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Maternal Age at First Birth and Childhood Mortality in Yoruba Society: The Case of Osun State, Nigeria

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Abstract

This paper examines the nexus between maternal age at first birth and level of childhood mortality most especially within the socio-economic structure of Yoruba society in Nigeria. The understanding of this relationship is of direct relevance to governments and non-State actors working on child health with the aim to achieve the stated MDGs goal and its associated targets. To achieve the objective of the study, quantitative data were generated from 1,000 women in one of the six Yoruba speaking States in Nigeria: Osun State. A multi-stage random sampling technique was adopted to select the respondents, while percentages, means, standard deviation, Pearson chi square, t-test, analysis of variance and post hoc test of homogeneous were adopted to analyze generated data. Findings of the study show significant relationships between maternal age at first birth and childhood mortality level within the socio-demographic characteristics of women (such as place of residence, current age, occupational status, educational level, marital status, form of marriage and number of children ever born). Specifically, women who had their first birth below age 20 years exhibit significant higher number of childhood mortality in comparison with women who had their first birth by age 20 years and above at $P<0.01$ most especially when the later were at similar categories to the former. Thus, age at first birth is a strong determinant of relatively high childhood mortality level in the study area. Consequently, it is imperative for government and non-State actors working on child health in the region to develop appropriate policies and programmes that will address and inhibit early age at first birth in order to reduce significantly the level of childhood mortality in Yoruba society of Nigeria.

Key words: Childhood Mortality, Maternal Age at First Birth, Yoruba society, Osun State, Nigeria

1. Introduction

Childhood mortality has been at the centre of developmental discourse more importantly since the beginning of the twentieth century. For instance, reduction of child mortality is the fourth of the United Nations' Millennium Development Goals (MDGs). The rationales for this special attention are not farfetched. One, although mortality is a necessity of life and inevitable phenomenon, its untimely occurrence and varieties, especially under-5 mortality, bring about diverse social, economic and psychological trauma not only to the members of bereave family, but to their immediate communities, various social and developmental organizations, the nation and entire world in general. Two, in almost all cultures in the world, childbirth is an event that attracts celebration and children serve as symbols of joy and success to their parents and the entire society, so, their sudden and untimely demise leaves behind sorrow and confusion to the victims of such unfortunate occurrence. Three, child mortality negate the concepts of reproduction and motherhood and if not properly stem it may lead to total extinction of entire humanity. Four, childhood mortality remains disturbingly high in developing countries especially in sub-Saharan Africa despite the significant decline in most parts of the developed world. The child mortality statistics reports of the World Health Organization (2012) reveal staggering fact that about 7.6 million children under the age of five die every year and more than half of these early child deaths are due to conditions that could be prevented or treated. More worrisome than this is the child mortality statistics of the World Bank (2006) which reveals that the death toll among children under-5 years has well reached some 11 million annually, with a clause that "more than 10 million of these occur in the developing world and sub-Sahara Africa is the region most affected and accounts for more than one-third of deaths of children under-5 years (World Bank, 2006:15).

This asymmetric geographical distribution and patterns persist even in the 2012 child mortality statistics. Thus, level of child mortality is a significant indicator of level of development of a given country, region or continent which makes child mortality to remains a major public health issue in developing countries where it is estimated that over 10 million preventable child deaths occur yearly. In addition, progress in child mortality reduction remains unacceptable in Sub-Saharan Africa. With special reference to Nigeria, the giant of Africa, available statistics suggest that child mortality levels continue to be high and exhibit wide geographic disparities (NPC, 1998; 2004; 2009).

These factors and many more reveal the needs for continuous and rigorous research in the areas of child mortality most especially in sub-Saharan Africa.

Childhood mortality as a concept measures the number of deaths between 0 and 5 years of age. Childhood mortality can be sub-divided into two major groups namely: infant mortality and under-five mortality. The infant mortality rate (IMR) measures the probability of a child dying before his or her first birthday (i.e. mortality between 0 and 1 year of age), while under-five mortality rate (U-5MR) is the probability of death between ages 1 and 5 years. These are powerful indicators of child survival, as children are most vulnerable in the early years of life, particularly during the first year. Both measures are synthesized and termed childhood mortality and they are indicative of quality of childcare, including the prevention and management of the major childhood illnesses (National Planning Commission, 2001). Thus, this study examines whether age at first birth, more importantly, childbirth during adolescence, has any significant effects on number of death among children below age 5 years in Osun State, Nigeria. The first part of the analysis involved establishment of differences in the levels of child mortality between adolescent and older mothers in the study location, while the second part placed child mortality within the milieu of socio-economic status of the respondents after controlling for the differences in their age at first childbirths.

