# Socioeconomic Determinants of Infant Mortality among Women Attending Antenatal Care in Northern States of Nigeria

**Waziri Bala Kwata[1], M.A Suleiman[2], V. Dashe[3]**

NCE, B.SC, M.ED, PhD, Department of Public Health Faculty of Health Sciences, National Open University of Nigeria
[2, 3]Professor, Department of Physical and Health Education, Ahmadu Bello University, Zaria

**Abstract:** *This study assessed the socioeconomic determinants of infant mortality among women attending antenatal care in Northern States of Nigeria. To achieve this purpose, a stratified, simple random sampling and proportionate sampling procedure were adopted. Two local government areas and four health facilities were selected from two states of the three Northern geopolitical zones. Namely North West, North East and North Central in Nigeria. The population for this study comprised of 16,850,229 women of child bearing age (15-49) who have had at least one child in Northern States of Nigeria. A total number of 400 women of child bearing age were purposively selected from the entire population of child bearing women in Northern States of Nigeria. The questionnaire was pilot tested and the results showed a reliability index of 0.951. The result revealed the appropriateness of the instrument which was then used for data collection. Out of the 400 copies of the questionnaire administered on the respondents, 389 (98.5%) were found valid and 2 (1.5%) invalid. The data collected was analyzed using descriptive statistics to answer research questions on the socioeconomic determinants of infant mortality among women attending antenatal care in Northern States of Nigeria. Multinomial logistic regression estimate was used to test the major hypotheses and Chi-square was also used to establish the influence of socio-economic determinants of infant mortality in Northern States of Nigeria. The results revealed that a group of mother's education, occupation, income level, and number of pregnancies were significant determinants at the following P-values (P=0.001, 0.018, 0.016 and 0.000). On the basis of the findings, the following recommendations were made that health care services should be provided throughout Northern States of Nigeria to cater for women attending antenatal care in Northern States of Nigeria by the government. Pregnant women should also be encouraged to go for medical care through enlightenment campaign by health care providers. This would help them seek for medical care and to deliver their babies in hospital or maternity homes rather than their houses.*

**Keywords:** Socioeconomic, Determinants, Infant, Mortality

## 1. Introduction

Mortality among infants is one of the important indicators of a country's general medical and public health conditions, and consequently, the country's level of socioeconomic development. Its increase is, therefore, not only undesirable but also indicative of a decline in general living standards (WHO, 2008). The progress and future of any country depends on how healthy children are. This is reflected in their access to basic health care, nutritious food and a protective environment, and if these are not available, the country's mortality rates would increase and economic potentials diminish (WHO, 2008). However, there are many factors that influence infant's mortality. It is necessary to identify and control such factors to reduce mortality in infants). This study therefore was conducted find out socio-economic determinants of infant mortality among women that attend antenatal care in northern states of Nigeria. It was hypothesized that there were no significant socio-economic determinants of infant mortality among women that attend antenatal care in Northern States of Nigeria. The socio-economic parameters selected for possible influence on their infant mortality were age at first delivery, Number of pregnancies, Number of dead children, age at death of child, respondents' level of education, occupation and monthly income. The population for this study comprised of women of reproductive age (age 18-49).

## 2. Methodology

For the purpose of this study, stratify sampling, simple random and proportional sampling techniques were used. The stratify sampling was used to select two (2) states from each of the (3) northern geo-political zones (North East, North West and North Central). Simple random sampling technique was used to select two (2)local government areas from all the six (6) selected states In each of the two (2)selected local government areas, two (2)health facilities were also selected randomly from the local government area's headquarters using the following procedures independently for each state, local government areas and health facilities

1) The names of all the states in the three (3 ) Northern Zones of Nigeria was independently written on pieces of paper squeezed and put inside three different cartons
2) The names of all local government areas in the states selected was also written on pieces of paper squeezed and put inside three (2) carton boxes
3) Using the deep-hat method, three people were assigned to pick a piece of paper from the carton box representing the zones, states, local government areas and health facilities. This was done until six (6) states and twelve (12) local government areas needed for this study were selected.

As the number of health facilities varies in all the local government areas, two (2) primary healthcare facilities were selected from the headquarters each of the selected local government area, using the following procedures.

The names of all the primary healthcare facilities in each of the local government area selected were written on a piece of paper squeezed and put inside two different carton boxes Using the deep-hat method, two people were assigned to pick one health facility from a carton box representing health facilities. This was done until twenty four (24) health facilities needed for this study were selected.

