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Exclusive Breast Feeding and Children Immunization as Demographic Determinants of Child Mortality in Delta State

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Abstract: This study on exclusive breast-feeding and child immunization on child mortality provides opportunities to continuously improve child health and reduce mortality. The ex-post facto design was employed while two research questions and two hypotheses gave direction to the study. The population was all children below their fifth birthday in 300 hundred households. The multi-stage sampling technique was combined with the ballot and systematic method to select 20 households in the state. The research instrument was standardized multi topic household survey instrument designed by Grosh and Glewwe (2002). It was reliable at 0.90. It was found that exclusive breast feeding and child immunization have no significant relationship on child mortality. This is so because exclusive breast-feeding and child immunization is not significantly practiced in Delta State, Nigeria. The practical implication of this study was the call for inhabitant of Delta State, Nigeria to pay more serious attention to child immunization and exclusive breast-feeding through organized Health Education Programme in Schools, Churches and Community Health Programme and through the media. This study has revealed the low child immunization coverage and low participation of reproductive women in exclusive breast-feeding in Delta State, Nigeria. Hence child immunization and exclusive breast-feeding cannot be a determinant of child mortality at the present level of practice in Delta State, Nigeria.

Key words: Child immunization, exclusive breast-feeding, child mortality, demography, Nigeria

Introduction

The mortality rates indicate death rate in every thousand people of the population. Mortality can be expressed with respect to specific groups of the population such as infant, children, pregnant women and others in the population. Exclusive breast-feeding is an important aspect of man. According to Gross (1986), exclusive breast-feeding practice is both psychologically satisfactory to the child and mother. It also reduces the cost of child maintenance and reduces child morbidity and mortality. With the practice of exclusive breast-feeding, the child's access to contaminated water is reduced thus decreasing the child's exposure to water-borne diseases. Immunization is another factor that can reduce child and maternal mortality rates. With the prevention of childhood diseases, child mortality rates can be reduced to the minimum, not only for the child but also for the mother; whose attendance at anti-natal and post-natal clinic increases as she is being exposed to more health information and practices.

Breast-feeding is one of the basic characteristics of mammals. It is the act of mammals including man feeding the Newborn with breast milk. Uwakwe (1996) sitting Ajello (1982) stated that breast-feeding is a phenomenon that is deeply rooted in the tradition of most human cultures. It is a post-natal activity of paramount importance and interest to diverse professional in pediatrics, nursing and endocrinology.

According to Ajello breast-feeding is divided into two-the "full" and "partial" breast-feeding. The term "full" breast-feeding is defined to include extremely "excessive and most exclusive". Exclusive breast-feeding is defined to mean that no other liquid or solid is given to the baby. Whole the almost "exclusive" means the addition of vitamins, mineral, water and fruit juices given frequently in addition to breast milk. "Partial" breast-feeding means three levels of substantial feeding-high, medium and low. "Token breast feeding is another form used by experts. Breast-feeding is defined as "token" when the breast is used primarily for the infant comfort and consolation or as a pacifier and for nutritional purpose. The importance of breast-feeding as a determinant of maternal and child morbidity and mortality has long been recognized and documented in literature. To the maternal, it is associated with reduction in number of obese women (Ebrahim, 1979) and as contraceptives thus reducing maternal morbidity and mortality (Fortney, 1995). Ebrahim (1979) stated the value of breast milk to infants to include its nourishment and anti-infective properties. According to the author, at the turn of the 19th century, it was shown that the frequency of diarrhea deaths in British's infants fed cows milk was six times that of the one fed on human milk. The author further reported a study in 1951 of mortality and morbidity in 3266. British infants British infants and showed that both were lowest in breast fed infants, highest in those who

Ogbe: Exclusive Breast Feeding and Children Immunization

were partly breast-fed. He also reported a similar study in Chile during 1969-70 when 1712 rural mothers were interviewed to assess the effects of feeding practices on the health of the infant. It was revealed that when bottle-feeding commenced before the age of 3 months, the mortality was three times that of breast-fed babies. Ebrahim (1979) also stated that breast-fed milk contains anti-bodies against many organisms, both viral and bacteria. In various studies, anti-bodies have been demonstrated against tetanus, haemophilus pertussis, Diplocossus precemoniae, shigella and Escherichia coli as well as against polio and Coxsackie virus.