2. Previous Studies

Scholars' estimates using United Nations reports show that, ''every year nearly 10 million children under five die globally. About 4 million newborns (40 percent of under-five deaths) die in the first four weeks of life. These reports show high prevalence of infant and child morbidity and mortality in developing countries. Population Reference Bureau (2011) reports that 76 out of every 1,000 infants die every year due to preventable causes in sub-Saharan Africa whereas, in advanced countries of the world, infant mortality rate has really dropped to only 5 out of every 1,000 live birth – a difference of 71 babies in every 1000 live births (PRB, 2011). It is imperative to note that although, Africa accounts for only 22 percent of births globally, half of the 10 million child deaths annually occur in the continent. Furthermore, it has been noted that Africa is the only continent in the world that has seen rising numbers of deaths among children under five since the 1970s. It is estimated that about 4.6 million (46 percent) under five deaths is in Africa and 98 percent of these deaths occur only across 42 developing countries. The greatest number of under-five deaths in the world occurs in Sierra Leone, Angola and Afghanistan where between 257 and 270 children die for every 1,000 live births. The lowest death rate in the developing world occur in Cuba, Sri Lanka and Syria, where between 7 to 14 children die for every 1,000 live births'' (Ogunjimi et al., 2012). Recent data in Nigeria precisely in 2008 show that the under-five mortality rate for the five years preceding the survey was 157 deaths per 1,000 live births. This translates to about one in every six children born in Nigeria dying before their fifth birthday. An examination of mortality levels across the three successive five-year periods in the country shows that under-five mortality decreased from 199 deaths per 1,000 births during the middle to late 1990s (1993-1998) to 157 deaths per 1,000 births in the middle part of this decade (2003-2008). Most of the decrease in mortality occurred outside of the neonatal period (NPC, 2009).

Scholars had argued in the literature that the proximate determinants of child mortality include maternal and demographic factors, nutrition, illness, and injury (Mosley and Chen, 1984; Balk, 2003). Maternal risk factors are more closely related to neonatal or early infant deaths because they are associated with premature and low birth weight infants and delivery complications. One of the most important maternal factors found to be related to childhood mortality is the pace of childbearing (Hobcraft et al., 1985). In particular, short preceding birth intervals are believed to increase an infant's risk of mortality because the mother's nutritional reserves have not fully recovered from the previous birth. Short birth intervals may affect the older child as well by creating competition between young siblings for the mother's resources (Rutstein, 1984). Other important maternal factors are the mother's age at birth and the birth order. Particularly in sub-Saharan Africa, women marry at a young age, thus first births are associated with very young mothers. These young women's children carry a higher risk of death because young, first parity mothers may not have reached their full physical and reproductive maturity. Factors such as climate, rainfall, and soil are especially pertinent to children's survival in sub-Saharan Africa. Demographic factors such as male sex, multiple births, and previous child deaths (Majumder et al., 1997; Mturi and Curtis, 1995) are associated with a high risk of infant death. Infant boys, especially during the neonatal period, have a higher risk of death than females. Early infant death is also significantly higher for multiple births, mainly because multiple births are most likely to be premature and/or low birth weight. If more than one birth survives delivery then there is

competition for breast milk and the mother's resources. Nutrition, illness, and injury are common proximate determinants of childhood death. Various studies examining mortality outcomes have researched mother and child nutritional status as direct or indirect causes of infant and child deaths through association with specific diseases (Rutstein, 1984).