To select the needed sample from the population of the health facilities used, all the women of child bearing age (15-49) that visited the primary health facilities only on antenatal days during the period of the research were purposively selected for this study. According to Patton (1990) purposive sampling technique is a type of non probability sampling where the researcher consciously selects particular elements or subjects for addition in a study so as to make sure that the elements will have certain characteristics pertinent to the study.

Hence, a total of 400 respondents were selected from24 health facilities in twelve (12) selected local government areas of the six (6) states in Northern Zones of Nigeria as sample for this study.

| Northern Zones | States | Local Govt. Area | Health Facilities | Respondents |
|---|---|---|---|---|
| North Central | Kwara | Kaima (124,164) | G/Hospital Kaima | 11 |
| | | | MCH Kaima | 10 |
| | | Baruten (209459) | G/Hospital Baruten | 20 |
| | | | MCH Baruten | 16 |
| | Nasarawa | Nasarawa (92,664) | G/Hospital Nasarawa | 10 |
| | | | MCH Nasarawa | 6 |
| | | Lafia (330,712) | G/Hospital Lafia | 30 |
| | | | MCH Lafia | 26 |
| North East | Maiduguri | Jere (211,204) | G/Hospital Jere | 20 |
| | | | MCH Jere | 16 |
| | | Magumeri (140,231) | G/Hospital Magumeri | 14 |
| | | | MCH Magumeri | 10 |
| | Taraba | Takum (84,054) | G/Hospital Takum | 7 |
| | | | MCH Takum | 7 |
| | | Wukari (241,546) | G/Hospital Wukari | 25 |
| | | | MCH Wukari | 16 |
| North West | Jigawa | Kazaure (161,494) | G/Hospital Kazaure | 18 |
| | | | MCH Kazaure | 10 |
| | | Roni (77,819) | G/Hospital Roni | 7 |
| | | | MCH Roni | 6 |
| | Zamfara | Bungudu (383,162) | G/Hospital Bungudu | 35 |
| | | | MCH Bungudu | 30 |
| | | Maru (291,900) | G.HospitalMaru | 25 |
| | | | MCH Maru | 25 |
| Total 2,348,409 Total | | | | 400 |

**Zones, States, Local Government Areas, Health facilities and Number Respondents**

Table 1: shows that there were total 400 respondents sampled from all the three northern zones of Nigeria (North Central, North East and North West). Thus the sampling technique used was stratified, simple random and proportionate sampling. The sample consisted of 400 female of reproductive age who has at least a child.

## 3. Result

The purpose of the study was to find out the socio-economic determinants of infant mortality among women attending antenatal care in northern states of Nigeria. To achieve this purpose, the data collected in this study were statistically analyzed; out of the 400 questionnaire 398 were found valid for the study. The result of which are presented and discussed according to hypothesis.

Before the results are presented according to hypothesis, the demographic characteristics of respondents are presented. Table 2

**Table 2:** Demographic Characteristics of the Respondents

| Variable | Variable options | Frequency | Percent |
|---|---|---|---|
| Mother age at first delivery | <15years | 61 | 15.3 |
| | 15 - 16years | 63 | 15.8 |
| | 16 - 17years | 65 | 16.3 |
| | 17 - 18years | 129 | 32.4 |
| | >18years | 80 | 20.1 |
| Number of pregnancy | 1pregnacy | 77 | 19.3 |
| | 2pregnacies | 101 | 25.4 |
| | 3pregnacies | 78 | 19.6 |
| | 4pregnacies | 59 | 14.8 |
| | >4pregnacies | 83 | 20.9 |
| Number of dead children | None | 55 | 13.8 |
| | 1child | 202 | 50.8 |
| | 2children | 62 | 15.6 |
| | 3children | 29 | 7.3 |
| | 4children | 13 | 3.3 |
| | >4children | 37 | 9.3 |
| Child age at death | None | 55 | 13.8 |
| | First day of birth | 56 | 14.1 |
| | Within 7days of birth | 59 | 14.8 |
| | Within 28days of birth | 43 | 10.8 |
| | Within 1year of birth | 62 | 15.6 |
| | At labor | 55 | 13.8 |
| | > one death | 68 | 17.1 |
| Mother level of education | No formal education | 106 | 26.6 |
| | Quran education | 100 | 25.1 |
| | Primary | 64 | 16.1 |
| | Secondary | 85 | 21.4 |
| | Tertiary | 43 | 10.8 |
| Mother occupation | Civil servant | 63 | 15.8 |
| | Trading | 101 | 25.4 |
| | Farming | 44 | 11.1 |
| | Fulltime housewife | 190 | 47.7 |
| Mother's monthly income | No income | 195 | 49.0 |
| | ₦5,000.00 - ₦9,000.00 | 82 | 20.6 |
| | ₦10,000.00 - ₦19,000.00 | 36 | 9.0 |
| | ₦20000.00 - ₦29,000.00 | 43 | 10.8 |
| | >29000.00 | 42 | 10.6 |