In most developing countries, breast-feeding appears to be a primary determinant of child survival so that the contribution of the practice to birth spacing and limitation remain low; this however means that the correlation between breast-feeding and amenorrhea is considerably high (Gross, 1986; Smith and Benoit, 1985). It does seem that breast-feeding has a major factor in population growth. Breast-feeding ensures the safety, optimum growth, health and survival of human infant. Duration of breast-feeding may determine the strength of mother-child bond and attachment; it also provides protection against malnutrition and immunity against infectious diseases as cited earlier.

Immunization is the introduction of atunated bacteria into the system of a healthy individual to stimulate the production of antibodies. United Nation (UN) (2003) reported contaminated water and inadequate breast-feeding among factors that contributed to high child morbidity and mortality during the Gulf war and United Nation sanction against Iraq. However, the mortality of children can also be seen from the perspective of "sudden death syndrome" as reported by World Bank (2003) ICD-10 as a leading cause of death among children. Child immunization campaigns, involve health workers visiting homes and schools to immunize children against a variety of serious childhood diseases (such as diphtheria, portusis, tetanus, measles and poliomyelitis). World Bank Staff estimates (2003) state that immunization is an essential component in reducing under five mortality rates. The report went further to state that among the childhood vaccine preventable diseases, measles is the leading cause of child mortality with over half a million deaths in the 2000 and that increased routine measles immunization to at least 90 percent coverage in all countries combined with a "second opportunity" for measles immunization scheduled or the supplemented immunization activities as the main strategies to reduce measles death.

An appraisal of the Nigeria Demographic Health Survey (NDHS) (1998) revealed that only 17 percent of Nigerian children 12-23 months could be considered fully immunized. Although the level of coverage of BCG and the first Dose of DPT and polio are close to or exceed 50 percent, the proportion who go on to receive the second

and third doses of these two vaccines fell of sharply to only about 25 percent of children age 12-23 months who have received the no vaccine at all. Of these children who do receive vaccinations, most of them receive them by the recommended age of 12 months. The report made comparison with the NDHS, documented a significant worsen of vaccination coverage compared 12-23 months who fully vaccinated decline from 30 percent in 1990 to 17 percent in 1999. Although there has been a decline for all types of vaccines. The decline is greater for Diphtheria Pertussis and Tetanus DPT and polio than it is for BCG and measles. The reason for the decline probably lies in the great shortage of all vaccines in Nigeria during the period 1996-1998.

The NDHS (1998) missed no word when it stated that childhood vaccination remains an important strategy for the reduction of morbidity and mortality from common vaccine-preventable diseases. In Nigeria such diseases include tuberculosis, diphtheria, pertussis (whooping cough), tetanus, poliomyelitis and measles. High vaccination coverage is generally associated with low levels of disease in the population. Thus, high vaccination coverage is a crucial goal in all child survival programmes in Nigeria. Guideline from World Health Organization (WHO) recommends that all children receive a BCG vaccination against tuberculosis, three doses of DPT vaccine for the prevention of diphtheria, pertussis (whooping cough) and tetanus; three does of polio vaccines; and a vaccination against measles. WHO recommends that children receive all these vaccines before their first birthday and that the vaccinations be recorded as health care given by the parents?

This study is necessitated by the fact that children and pregnant women are two important elements in the community (Nigeria Demographic and Health Survey NDHS, 1990). NDHS (1990) stated that preventive and curative health services are yet to reach many women and children. The report states further that mothers receive no anti-natal care of one-third of the period and over 60 percent of all babies are born at home. Only one-third of births are assisted by doctors and trained nurses and midwives. A third of the children are never vaccinated and only 30 percent are fully immunized against childhood diseases. This study on exclusive breast-feeding and immunization on child mortality would therefore enhance opportunities to improve child health. The overall goal is to stimulate action to address and identify child and community needs towards their improvement in health.

Delta State with its capital at Asaba is one of the 36 states of the Nigerian federation. It has a population of about 4 million (Delta State Diary, 2003).