As reported by WHO (2012), the leading causes of death in under-five children are pneumonia, preterm birth compilations, diarrhoea, birth asphyxia and malaria. Specifically, from the end of neonatal period and through the first five years of life, the main causes of deaths are pneumonia, diarrhoea and malaria. Malnutrition has been attributed as the underlying contributing factor in over one-third of all child deaths making children more vulnerable to severe disease. (WHO, 2012). Other determinants of child survival in sub-Saharan Africa are length of birth spacing as a result of adoption of fertility regulation methods, access to safe drinking water, breastfeeding, immunization of children especially against measles, cultural acceptance and adaptability to innovation and changes, environmental sustainability and geographical constraints (Brockerhooff, 1995). In Nigeria, majority of deaths 73.5 percent in children under five years of age in the country occurred in aged two years and below with a peak in the age group, 7-12 months. It was further revealed that out of 101 children with respiratory symptoms of less than 28 days duration, 52 had radiological pneumonia; 42 (80 percent) of them were less than three years (Osuala, 2011).

The quantity and quality of food a child eats affects his/her health and survival (mortality) especially before his/her fifth birthday. As scientific studies have proved, the ability of a child to resist most bacterial infections and recover from such infections is greatly affected by how much and well he/she eats. Scholars had demonstrated the fact that nutrition plays an enormous role in the improvement of health and reduction of mortality (Deaton et al., 2005). This is because a well-nourished child tends to be healthier both during his or her childhood and adulthood. Similarly, a well-nourished woman/mother faces fewer risks during pregnancy and childbirth, and her child therefore has better chances of surviving into adulthood, with better physical and mental development (UNICEF, 2007). Available data reveal that in Europe, the increased caloric intake (by one-third) between the middle of the eighteenth century and the present explains the 10 centimetres or more increase in height seen in the population across most of the continent and also that the improved nutrition between the eighteenth and nineteenth century coincides with the reduction in mortality during this period (Deaton et al, 2005:45). These authors posited that child deaths due to malaria can occur in three different ways. First, the acute infection which manifests itself as a coma and is clinically referred to as cerebral malaria is the most direct and quickest way in which malaria may kill a child. Secondly, frequent or chronic malaria infection develops into severe anaemia which has a high risk of death. Thirdly, malaria during pregnancy results in low birth weight of a child which increases the child's chance of dying during the first month. In addition to these factors, repeated or chronic malaria increases a child's susceptibility to other diseases such as acute respiratory infection or diarrhoea, which in combination cause the child to die.

Parental socioeconomic status had been identified to be significant determinants of child mortality. Parents' education, access to health services, and the household environment represent a few of these factors. Maternal education has consistently been observed to have a strong impact on child survival (Agha, 2000; McMurray, 1997). Paternal education has also emerged as a significant factor (Majumder et al., 1997). In part, maternal education is positively correlated with using modern health services including prenatal care. More education is needed to counteract child mortality than infant mortality, presumably because older children are more reliant on health facilities, clean hygiene practices, and quantity and variety of solid food-factors that better educated parents are more likely to seek out and gain access to (Boerma, 1996). The use of health services, especially prenatal and delivery care, which is often a function of other socioeconomic factors, also reduces infant mortality (Ahonsi, 1995). Maternal education has consistently been observed to have a strong impact on child survival. The use of preventive health services, such as immunization programs, has been determined to influence survival later in childhood (Ahonsi, 1995). The household environment, measured by factors such as source of drinking water and toilet facilities, provides important determinants covering with older children's chances of survival (Esrey and Habicht, 1986; Merrick, 1985). These factors are important not only for their direct effect on child survival, but because they may also indicate the overall resource level of a child's family. Poverty in and of itself is a key determinant of infant and child mortality (Hussain et al., 1999).

Mothers' educational level has been identified to have significant direct relationship with child survival, especially in the developing countries of the world (Orubuloye, 1998; Brockerhoff, 1995). Existing studies have shown that there is a strong correlation between education and health. A woman's education, particularly, is an important determinant

of her child's health and mortality. A cross-sectional and panel studies revealed that there is a strong correlation between a woman's education and implementation of health behaviours that can improve her child's health (Deaton et al, 2005:19). These authors had shown a strong correlation between improved social indicators like education and reduction in mortality in the country. Another empirical study of child mortality and socioeconomic status in sub-Saharan Africa illustrates that illiteracy accounts for two-thirds (67%) of the variation in under-five mortality rate; a 10 percent point reduction in women's illiteracy rate reduces under-five mortality by 13 per cent (UNICEF, 2007). These findings from empirical studies imply that educated mothers tend to have healthier babies and a higher probability that these babies will survive to adulthood than their uneducated counterparts. This is because an educated mother is most likely among others things to complete her child's immunization, have greater knowledge of the child's health (causes and prevention of disease), practice good hygiene for her baby and family at large, and gives her baby good nutrition as she is more likely to be knowledgeable on the nutritional values of the foods she feeds her baby. She is also more likely to be able to afford the above mentioned items for her household since most educated women in developing countries are more likely to have their own source of income.