Table 2: revealed that 61 or 15.2% of the respondents had their first delivery at age of less than 15years while 63 had their first delivery between 15 and 16years. Those who had their first delivery between 16 and 17years were 65 or 16.3% while 129 or 32.4% of the total had their first delivery between 17 and 18years. Only 80 or 20.1% of the

respondents said they had their first delivery when they were above 18years. Going by the adult age in the country, it could be said that half of the respondents have their first delivery before attaining adulthood while half had theirs after. This factor is considered along in the assessment of their infant mortality in this study.

As indicated in the table, 77 or 19.3% have had one pregnancy each as at the survey and 101 or 25.4% have two pregnancies while 78 or 19.6% have had three pregnancies. Those who had four pregnancies were 59 or 14.8% of the total respondents. Only 83 or 20.9% had more than 4 pregnancies at the time of the survey. The number of pregnancies was examined in the study as a possible factor of infant mortality experienced by the mothers.

In the table, only 55 or 13.8% of the respondents have no experience of infant mortality. Two hundred and two or 50.8% of them have lost one child each while 62 or 15.6% lost two children each. Those who lost up to three children were 29 or 7.3% while 13 or 3.3% said they lost up to four children. Only 37 or 9.3% of the total respondents said they have lost more than 4children. As to the time of death of the children, 56 or 14.1% lost their children on the first day of birth while 59 lost their own within the first seven days of birth and 43 or 10.8% lost their own within 28 days of their births. Respondents who experienced the death of more than one child were 68 or 17.1% of the total and 55 or 13.8% lost their child at time of delivery (labour) while 62 or 15.6% lost their children with one year of birth. This constituted the dependent variable used for the child mortality in the study.

For levels of educational attainment, 100 or 25.1% of the respondents only have Quranic education while 64 or 16.1% said they have primary school education. Those who had secondary education were 85 or 21.4% of the total respondents and 43 or 10.8% of the respondents have tertiary education. But 106 or 26.6% of the total respondents have no formal education. Thus in terms of educational qualification the respondents could not be said to be generally adequate. This factor is assed in association with their infant mortality in the study.

The classification of the respondents by their occupation shows that 190 or 47.7% were full time housewives. Apart from being house wives 44 or 11.1% said they were farmers while 101 or 25.4% were involved in trading. Only 63 or 15.8% of the total respondents were civil servants. This tally with the income categorization in the table where 82 or 20.6% of them have between ₦5,000.00 and ₦9,000.00 per month while 36 or 9.0% earn between ₦10,000.00 and ₦19,000.00 and 43 or 10.8% of them earns between ₦20000.00 and ₦29,000.00 only 42 or 10.6% of them earns more than ₦29,000.00 per month. And 195 or 49.0% have no monthly income. This figure tally relatively well with the expressed occupations of the respondents in the table. These two variables were assessed as part of the socio-economic factors in the infant mortality experienced by the respondents.

**Table 3:** Mean scores of the Respondent on Infant Mortality Attributable to Social Determinants

| Sn | Mortality due to social factors | Mean | S. D. |
|---|---|---|---|
| 1 | I sought for traditional medicine while my child was ill which eventually led to his/her death | 2.28 | 0.997 |
| 2 | I gave birth under unskilled birth attendant this lead to prolonged labor and death of my child | 2.54 | 1.139 |
| 3 | I lacked knowledge of nutrition which caused loss of weight and death of my child | 2.33 | 0.909 |
| 4 | I had problem of access to emergency health care services because of long distance to health care facilities and caused death of my child | 2.36 | 0.983 |
| 5 | I married too early this caused the preterm delivery and health of my child | 2.20 | 0.969 |
| 6 | I did not comply with scheduled immunizations against the six killer diseases and this led to infection and my child's death | 2.17 | 0.944 |
| 7 | Feeding was inadequate in my family which caused malnutrition and my child death | 2.08 | 0.864 |
| 8 | My low level of education affected my child health care and his/her death | 2.40 | 1.106 |
| 9 | There was no hospital in my place which led to poor access to health care service and my child death | 2.16 | 0.965 |
| 10 | I lacked adequate prenatal care therefore led to poor access to complications during pregnancy and my child death | 2.27 | 0.992 |
| 11 | I lacked access to good drinking water and this led me to drinking contaminated water which caused diseases and my child death | 2.26 | 0.976 |
| 12 | I did not have adequate birth spacing between my children, and this affected my health and caused the death of my child | 2.21 | 1.042 |
| | Aggregate mean score | 2.27 | 0.611 |