Research Questions: Two research questions were formulated to guide the study:

Ogbe: Exclusive Breast Feeding and Children Immunization

- 1) What is the degree of child immunization coverage in Delta State?
- 2) To what extent is exclusive breast-feeding practiced among reproductive women in Delta State?

Hypotheses: Two hypotheses were formulated in line with the research questions:

- 1) There is no significant relationship between child immunization and child mortality in Delta State.
- 2) There is no significant relationship between exclusive breast-feeding and child mortality in Delta State.

Materials and Methods

This study used the ex-post facto design. An ex-post facto (after-the-fact or after affect) research is undertaken after the events have taken place and the data are already in existence. According to Asika (2001) ex-post facto research is a systematic empirical study in which the researcher does not in any way controls or manipulates independent variable because the situation for the study already exists or has already taken place. The population of the study consists of all children between birth and their fifth birthday, estimated at about 227. The sample consists of all children between birth and their fifth birthday in each selected household. A total of fifteen communities in Delta State were selected for the study. With three hundred households (300) With twenty selected from each community were used for the study. The multi-stage sampling technique was combined with ballot and systematic methods. The surveyed communities were selected from a list of the communities in each local government area using the simple random ballot method. Each community, quarter or streets were numbered using the title of Housing Unit numbering (HU). 100 housing units were numbered. Using systematic method, 20 housing units were selected. From each housing unit the household enumeration was done selecting 20 households. Using the ballot method, one household was selected from each housing unit for the study. Household are persons staying under one roof and feeding from the same cooking pot. The data collection instrument for the study was the standardized multi topic household surveys instrument for household surveys in developing countries. It has been used in both Local, National and International surveys. It was used in Nigeria Demographic and Health survey (1999) Onokerharaye (1990 and (1998); Federal Office of Statistics FOS (1995 and 2002); Grosh and Glewwe (2002) researched on it and presented it for international use in Household surveys in developing countries. The instrument was in two parts; Part A: Is concerned with instruction and tables towards the identification of the study area and

location of each household sample and part B was; (I) concerned with the immunization coverage for only children below 5 years (ii) was meant for the collection of information on the mortality of children before their fifth birthday in each household. The instrument was given to three experts in Physical and Health Education and three experts in Geography and Regional Planning for criticism and corrections as validity assessment. They made few corrections and contributions. After which they found it worthy of use.

The instrument was administered to two communities outside the study area with a total of thirty samples. Their responses were scored on each item in the questionnaire. The items were scored right for those who understood the question and wrong for those who did not understand the question and filled wrongly. Based on this, the Kuder-Richardson reliability test was used to ascertain the reliability of the instrument. It was found reliable at 0.90.

Data collection procedure: The data for this study were collected through the use of questionnaire survey and interviews with the help of research assistants. The questionnaire were administered to the respondents and interviewed. The recall method for the past 12 months was used for the study. The recall method seeks information for a length of time preceding the interview. The multiple regression analysis was used to analyze the data.

Results

Ho, 1: There is no significant relationship between child immunization coverage and child mortality in Delta State, Nigeria.

From Table 1, the observed t-value for child mortality as a dependent variable of immunization (IM) was -1.39 with associated p-value of 0.166 was lower than 1.96-table value at 0.05 level of significance. Consequently the null hypothesis was accepted. Thus, there was no significant relationship between child immunization coverage and child mortality in Delta State, Nigeria from this study.

Ho-2: There is no significant relationship between Exclusive Breast-Feeding (EBF) and Child mortality in Delta State Nigeria.

From Table 1, the observed t-value for child mortality as a dependent variable of Exclusive Breast Feeding (EBF) was 1.51 with associated p-value of 0.61 was lower than 1.96 table value at 0.05 level of significance. Consequently the null-hypothesis was accepted. Although the level of significance proved negative, the negative sign attached to the immunization t-value (-1.37) shows that as immunization increases, child mortality decreases. The negative significance may be due to the low number of children that were actually

Ogbe: Exclusive Breast Feeding and Children Immunization

Table 1: Multiple regression analysis showing the relationship between child immunization (IM) coverage, Exclusive breast feeding (EBF) and Child mortality in Delta State Nigeria