The recent Nigeria Demographic and Health Survey (NDHS) of 2008 reveals that childhood mortality rates differ substantially between urban and rural areas, and are in rural areas than in urban areas for all categories. For example, the under-five mortality rate is 121 deaths per 1,000 births in the urban areas, compared with 191 deaths per 1,000 births in rural areas. Among the zones, under-five mortality ranges from 89 deaths per 1,000 births in South West to 222 deaths per 1,000 births in North East. The South West zone has the lowest rates for all five childhood mortality estimates compared with the other zones. Higher levels of educational attainment are generally associated with lower mortality rates. Children born to mothers with no education have the highest under-five mortality rate (209 deaths per 1,000 live births). Rates decline sharply as mother's level of education increases. Under-five mortality is 68 deaths per 1,000 live births for children whose mothers have more than a secondary education. Under-five mortality rates are lowest for children in households in to the highest wealth quintile (87 deaths per 1,000 live births); the rate for children in the lowest wealth quintile is 219 deaths per 1,000 live births (NPC, 2009).

Knowledge of measles and diarrhoea is quite pertinent in an understanding of the role of cultural beliefs in health seeking among the Yoruba. In the traditional Yoruba setting, measles attack is usually attributed to a variety of causes which have no link with the concept of virus (Odebiyi and Ekong, 1982). Measles attack is traditionally considered as a punishment for breaking family taboos or as an evil deed from witches or enemies. The belief that the measles attack is caused by enemies is common among polygynous family where co-wives are natural suspects. While measles is perceived as deadly disease among the Yoruba, diarrhoea is perceived merely as a means of getting rid of body impurities or as a sign of 'teething', 'crawling', or 'stretching'. Also some mothers believe that diarrhoea is caused by consumption of sweet things (Jinadu et al., 1991). Mothers with this view will not likely introduce oral rehydration solution to their children since it contains sugar and salt. Another non-disease specific belief among the Yoruba is the existence of "Abiku" (children from the spirit world who can die at will). The Yoruba belief that some children are from the spirit world and they will eventually return to the spirit world after a short period of time on earth unless certain rituals are performed. Abikus are described as spirit children whose mercurial treatment, even rejection, of their parents (mothers especially) leave the mothers in most pitiable state. Abiku children inflict a lot of pain and agony on their mothers. The pain suffered by the mothers of abiku and the efforts made by abiku mothers to placate their obviously mischievous, pain-causing offspring are enormous such as consultation with herbalists and traditional healers (Ogunjuyigbe, 2004). Within the existing literature, this study examines the relationships between mother's age at first birth and childhood mortality level in Yoruba society.

3. Materials and Methods

Cross-sectional survey was used to generate data in the study. The reason for this was to generate quantitative information concerning the topic under study. Thus the quantitative method was geared toward identifying the mechanism by which age at first birth of women determine the level of childhood mortality in Osun State, Nigeria. Osun State is composed of thirty (30) Local Government Areas (LGAs). Two (2) LGAs out of the 30 LGAs in the State were purposively selected for the study with the aid of quota system of sampling method. The procedures adopted here involved the stratification of the 30 LGAs into two main strata on the basis of rural/urban-characteristics of the LGAs the State. One LGA each was purposively selected from each stratum of the two strata. The two (2) LGAs selected are Osogbo LGA with headquarter in Osogbo the State capital of Osun State and Ola-

