurrence of negative health outcomes including diarrhoea among children and exclusive breastfeeding is one. Exclusive breastfeeding during the first six months of life has been identified as one of the most cost-effective child survival interventions. Kramer and Chalmers (2001) stated that it greatly reduces the risk of a young infant dying from diarrhoea by 40% in infancy, with even greater protection against hospitalization or duration of diarrhoea. They also affirmed that exclusive breast feeding decreases diarrhoeal disease mortality seven folds.

WHO Health Reports (2005) stated that exclusive breastfeeding rates have increased markedly in many countries with previously high mortality rate from diarrhoea since 1990. Despite this progress, fewer than 40% of children below 6 months of age in most developing countries are exclusively breastfed. In Nigeria, it has been reported that exclusive breastfeeding rate has dropped from 17% in 2003 to 13% in 2008 (WHO, 2010). Apart from exclusive breastfeeding, hygienic conditions are also crucial to diarrhoea prevention.

Sanitation, hygiene and water supply which are highly deficient in sub-Saharan Africa and other developing regions of the world might also have significant contribution to diarrhoeal morbidity and mortality in these regions. According to WHO (2002) 88% of all diseases due to diarrhoea are attributed to poor sanitation, poor hygiene and unsafe drinking water. Sub-Saharan Africa is one of the regions with the lowest coverage of improved sanitation (31%), as observed by WHO (2006). With evidence of 32% reduction in diarrhoeal incidence due to interventions built around sanitation (Fewtell et al., 2005), improving sanitation poses as a potent mechanism and strategy of diarrhoeal prevention. In the same vein, a more recent study by Traore, Cousens, and Curtis (2010) revealed 50% increase of diarrhoea risk among children in settings where stool is disposed of at ground level compared to settings where provision of hygienic disposal of human faecal matter resulted in reduction of diarrhoeal mortality and morbidity. The place of this knowledge in diarrhoeal prevention among under-five mothers has serious implication for diarrhoeal control in Nigeria and other vulnerable regions of the world.

Water supply and use are fundamental to the prevention and amelioration of diarrhoea disease. It is necessary for the best sanitation and personal hygiene which are two major co-factors in the causation of diarrhoea disease. Access to clean water is considered to be a fundamental human right. The WHO (2008) states that a human being requires a minimum supply of 20 litres of water daily. A recent meta-analysis of the effect of water supply interventions on diarrhoea incidence by Cairncross, Hunt and Boisson (2010) confirmed a 25% reduction in the illness. This corroborated the effect noted in observational studies in the 1970s and 1980s. There is evidence that the supply of ample clean water either at the point of supply or through good household water treatment and/or storage practices protects against diarrhoeal disease (WHO, 2005). The June 2012 report of UNICEF established that Millennium Development Goal target on use of an improved drinking water source has been met globally as of 2010, yet, it is disheartening to note that 783 million people — mostly in the poorest households and rural areas still do not have access to clean water, and 2.5 billion also do not use improved sanitation facility.

Vaccination against diarrhoeal causing agent — rotavirus is also another notable prevention strategy against the disease. Widespread use of vaccines has therefore contributed to a dramatic drop in deaths due to diarrhoeal diseases in the developed world; rotavirus is the most common cause of diarrhoeal hospitalizations and deaths in young children under 5 years. Existing rotavirus vaccines have been shown to dramatically reduce the number of

hospitalizations and deaths. WHO recommends its use in all countries, particularly ones in which diarrhoea is a major cause of childhood deaths like Nigeria, yet many mothers are still not making use of it. Rotavirus vaccines were introduced in the United States and many Latin American countries in 2006, and in 2012 they finally reached children in several developing countries including Nigeria. Other vaccines such as cholera, typhoid and paratyphoid vaccines and vaccines against enterotoxigenic E. coli and Shigella are also available.

The acquisition and utilization of knowledge relating to these prevention strategies are central to achieving reduction in the incidence and prevalence of diarrhoeal. Olopha (2016) in an empirical survey of knowledge of childhood diarrhoea prevention among mothers of under-five in Ibadan reported poor level of knowledge in this regard. Previous studies in other areas have shown that health education significantly improved mothers' knowledge on diarrhoea prevention (Omotade, Adeyemo, Kayode & Ladepo, 2000; Gupte, 2001; Ghimire, Pradhan & Maskey, 2010; Ansari, Ibrahim & Shantar, 2012). Similarly, a study done by Haroun, Mahfouz, Mukhtar, and Salah (2010) revealed that health education activities like personal communication, focused group discussion and lectures produced a significant improvement in mother's knowledge on diarrhoea prevention.