Predictor Variables	Coefficient	Std error	Student's t	P
Constant	0.11041	0.03262	3.63	0.0003
EBF	0.02235	0.04417	0.51	0.6132
IM	-0.07201	0.05192	-1.39	0.1666
R-Squared	0.0080	Resid. Mean Square		0.07818
ADJ. R-Squared	0.0005	Standard Dev.		0.27960

Key: EFB-Exclusive breast feeding; IM-Child immunization; MM-Maternal mortality; CM-Child mortality

Table 2: A regression summary of the combined relationship between child immunization and exclusive breast-feeding on child mortality in Delta State

Source	DF	SS	MS	F	P
Regression	2	0.16737	0.00360	1.07	0.3453
Residual	267	20.0734	0.07018		

Cases Included 270 Missing Cases 0

Key: EFB-Exclusive breast feeding; IM-Child immunization; MM-Maternal mortality; CM-Child mortality

involved in the immunization programme. Thus there is no significant relationship between Exclusive breast-feeding and child mortality in Delta State Nigeria.

A statistically non-significant F-value of 1.07 with associated p-value of 0.345 and a table value of 3.04 at 0.05 level of significance shows that child immunization coverage and Exclusive breast feeding does not provide a good fit in explaining child mortality. It was observed in this study that child immunization coverage from individual child participation, stood at 52% and less than 10% of this number had full immunization. This study also reveals that only 10% of the reproductive women participate in Exclusive breast-feeding.

Discussion

The findings of this study were at variance with some other studies but also agrees with some others. It was at variances with the United Nation (UN) (2003) which reported that Iraq incriminated water and inadequate breast-feeding among factors that contributed to high child morbidity and mortality during the Gulf Wars and UN Sanctions against Iraq. World bank staff estimate (2003) stated that immunization is an essential component in reducing under five mortality. The findings of this study also correlates the World Bank (2003) ICD-10 leading reported effort being made in Michigan to reduce the risk of sudden infant death syndrome. In other words, the death of infant at times remain elusive and couvade.

However, the Nigeria Demographic and Health Survey NDHS (1998) recorded that only 17 percent of Nigeria children 12-23 months can be considered fully immunized. This similar to the 10% found in this study and about 50% attempted any type of immunization. Only 10% of mother also took part in Exclusive breast-feeding. With this standard of immunization coverage

and Exclusive breast-feeding practice not much is expected from a study of immunization and Exclusive breast-feeding on child mortality as the number of participants in the programme can hardly make statistically meaning to child mortality. Hence the clear non-significance recorded in this study.

Health education implications: The study has shown that child immunization and Exclusive breast-feeding programmes known to reduce child mortality (UN, 2003; World Bank Staff estimation, 2003) was yet to have a good coverage and participants in Delta State, Nigeria. Hence these programmes are yet to be used as instrument of reducing child mortality. Health Educators, Health Counselors and Government Health programme and Non-Governmental organization should constantly reecho child immunization and Exclusive breast feeding on continuous basis to reach every strata of the society so as to influence positive attitude and behaviour towards child survival strategy though the use of schools, churches, community health programmes and all aspect of the media.

Conclusion: This study has revealed that Delta State, Nigeria had less than 50% child immunization coverage and about 10% exclusive breast-feeding participation by mothers. Not much has been attained in child immunization average and exclusive breast-feeding in Delta State, Nigeria. Hence child immunization and exclusive breast-feeding are not important determinants of child mortality in Delta State, Nigeria.

Recommendations: To reduce child mortality through demographic variables of immunization coverage and exclusive breast-feeding, the following are hereby recommended:

- 1) Health Education should be built into every aspect of public health services, such as population study and studies in family life and sexuality. School curriculum at every level of learning including adult education where family planning, exclusive breast-feeding and immunization programme should be built into social studies, health and general science.

Ogbe: Exclusive Breast Feeding and Children Immunization

- 2) The present door-to-door immunization programmes of the Federal, State and donor agencies should be well maintained and supervised.
- 3) Exclusive breast-feeding mothers' should be identified and encouraged by being given gifts to encourage others.
- 4) Immunization card and certificate of completion of full-scale immunization being used as criteria for accepting children into public and private schools.
- 5) Certificate of completion of full immunization programme and participation in exclusive breast feeding for the previous child should be made a condition for approving maternity leave for working mothers.

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