Oluwa LGA with headquarter in Bode-Osi. Osogbo LGA represents the urban centers in the State. The 2006 Population Census figures show that the total population of this LGA was 115,507 in 2006 and its current estimated population is about 188,197 in 2012. Ola-Oluwa is purely a rural LGA. The local government is made up of one hundred and fifteen (115) rural communities, out of which 9 are major communities (NPC, 1998). Ola-Oluwa LGA had a total population of 76,227 people in 2006 and the current estimated total population of the LGA is about 92,251 in 2012. The LGA represents the rural communities in Osun State for the study. The study population of the survey are women within the child bearing age (15-49 years) with at least a live birth as at the time of survey. A multistage random sampling technique was utilized to select the respondents in the survey. The non-existence of a sampling frame (i.e. the list of all women within the childbearing age that posses the three features stated above in Osun State) necessitated the adoption of a multi-stage random sampling technique in the survey exercise. SPSS software package (version 17.0) was used to survey data. Percentages, means, standard deviation, Pearson chi square, t-test, analysis of variance and post hoc test of homogeneous were the statistical methods used in the interpretation of quantitative data.

4. Results

4.1 Maternal Age at First Birth and Level of Childhood Mortality

Table 1 shows the prevalence rates of childhood mortality among children of adolescent as well as older mothers in Osun State, Nigeria. The childhood mortality prevalence rate among children of adolescent mothers in the study area was about 18.0 percent, while the rate was just 3.0 percent among older mothers. The mean number of childhood mortality among children of adolescent mother was 0.21 as against 0.05 among children of older mothers. Thus the alternative hypothesis which stated that adolescent mothers are more likely to have significantly higher level of childhood mortality among their children compared with the level among children of older mothers was accepted at $P < 0.01$. This is because on Table 1, the chi-square result of the relationship between age at first childbirth and level of childhood mortality was 73.528, degree of freedom = 3 and $P < 0.01$. These data showed that mother's age at childbirth is a significant factor to explain the level of childhood mortality in Osun State, Nigeria. The Contingency coefficient on the relationship between the two variables was 0.26. The contingency coefficient showed that about 26 percent of the reasons for the level of childhood mortality observed in the study area could be explained by age at which women give their first childbirths in the State. Critical examination of the data shows that the lower the age at first childbirth, the higher the level of childhood mortality in the study location. Therefore adolescent mothers are expected to have higher level of childhood mortality among their children compared with older mothers in Osun State, Nigeria. Therefore, in order to reduce level of childhood mortality rate in the State, adolescent fertility must be discouraged.

4.2 Age at first childbirth and socio-economic differentials in childhood mortality level

It is essential to place the levels of child mortality within the context of socio-economic milieu of adolescent and old mothers in the study area. This may greatly help in identifying those variables which health planners and policy makers can manipulate in order to reduce the high rate of childhood mortality identified among adolescent mothers in Osun State, Nigeria. Seven socio-economic variables were identified and examined in this section. These are place of residence, current age, educational level, occupational status, marital status, form of marriage and number of children ever born.

a. Place of residence, Current age and Educational level

Place of residence is not a significant factor to explain differentials in mortality levels among children of adolescent mothers in Osun State, Nigeria. The reason for this was based on the observed difference between childhood mortality levels among adolescent mothers living in rural and urban areas of the study location. As can be seen on Table 2, the independent t-test on the mean difference in the number of childhood mortality between adolescent mothers in the rural and urban areas in the study location was not statistically significant at 0.05 level of significance. However, there was a significant rural-urban childhood mortality differential among older mothers in the study location. This was significant at 0.05 level of significance. It is important to note that childhood mortality level was very high among children of adolescent mothers compared with the level among children of older mothers at both rural and urban areas of the State. It can thus be assumed from these data that irrespective of place of residence, the level of childhood mortality among children of adolescent mothers is usually higher compared with the level among

children of older mothers in Osun State, Nigeria. Table 2 shows a positive relationship between current age of adolescent mothers and levels of childhood mortality rate in the study location. This relationship was significant at 0.01 level of significance and the analysis of variance of this relationship (ANOVA) value (F) was 31.560, with 6 as degree of freedom. Older mothers also have a similar pattern of relationship but the pattern fluctuated at age group 25-29, where none of the older mothers reported occurrence of childhood mortality. The pattern of this behaviour among older mother was also significant at 0.01 level of significance. It is imperative to note that in each of all the age groups identified in the analysis, children of adolescent mothers consistently have higher rates of childhood mortality compared to children of older mothers in the study location. Education is an important determinant of mortality levels in every modern human society. Analysis on educational levels and levels of childhood mortality of adolescent mothers in Table 2 shows a negative or inverse relationship between women's educational level and childhood mortality levels. This means that the higher the educational status of adolescent mothers, the lower the level of childhood mortality among their children. This relationship was significant at 0.01 level of significance. This same pattern was also evident among older mothers. Worthy to note in this relationship is that few adolescent mothers with higher education have never had occurrence of childhood mortality in their lives. Thus in order to reduce the high rate of childhood mortality among children born in Osun State, Nigeria, young girls in the State should be encouraged to acquire higher education. This will invariably reduce the high rate of childhood mortality generally among children in the State.