Anyanwu and Okeke (2016) citing Green and Kreuter, defined Health Education as any combination of learning experiences designed to facilitate voluntary action conducive to health. The scholars identified and x-rayed salient points that make Health Education an effective tool in behaviour change beginning with improvement in knowledge. Combination as used in the definition places emphasis on the need to match multiple determinants of health behaviour with equally multiple learning/educational, designed distinguishes health education from incidental learning experiences, facilitate denotes the ability of Health Education to predispose, enable and reinforce positive health outcomes, voluntary entails adoption of persuasion over coercion, while action connotes behavioral steps taken by an individual, group, or community to achieve an intended health effect due to the intervention (Anyanwu & Okeke, 2016). This study therefore investigated the effect of a carefully designed and planned intervention on knowledge of under–five diarrhea prevention among mothers in Ibadan metropolis.

2. Objective of the Study

The study aims at examining the effect of diarrhoeal control education on knowledge of prevention of under-five diarrhoea among mothers in Ibadan Metropolis.

3. Hypotheses

The following understated hypothesis was tested in the study:

There is no significant main and interaction effects of treatment, age and level of education on the knowledge of under-five diarrhoea prevention among women attending immunization clinic in Ibadan metropolis.

4. Methodology

The research design adopted in this study was pretest-posttest quasi experimental non-equivalent groups design using 2×2×4 factorial matrix. This design was adopted because the participants for this study were not randomly assigned to treatment and control groups instead different Local Government Areas (LGAs) (that is all mothers and caregivers attending a particular LGA for routine immunization of their children) received the

treatment or placebo as experimental or control group respectively. Frankel and Wallen (2000) asserted that such design is best suitable in matching participants in both the experimental and control groups based on similar variables. This research design was chosen because any observed change in the post test could be extensively attributed to the effects of the intervention given (Kerlinger & Lee, 2009). The choice of the factorial matrix used in this study was based on the fact that the study involved the use of independent variables at two levels. The training programme had two levels (one experimental and one control group), age had two levels (Teenage mothers and adult mothers) while education had four levels (no formal education, primary, secondary and tertiary education).

The population for this study was made up of mothers of under–five children attending immunization clinic in public health facilities in Ibadan Metropolis. The sample size for the study consisted of one hundred and ninety six (196) mothers attending immunization/infant welfare clinic in Ibadan Metropolis. Multistage procedure was adopted in picking this sample. The first stage involved purposive sampling to select the three most patronized local government areas in Ibadan metropolis. At the second stage, local government areas (LGAs) that were used for experimental and control groups were purposively selected considering proximity to one another. The two LGAs (Ibadan North and Ibadan North East) that are close to each other were used for experimental group while Ibadan South West that is far away from these two was used for control in order to reduce the risk of contamination. The third sampling stage involved simple random sampling technique to select 50% of health facilities in each of the selected LGAs that mothers attend for routine immunization of their children. While the last stage involved selection of participants by selecting 20% of mothers attending each of the selected health facilities in the three LGAs who volunteered to participate in the study. One hundred and thirty (130) participants were used for experimental and sixty six (66) participants were used for control group. The training for the entire experimental group members was carried out at Adeoyo Maternity Teaching Hospital in Ibadan North Local Government Area of Oyo State, while that of control group was done at Oluyole Primary Health Care, Town Planning in Ibadan South West LGA.

5. Results

There is no significant main and interaction effects of treatment, age and level of education on the knowledge of diarrhoeal prevention

Table 1 ANCOVA Showing Main and Interaction Effect of Treatment, Age and Level of Education on the Knowledge of Diarrhoeal Prevention

Source	Sum of Squares	DF	Mean Square	F	Sig.	PartialEta^2/ Effect Size
Corrected Model	939.133	16	58.696			
Pre Knowledge	52.296	1	52.296	10.416	.000	.482
Main effect				9.280	.003	.049
Treatment	381.357	1	381.357			
Age	16.647	1	16.647	67.673	.000	.274
Level of Education	3.038	3	1.013	2.954	.087	.016
2-ways interaction				.180	.910	.003
Treatment × Age	23.908	1	23.908			
Treatment x Education	39.034	3	13.011	4.243	.041	.023
Age x Education	28.248	3	9.416	2.309	.078	.037
3-ways interaction				1.671	.175	.027
Treatment × Age × Education	9.215	3	3.0772			
Error	1008.719	179	5.635	.545	.652	.009
Total	1947.520	195				