The table revealed that social determinants were not really major determinants of the respondents' infant mortality. However this conclusion does not include the personal social parameters examined independently in association with the respondents ratings. In the table one social outstanding factor is the problem of unskilled birth attendant who attend to some of the respondents during child delivery. This was rated as often leads to prolonged labor and death of the child. Apart from this factor, there was no other social factor so rated and from the aggregate mean score of 2.27 it could be concluded that infant mortality due to exogenous factor in the society was not a major factor of the respondents' child death. Table 4.3 shows the rated infant mortality associated with economic factors in the society.

**Table 4:** Mean scores of the respondent on infant mortality attributable to economic determinants

| Sn | Mortality due to economic determinants | Mean | S. D. |
|---|---|---|---|
| 1 | My poor health seeking behavior due to poverty caused my child death | 2.36 | 0.920 |
| 2 | I have less risk of death of children because I could afford medical care to the family | 2.52 | 0.944 |
| 3 | I labored on the farm therefore earned very low income which affected the welfare of child and lead to his/her death | 2.21 | 0.934 |
| 4 | I lived in the rural area where good health care facilities and services were not available which caused my child's death | 2.27 | 0.944 |
| 5 | I was not aware of health care services available in my area and how best to access them, this cause my child's death | 2.16 | 0.873 |
| 6 | I was not enrolled in to school because I believed | 2.43 | 1.110 |

| | | | |
|---|---|---|---|
| | that formal education is not a requirement for fitting into the way of life. This affected my health seeking decision and caused my child's death | | |
| 7 | I lived in the urban area where good health care facilities and services are located therefore had no risk of child death | 2.43 | 0.996 |
| 8 | I lived in overcrowded house, this promoted disease and caused my child's death | 2.15 | 0.880 |
| 9 | The accessible health care facility in my area was poorly equipped and led to poor services and my child's death | 2.33 | 0.966 |
| 10 | My income affect the ability to access a health care service to the family and this led to the death of my child | 2.53 | 1.119 |
| 11 | I did not use treated mosquito nets therefore children and i had malaria attack which cause my child's death | 2.25 | 1.030 |
| 12 | I experienced more child death because of my inability to afford good health care service | 2.03 | 0.953 |
| | Aggregate mean score | 2.31 | 0.542 |

The aggregate mean score of 2.31 obtained for the table did not show that the infant mortality rating by the respondents could be said to be prevailing economic factors of the society. Though most of the respondents agreed that their income affected the ability to access a health care service by their family and this led to the death of the respective child but the aggregate mean (2.31) did not quite associated such mortality rating to the prevailing economic factors of the society. This means that the respondents' individual variables call for examination. This leads to the specific objectives of determining possible differences in the socio-economic parameters of the individual respondents.

**Table 5:** Multinomial Logistic regression estimates for influence of maternal socio-economic variables on their infant mortality in states of Northern Nigeria

| Maternal socio-economic variables | Model Fitting Criteria | Likelihood Ratio Tests | | |
|---|---|---|---|---|
| | -2 Log Likelihood of Reduced Model | Chi-Square | DF | Sig. |
| Intercept | 766.956(a) | .000 | 0 | . |
| Mother age at first delivery | 790.642 | 23.686 | 20 | .256 |
| Number of pregnancies | 840.285 | 73.329 | 20 | .000 |
| Mother level of education | 814.161 | 47.204 | 20 | .001 |
| Mother occupation | 795.644 | 28.688 | 15 | .018 |
| Mother's monthly income | 802.748 | 35.792 | 20 | .016 |