b. Occupational status, Marital status, Form of Marriage and Number of children ever born

Occupation was not a significant factor to explain childhood mortality differentials among older mothers in Osun state, Nigeria. But it was significant at 0.05 level of significance among children of adolescent mothers in the State. Detailed examination of data on the Table 3 showed that adolescent mothers who were farmers recorded the highest levels of childhood mortality than their counterparts in other occupational groups. Furthermore, adolescent women in trade/craft occupation had second highest child mortality rate. This was followed by civil servants and those of them working with local entrepreneurs. It is important to note that in each of the groups of the identified occupational categories, adolescent mothers consistently recorded higher rate of child mortality than their counterparts who were 20 years and above at their first childbirths. Information on Table 3 showed that marital status of a woman was a significant explanatory variable to explain levels of childhood mortality differentials among adolescent and older mothers in Osun State, Nigeria. Specifically, among adolescent mothers, widowed and divorced women recorded higher rates of childhood mortality compared to those adolescent women who were married and living with their husbands. This same pattern also appeared among older mothers in the State. Divorced older mothers specifically recorded the highest rates of childhood mortality among all the women in older mothers sampled. Thus it can be assumed that adequate moral and financial support from spouse which was lacking among widowed and divorced women in general may be responsible for the reported higher rate of childhood mortality among their children. This relationship is statistically significant for both adolescent and older mothers at $P < 0.01$ level of significance in the study location. Form of marriage is also a significant factor to explain childhood mortality differentials among women in Osun State, Nigeria. The independent t-test in Table 3 showed that, women in polygynous unions reported high rates of childhood mortality among their children than women in monogamous unions. This relationship was significant at 0.01 level of significance for both adolescent and older mothers in the State. But it is essential to note that the proportion of childhood mortality was very high among adolescent mothers in the two forms of marriage compared to their counterparts who were older mothers at their first childbirths in the study location. It is important to note that in previous studies, maternal characteristics like marital status and form of marriage have been less explored in relation to rate of childhood mortality. Thus it is difficult to compare the above findings with earlier studies. In fact, Argeseanu (2004:14) noted a similar problem in the study of determinants of childhood in rural areas of South Africa. As may be expected, data on Table 4 showed a positive or direct relationship between number of children ever born and levels of childhood mortality for both adolescent and older mothers in Osun State, Nigeria. This relationship was significant at 0.01 level of significance. But in each of the levels of number of children ever born, adolescent mothers' record higher level of childhood mortality rate compared with older mothers in the State except fertility level Five and above. Thus it can be argued that the higher the level of parity of a woman in Osun State, Nigeria, the higher the possibility of childhood mortality among her children. It is important to note that preponderance of childhood mortality is very high among children of adolescent mothers at all levels of fertility compared with children of older mothers in the study location.