The results in the ANCOVA table above shows that there was significant main effect of treatment on knowledge of diarrhoeal prevention among mothers in Ibadan metropolis ($F(1,194) = 67.673$, $P < .05$, $\eta 2 = .274$) thereby leading to the rejection of the null hypothesis which stated otherwise. The result further established no significant main effect of age on knowledge of diarrhoeal prevention among mothers in Ibadan metropolis ($F(1,194) = 2.954$, $p > .05$, $\eta 2 = .016$). Hence, the null hypothesis is retained. However, the estimated mean posttest scores of mothers in Ibadan metropolis exposed to diarrhoeal control education was higher (52.74) in mothers that were 20 years + than the mothers that were ≤ 19 years (51.825). This revealed that mothers who were 20 years and above had a higher mean score than those of 19 years and below. On the moderator variable of level of education, findings showed that there was no significant main effect of level of education on knowledge of under-five diarrhoeal prevention among mothers in Ibadan metropolis ($F(3,192) = 180$, $p > .05$, $\eta 2 = .003$). Hence, the null hypothesis is not rejected. The result also shows that there was a significant 2-way effect of treatment and age on knowledge of diarrhoeal prevention among mothers in Ibadan metropolis ($F(1,194) = 4.243$, $p < .05$, $\eta 2 = .023$), leading to rejection of the null hypothesis. It is revealed that there was no significant 2-way effect of treatment and level of education on knowledge of diarrhoeal prevention among mothers in Ibadan metropolis ($F(3,192) = 2.309$, $p > .05$, $\eta 2 = .037$). When taken together, the study finding revealed that there was no significant three-way effect of Treatment, age and level of education on knowledge of diarrhoeal prevention among mothers in Ibadan metropolis. The result implies that mothers age and level of education did not influence the effect of the intervention on knowledge of diarrhoeal prevention in Ibadan metropolis ($F(3,192) = .545$, $P > .05$, $\eta 2 = .009$).

6. Discussion

The finding of this study established that diarrhoeal control education had significant main effect on mothers' knowledge of diarrhoeal prevention. This is an indication that the knowledge of mothers that were involved in this study improved significantly as a result of the intervention programme. The prevalence of diarrhoea and other preventable diseases are largely attributable to poor knowledge regarding the prevention and control of these diseases. When individuals and groups in the community are exposed to educational programme designed in line with their peculiarities and needs, there is a high probability of controlling such disease. There is therefore the need for designing population — specific health education targeted at improving knowledge of diseases and how best to prevent them since prevention is far preferable to cure. Sound knowledge of the conditions that increase vulnerabilities of under-five children for instance would go a long way in improving maternal knowledge on diarrhoea prevention which is vital to drastic reduction of the alarming prevalence of diarrhoea related morbidity and mortality among under-five children in Ibadan. This finding is in support of the findings of previous studies by Omotade et al. (2000), Gupte (2001), Karamag, Lubanga, Kiguli, Ekwaru and Heggenhougen (2004) and Ghimire, Pradhan and Maskey (2010) that all reported the effectiveness of diarrhoea control education in bringing about improvement in knowledge and skills of mothers in diarrhoea prevention. When investigation was conducted on interaction of treatment, age and educational level, findings showed that there was no significant interaction effect. This implies that participants benefitted from the programme notwithstanding their age or educational qualification. This is therefore a carefully planned and articulated programme designed to impact on a wide range of participants. There was no discriminatory effect of the programme based on age of participants or their educational level. As such, the programme could be adopted and used in a wide range of participants among

the population without fear of variance of effect due to age or educational level.

7. Conclusion and Recommendations

From the findings of the study, it is concluded that diarrhoeal control education is very effective in improving the knowledge of mothers on under-five diarrhoeal prevention. Since no significant interaction effect was found for treatment, age and educational level, it is concluded that programme could be adopted and used for a wide range of audience in the metropolis as everyone will likely gain from it. Adopting and further channelling the programme to reach rural women is vitally important as it could be inferred that cases of childhood diarrhoeal among rural populations likely go unreported. Since there was no interaction effect of the programme and educational level, taking the programme down to rural women as well as covering of the total Ibadan municipality is highly recommended.

Other vital recommendations based on the findings of the study are:

(1) There is need for health workers always give detailed diarrhoeal control teaching to mothers and potential mothers irrespective of their age and level of education using the hospital setting.

(2) Diarrhoeal control education should be considered a general education not targeted at mothers alone but could also be given to teachers, religious leaders, community heads and other influential people in the community who are expected to directly or indirectly step down the training to as many care givers as could be reached.

(3) Diarrhoeal control education should be routinely given at antenatal level to empower expectant mothers and get them well equipped with the necessary information to prevent diarrhoea in their children.

(4) Diarrhoeal control education should be made a routine teaching given by health workers to all care givers not waiting till the time their children develop diarrhoea.

Mothers and care givers who have the correct information on diarrhoeal control could be used to facilitate other mothers to ensure wide dissemination of this information on diarrhoea control.

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