



ISSN: 0975-833X

RESEARCH ARTICLE

CHILDHOOD MORTALITY IN GHANA: A COMPARATIVE STUDY OF 2003-2008

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ARTICLE INFO

Article History:

Received 03rd September, 2013
Received in revised form
08th October, 2013
Accepted 25th November, 2013
Published online 02nd December, 2013

Key words:

Childhood,
Mortality,
Ghana.

ABSTRACT

Although childhood mortality rates have been steadily declining in Ghana over the last two decades, the rate of decline has been very slow and uneven. This study compares the determinants of childhood mortality in Ghana for 2003 and 2008. Secondary data from the 2003 and 2008 Ghana Demographic and Health Surveys were used for the study. Bivariate analysis and binary logistic regression were used to examine the relationship between socio-demographic, household/environmental, and biomedical characteristics of mothers and childhood mortality for both survey years. The results show that childhood mortality had a significant relationship with parity, household size, and duration of breastfeeding for both survey years; and that mothers with higher parity; mothers from small size households and mothers who never breast fed were significantly likely to experience childhood mortality compared to their counterparts, for both 2003 and 2008. Furthermore, work status and mosquito bed net use significantly influenced childhood mortality for 2003 while religion and type of birth significantly influenced childhood mortality for 2008. Some socio-demographic, household/environmental as well as biomedical factors actually influenced childhood mortality for both survey periods.

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INTRODUCTION

The fourth goal of the Millennium Development Goals (MDG) is to reduce childhood mortality in Ghana to two-thirds the 1990 value (122 deaths per 1000 live births) by the year 2015. As a result, the Government of Ghana adopted the High Impact Rapid Delivery (HIRD) approach among other existing internationally proven and cost-effective health, and nutrition interventions as a national strategy for reducing childhood mortality (MOH, 2006). Meanwhile, even though under five mortality rates have steadily declined in Ghana over the last two decades, the rate of decline has been very slow and uneven. Under five mortality rate in Ghana has declined slowly from 155 deaths per 1000 live births in 1988 to 80 deaths per 1000 live births in 2008. The under five mortality rate of 80 deaths per 1000 live births in Ghana means that one in every thirteen Ghanaian children dies before reaching age five and nearly three in five of these deaths occur in the first year of life (GSS *et al.*, 2009). Also, under five mortality rate is higher than the world average of 57 deaths per 1000 live births in 2010. In Ghana, about 57,000 children die annually before their fifth birthday (IGME, 2011). Furthermore, in spite of the observed reduction in under five mortality in Ghana over the years, regional disparities between the northern and southern parts of the country still exist. Under five mortality rate was as low as 50 deaths per 1000 live births in the Greater Accra and Volta Regions to as high as 142 deaths per 1000 live births in Upper West Region and 137 deaths per 1000 live births in

Northern Region (GSS *et al.*, 2009). As such, a number of studies have been conducted to examine various factors that determine under five mortality in Ghana over the past years (Tawiah, 1979; Gyimah, 2002; Tettey, 2003; Gyimah, 2007). However, all these studies were carried out for single periods. As a result, this study sought to go further to compare the levels and determinants of childhood mortality for two consecutive periods using the 2003 and 2008 Ghana Demographic and Health Surveys.

DATA AND METHODS

The study used secondary data from the 2003 and 2008 Ghana Demographic and Health Surveys (GDHS) children's data file. GDHS is undertaken by Ghana Statistical Service in conjunction with Macro International within the broader framework of DHS programmes for developing countries. GDHS includes a complete birth history of women and hence provides good knowledge of levels, differentials, and particularly age patterns of childhood mortality. The GDHS is a nationally representative survey of women age 15 to 49 and men age 15 to 59 that used a two-stage sample design for selecting households for the data collection. The 2003 and 2008 surveys are the fourth and fifth surveys in the series of national level population and health survey conducted as part of the global DHS programme, and was designed to provide data to monitor the population and health situation in Ghana. Data collection took place over a three-month period, from late July to late October 2003 for the 2003 GDHS and a three-month period, from early September to late November, 2008 for the 2008 GDHS (GSS *et al.*, 2004; GSS *et al.*, 2009).

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The dependent (outcome) variable for the study was under five mortality (5q0), defined as deaths occurring among live-born babies between birth and the fifth birthday (0-59 months). Three main categories of independent variables were considered in the study: socio- demographic (maternal age, maternal education, religious affiliation, ethnicity, marital status, maternal work status, and parity), household/environmental (household size, wealth status, type of residence, region of residence, source of drinking water, type of toilet facility, and use of mosquito bed net), and biomedical (timing of prenatal care, place of delivery, type of delivery, type of birth, sex of child, birth order, preceding birth interval, and duration of breastfeeding). The statistical software Stata (Stata.11) was used to process the data. Bivariate and binary logistic regression analyses were carried out. The bivariate analysis was used to present proportions of childhood mortality while stepwise logistic regression model was used to examine the effect of independent variables on childhood mortality, while controlling for other variables for both study periods. Logistic regression model was used because the dependent variable (under-five mortality (5q0)) is dichotomous denoting whether or not a child is alive before age five and provides the odds as well as the relationships with childhood mortality. Three models were used to examine the effects of each of the three main categories of variables on under five mortality for both study periods.