The test revealed that the selected maternal socio-economic variables have significant influence on the respondents' infant mortality rate. The observed pseudo coefficient of determination ($R^2$) were Cox and Snell = 0.371, Nagelkerke = 0.393 and McFadden =0.162 respectively. The likelihood chi-square was 184.349 at 95 degree of freedom with a probability level of 0.000 (P < 0.05). On influence of the individual variables, maternal age at first delivery was not found to have a significant influence on the infant mortality. The chi-square value obtained (23.686) at 20 degree of freedom and the obtained probability level (0.256) were not significant (P > 0.05). For Number of maternal pregnancies, the chi-square obtained was 73.329 at 20 degree of freedom and the observed level of significance is 0.000 (P < 0.05). Maternal monthly income was found to have significant influence with chi-square of 35.792 and a level of significance (0.016) obtains 20 degree of freedom. Maternal educational level's influence was highly significant with a chi-square of 47.204 at 20 degree of freedom and a probability level of 0.001 (P < 0.05). The occupation of the respondents was significant with a chi-square of 26.688 at 15 degree of freedom and a probability level of 0.018 (P < 0.05). Apart from maternal age at first delivery which could be due to the overcrowding influence of other independent variables involved in the model, all the variables were found to have significant influence on the respondents' infant mortality. With these observations, there is enough evidence to reject the null hypothesis. The null hypothesis that there is no significant influence of socioeconomic determinants of maternal age at first delivery, education, occupation, income and number of pregnancies on infant mortality in Northern States of Nigeria is therefore rejected.

## 4. Discussions of the findings

This study assessed the influence of socio-economic determinants on infant mortality among women attending Antenatal Care in Northern States of Nigeria. Apart from influence of the general socioeconomic exogenous variables within the society, the main personal variables of the respondents whose influence on infant mortality were assessed were age at first delivery, education, occupation, monthly income and number of pregnancies. One major hypothesis and five sub-hypotheses were tested along the objectives and research questions of the study.

The major research question and hypothesis investigated the influence of the respondents' socio-economic variables on their infant mortality rate in the states. A multivariate approach was used in the test with multinomial logistic regression model. The result revealed that the selected independent variables significantly influence infant mortality among the respondents. On individual influence, maternal age at first delivery was the only personal variable found not to have a significant influence on their infant mortality. Maternal education, occupation, monthly income and number of pregnancieswere found to have significant influence in the model. This null hypothesis was therefore rejected. The finding are is consistent with Lucas and Gilles, (2003) who reported that infant mortality rate reflect the socio-economic status of their parents. The finding agrees with Ogbe, (2008) where infant mortality in Nigeria was associated with its environmental determinants such as rural and urban influence on infant mortality, demographic factors such vaccination and immunization determinants.

Sub-hypothesis I and research question two investigated the influence of maternal age at first delivery on their infant mortality rate. The test was conducted on a bivariate basis with the chi-square procedure. From the result obtained in the test, maternal age at first delivery's influence on the respondents' infant mortality rate was not statistically significant. The null hypothesis was therefore retained. The finding this study contradicts the reports of Alade, (2001), Lucasand Gilles, (2003); Insel, and Roth, (2006), where it was reported that age of the mother have some effects on the growing baby, for instance, certain defects like mongolism, congenital heart diseases, premature deliveries, still birth and infant deaths are all associated with old age and teenage

pregnancies. The finding here contradicts Ayengbara and Olorunmaye (2012) who revealed from their study that the age of the expectant mother i.e. teenage pregnancy significantly caused infant mortality.

Sub-hypothesis II and research question two investigated the influence of maternal education on the respondents' infant mortality rate. The test which was conducted with chi-square procedure revealed that levels of maternal education have significant influence on their infant mortality rate. The null hypothesis was therefore rejected. From the related data examined in relation to the research question, it was found that respondents with no formal education and those with only Quranic education have relatively higher infant mortality rate than those with tertiary education. The finding of this study strongly support the report of, Uzma and Muhammad (2000) investigation of socioeconomic determinants of child mortality in Pakistan where it was reported that that mother's feeding and mother's education is strongly related to the neonatal mortality, infant mortality as well as child mortality through improved child care practices as well as other proximate determinants as parental care, income and environmental contamination. The finding here is consistent with Black, (2003) where it was pointed out that the high infant mortality rate in Nigeria is systemic and endemic stemming from exposure of certain environmental risk determinants in contextual sites (household and community levels) in which mothers are forced to give birth and raise their children and Bishai, Opuni, and Poon, (2007) where it was reported that infant mortality takes away society's potential physical, social, and human capital due to avoidable factors.