5. Discussion of Findings and Conclusion

Findings of this study reveal that irrespective of place of residence, the level of childhood mortality among children of adolescent mothers is usually higher compared with the level among children of older mothers in Osun State, Nigeria. This finding is similar to previous reports of scholars about rural-urban differentials in the level of childhood mortality in developing countries (Alderman and Hentchel, 2003; Argeseanu, 2004). The major explanations for this differential are non-availability of better toilet facilities, good source of drinking water, better environmental sanitation and environmental contamination in the rural areas (Casterline and Cooksey, 1989; Das Gupta, 1990; and Alderman and Hentchel, 2003). In addition, the recent national demographic data of 2003 NDHS confirm rural-urban differentials in the level of childhood mortality in Nigeria. According to this report, rural women have 243 under-five mortality compared with 153 among urban women in the country (NPC, 2004:110). It is imperative to note that in each of all the age groups identified in the analysis, children of adolescent mothers consistently have higher rates of childhood mortality compared to children of older mothers in the study location. The result of this analysis confirmed previous data in the literature about relationship that exist between age of women and level of childhood mortality. For example, Curtis and Diamond (1993) and Sastry (1997) found a J-shaped relationship between age of the mother and level of childhood mortality among their children. This means the higher the age of the mother, the higher the level of childhood mortality among her children. However, Gubhaju's (1985) analysis of data generated from Nepal shows decreases in childhood mortality as age of the mother increases. The recent national Nigeria data of 2003 NDHS confirm the finding of this study that age at first childbirth has impact on the level of under-five mortality rate in Nigeria. In particular, adolescent mothers (women who had their first childbirth before age 20 years) have 248 under-five child mortality compared with 203 among women who had their first childbirths between ages 20 and 29 years (NPC, 2004:111). This study also reveals that the higher the educational status of adolescent mothers, the lower the level of childhood mortality among their children. Thus in order to reduce the high rate of childhood mortality among children born in Osun State, Nigeria, young girls in the State should be encouraged to acquire higher education. This will invariably reduce the high rate of childhood mortality generally among children in the State. The above finding corroborates previous findings on the relationship between women education and level of childhood mortality in the literature. For example, studies have consistently found that the children of women with some education do better. Sastry (1997) reports that in Brazil, mothers with at least three years of schooling experience 32 percent lower mortality risk among their children than less educated mothers. In addition, Argeseanu (2004) and NPC (2004) discovered significant relationship between women educational status and level of childhood mortality in rural South Africa and Nigeria respectively. The general explanation for this finding is that mother's education serves as a general control for socio-economic status and knowledge of health-related matters.

Findings of the study indicate that in each of the groups of the identified occupational categories, adolescent mothers consistently recorded higher rate of child mortality than their counterparts who were 20 years and above at their first childbirths. The explanation for the observed differences in childhood mortality rate by occupational status of adolescent mothers may be located in the nature of the occupation and other associated variables. For instance, adolescent mothers who are farmers may be uneducated; they may not have access to pipe born water and good toilet facilities. Absence of these factors is associated with high rate of childhood mortality in any known society (Argeseanu, 2004). The results of the study show a positive or direct relationship between number of children ever born and levels of childhood mortality for both adolescent and older mothers in Osun State, Nigeria. But in each of the levels of number of children ever born, adolescent mothers' record higher level of childhood mortality rate compared with older mothers in the State except fertility level Five and above. Thus it can be argued that the higher the level of parity of a woman in Osun State, Nigeria, the higher the possibility of childhood mortality among her children. This finding confirms previous studies in this area. For instance, literature has it that number of siblings and their survival have significant effect on level of childhood mortality globally (Gubhaju, 1985; Das Gupta, 1990; Arulampalam and Bhalotra, 2003). In conclusion, empirical data in this article reveal that irrespective of place of residence, current age, educational level, occupational status, marital status, form of marriage and number of children ever born, children of adolescent mothers have high rate of childhood mortality compared with children of older mothers when the later are in similar categories with the former in Osun State, Nigeria. This shows that early timing of first childbirth or adolescent fertility increases the level of childhood mortality rate in the State. On the basis of these findings, policy makers, non-state actors and development partners in Osun State, Nigeria aiming at reducing level of childhood mortality should device mechanism to discourage occurrence of adolescent fertility among the younger women in the State.

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Table 1. Percentage distribution of respondents showing the relationship between age at first birth and Number of Childhood Mortality (NCM)

Level of Childhood Mortality (LCM)	Adolescent mothers		Older mothers		Total	
	No	%	No	%	No	%
None	410	82.0	485	97.0	895	89.5
One	79	15.8	5	1.0	84	8.4
Two	9	1.8	10	2.0	19	1.9
Three	2	0.4	-	-	2	0.2
Total	500	100.0	500	100.0	1000	100.0
$X^2 = 73.528$						
d.f = 3, C = 0.262, P = 0.000						
Mean Number of Child Mortality	0.21		0.05			