Sub-hypothesis III and research question tested the influence of maternal occupation on the infant mortality rate among the respondents. The result did not reveal that the level of influence exacted by occupation on their infant mortality was statistically significant. The null hypothesis was therefore retained. From the related data for the research question, it was observed that some of the respondents were fulltime house wives which may imply that occupation could not play a major role in the mortality rate of their infants. The finding here support the report of Hisham and Clifford (2008) study in which they concluded that in urban areas the child survival depends on mother's education and maternal awareness while in rural it depends whether they are in occupation and giving time to child or not, also the fertility factor and most importantly breast feeding is found as major determinant of child health leading to mortality along with family planning programs in Kenya.

Sub-hypothesis IV and research question four investigated the influence of maternal monthly income on their infant mortality rate. The result of the test conducted with chi-square procedure did not reveal significant association between the two variables. The null hypothesis was therefore retained. From the related data, the income level obtained among the respondents may not necessarily determine the role of income in the family since some were not even earning income and does not imply that they have no means of livelihood. The finding here contradicts the report of Inseland Roth (2006) who asserted that about half of all cases of low birth weight (LBW) babies are related to

teenage pregnancies which may cause infant mortality. Ignorance and poverty, which are common among teenage mothers and the Primigravidas are responsible for LBW babies, who are more likely than normal-birth-weight infants to die

Sub-hypothesis V and the related research question tested the influence of maternal number of pregnancies on their infant mortality rate. The result of the test revealed that the number of pregnancies has significant influence on the infant mortality rate among the respondents. The null hypothesis was therefore rejected. The finding of this study supported Rowley, (1996) affirmation that there is high infant mortality rate of about two or four times with the babies born one year of a previous birth, as against the babies born at both ends of the intervals. The report further stated that a short interval does not give the mother sufficient time to recuperate from the birth and to replenish her stores of nutrient used during pregnancy, especially in conditions of malnutrition. This finding is consistent with the report of Hodges, (2001) in which it was stated that frequent pregnancies are common among the polygamists in Nigeria, where women compete in child bearing, with some women having up to 13 children and Ayengbara and Olorunmaye (2012) from a study on the causes of infant mortality in Nigeria. It was found in the report that too frequent pregnancies significantly caused infant mortality.

## 5. Conclusion

Based on the findings of this study, the researcher wish to conclude as follows:
1) Socio-economic determinants not within the personal environment of child bearing women do not have significant influence on their infant mortality rate in Northern states of Nigeria.
2) The group of maternal education, occupation, income level, and number of pregnancies are major and significant determinants of infant mortality among child bearing mothers in Northern States of Nigeria.

## References

[1] Alade, Ibukun and Ollu (2001). Public Health Nutrition, (2nd ed.). Ilorin, S.O.A. Fosco *Ventures Press*

[2] Ayenigbara, G. O.Olorunmaye, V. B. (2012)Investigating the Causes of Infant Mortality in Akoko South West Local Government Area of Ondo State, *Nigeria Public Health Research* p-ISSN: 2167-7263 e-ISSN: 2167-7247; 2(6): 180-184

[3] Black, R. E. Morris, S.S. and Bryce, J. (2003). Where and why are 10 million children dying every year? *Lancet*: 361: 2226- 2234.

[4] Bishai, D. Opuni, M. and Poon, A. (2007). Does the level of infant mortality affect the rate of decline? Time series data from 21 countries" *Science Direct***5**: 74–81.

[5] Hisham, E. M. and Clifford O, (2008). Socioeconomic determinant of infant mortality in Kenya: Analysis of Kenya DHS 2008. *Journal: Humanities and Social Science Vol.2*

[6] Hodges, A. (2001) Children's and Women's Right in Nigeria: A Wake-up call. Situation Assessment and Analysis

[7] Insel, P.M. and Roth, W.T. (2006).Care Concepts in Health, 10th ed. New York, McGraw Hill.

[8] Lucas, A.O. and Gilles, H. M. (2003).A Short Textbook of Preventive Medicine for the Tropics, London; Hodder Arnold, 4th ed., Malta.

[9] Ogbe, J. O. (2008), Exclusive breastfeeding and children immunization as demographic determinants of child mortality in Delta State, Nigeria. Pakistan *Journal of Nutrition*; 7, (1), 35-39.

[10] Patton, M. Q. (1990)*Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage Publications.

[11] Rowley, S. (1996). Birth Interval a Determinant of Child's Survival, Accra: *Macmillan, Press*.

[12] Uzman, I. Muhammed, S. and Butt, (2008). Socioeconomic determinants of child mortality in Pakistan: Evidence from sequential probity model. *International Journal of Social Economic: Vol. 35 ISS: ½ pp. 63-76.*

[13] World Health Organization, (2008) World Health Report: WHO Geneva