Table 2. Mean Number of Childhood Mortality (NCM), Standard Deviation (SD) and Analysis of Variance (ANOVA) by place of residence, current age and educational level for adolescent and older mothers

Socio-economic Variable	Adolescent mothers			Older mothers		
	Number	Mean NCM	SD	Number	Mean NCM	SD
Place of residence						
Rural	231	0.23	0.46	210	0.01	0.19
Urban	269	0.19	0.49	290	0.07	0.35
Total	500	0.21	0.47	500	0.05	0.30
	T = 0.836, D.F = 498, Sig. (2-tailed) = 0.403			T = - 1.995, D.F = 498, Sig. (2-tailed) = 0.047		
Current age						
15 – 19	171	0.05	0.24	-	-	-
20 – 24	132	0.04	0.21	88	0.03	0.24
25 – 29	106	0.25	0.46	185	0.00	0.00
30 – 34	39	0.41	0.55	116	0.003	0.09
35 – 39	33	0.76	0.79	62	0.01	0.13
40 – 44	16	1.00	0.82	34	0.38	0.78
45 - 49	3	1.00	1.00	15	0.40	0.83
Total	500	0.21	0.47	500	0.05	0.30
	F = 31.560, D.F = 6, P = 0.000			F = 14.990, D.F = 5, P = 0.000		
Educational level						
None	42	0.57	0.80	32	0.38	0.79
Primary	246	0.22	0.48	51	0.01	0.14
Secondary	209	0.12	0.33	326	0.02	0.22
Higher	3	0.00	0.00	91	0.04	0.21
Total	500	0.21	0.47	500	0.05	0.30
	F = 11.620, D.F = 3, P = 0.000			F = 15.012, D.F = 3, P = 0.000		

Table 3. Mean Number of Childhood Mortality (NCM), Standard Deviation (SD) and Analysis of Variance (ANOVA) by occupational status, marital status and form of marriage for adolescent and older mothers

Socio-economic variable	Adolescent mothers			Older mothers		
	Number	Mean NCF	SD	Number	Mean NCF	SD
Occupational status						
Trade/Craft	360	0.23	0.50	358	0.05	0.30
Farming	23	0.48	0.67	11	0.00	0.00
Wage labour (WLE)	40	0.10	0.30	26	0.15	0.54
Civil Servant	9	0.11	0.33	74	0.01	0.12
Professional	-	-	-	27	0.07	0.27
Unemployment	68	0.08	0.29	4	0.00	0.00
Total	500	0.21	0.47	500	0.05	0.30
	F = 3.774, D.F = 4, P = 0.005			F = 0.985, D.F = 5, P = 0.426		
Marital status						
Single	79	0.05	0.35	13	0.00	0.00
Married	350	0.22	0.43	446	0.02	0.21
Separated	50	0.18	0.48	23	0.04	0.21
Divorced	17	0.53	0.80	13	1.00	1.00
Widowed	4	1.25	1.50	5	0.00	0.00
Total	500	0.21	0.47	500	0.05	0.30
	F = 9.696, D.F = 4, P = 0.000			F = 47.120, D.F = 4, P = 0.000		
Form of marriage						
Monogamy	231	0.15	0.39	316	0.003	0.05
Polygyny	190	0.34	0.57	171	0.14	0.49
Total	421	0.24	0.49	487	0.05	0.30
	T = - 4.010, D.F = 417, Sig. (2-tailed) = 0.000			T = - 4.932, D.F = 485, Sig. (2-tailed) = 0.000		

Table 4. Mean Number of Childhood Mortality (NCM), Standard Deviation (SD) and Analysis of Variance (ANOVA) by number of children ever born for adolescent and older mothers

Socioeconomic Variable	Adolescent mothers			Older mothers		
	Number	Mean NCM	SD	Number	Mean NCM	SD
Number of Children Ever Born (CEB)						
One	176	0.005	0.27	116	0.00	0.00
Two	103	0.11	0.47	117	0.00	0.00
Three	69	0.12	0.61	133	0.007	0.08
Four	68	0.26	0.78	94	0.01	0.10
Five and above	84	0.77	0.99	40	1.57	0.87
Total	500	0.21	0.77	500	0.05	0.30
	F = 58.672, D.F = 4, P = 0.000			F = 46.735, D.F = 4, P = 0.000		