RESULTS AND DISCUSSION

Childhood mortality and socio-demographic characteristics

The results in Table 1 indicate that the proportion of childhood mortality was highest for children of mothers aged 40 to 49 for both 2003 and 2008 (11.7% and 8.4% respectively) and lowest for children of mothers aged 20 to 29 (7.2%) and 15 to 19 (3.4%) for 2003 and 2008 respectively. It is therefore clear that in both 2003 and 2008, childhood mortality proportions increased with increasing maternal age, showing a positive linear relationship between childhood mortality and maternal age at birth. However, Bhalotra and van Soest (2008) rather observed a curvilinear relationship between maternal age and child mortality, where childhood mortality was highest for both younger and older mothers. Furthermore, from Table 1, it can be observed that in 2003, proportion of childhood mortality was highest (10.3%) for children whose mothers were never married and lowest (8.0%) for children whose mothers were married/living together. However, in 2008, proportion of childhood mortality was highest (8.0%) for children whose mothers were widowed/divorced/separated and lowest (2.3%) for children whose mothers were never married. The result for 2008 is consistent with the findings from a study by Antai (2010) which found that children born to mothers who have not been married seem to have better chances of survival than children of married mothers. However, Goro (2007) asserts that

Table 1. Proportion of childhood mortality by socio-demographic characteristics

Variables	Year of survey	
	2003	2008
Maternal age		
15-19	8.9	3.4
20-29	7.2	5.4
30-39	8.1	6.6
40-49	11.7	8.4
Marital status		
Never married	10.3	2.3
Married/Living together	8.0	6.7
Widowed/divorced/separated	9.8	8.0
Religious affiliation		
Christian	8.0	5.2
Muslim	9.0	7.2
Traditional/spiritual	7.9	11.5
No religion	8.8	7.9
Ethnicity		
Akan	8.4	5.8
Ga/dangme	6.9	5.6
Ewe	7.9	3.6
Mole-dagbani	9.3	7.6
Others	5.8	6.9
Maternal education		
No education	8.7	6.7
Primary	9.7	7.5
Secondary+	6.8	4.9
Maternal work status		
Working	8.3	5.9
Not working	6.8	8.1
Parity		
1-3	6.6	4.9
4-6	9.0	6.3
7+	12.3	11.7

Source: Computed from 2003 and 2008 GDHS data sets

children born to women who are not in union are almost two times more likely to die than children born to women who are in union. From Table 1, proportion of childhood mortality in 2003 was highest (9.0%) for children whose mothers were Muslims and lowest (7.9%) for children whose mothers were traditionalists/spiritualists. In 2008, however, it was highest (11.5%) for children of traditional/spiritual mothers and lowest (5.2%) for children of Christian mothers. This result is consistent with the result of a study in Ghana by Ahiadeke (1982) who found that child mortality rate is lower among Christian mothers than Muslim mothers and contrary to the finding for 2003. The proportion of childhood mortality was highest for children of Mole-Dagbani mothers for both 2003 and 2008 (9.3% and 7.6% respectively) and lowest for children of mothers from other ethnic groups (5.8%) and children of Ewe mothers (3.6%) for 2003 and 2008 respectively (Table 1). This means that more childhood deaths occurred among children of Mole-Dagbani mothers than children of mothers from the other ethnic groups in both 2003 and 2008 (Gyimah, 2002) and less childhood deaths occurred among children of mothers from other tribes and children of Ewe mothers for both periods respectively. From Table 1, proportion of childhood mortality was highest for children whose mothers had attained primary school education for both 2003 and 2008 (9.7% and 7.5% respectively) and lowest for children whose mothers had attained secondary school education or higher for both 2003 and 2008 (6.8% and 4.9% respectively). This means that children born to mothers with secondary or higher education had relatively better chances of survival until age five for both 2003 and 2008 (Murphy & Wang, 2001). In 2003, proportion of childhood mortality was higher for children whose mothers were working (8.3%) than that for children whose mothers were not working (6.8%) while in 2008, it was higher for children whose mothers were not working (8.1%) than that for children whose mothers were working (5.9%) (Table 1). This means that there was negative relationship between maternal work and childhood survival in 2008 (Mondal *et al.*, 2009, Uddin *et al.*, 2009) and positive relationship in 2003 (Wharton, 2009). This could possibly be because of the fact that majority of non-working mothers are family helpers and hence do not have cash in hand to provide better health care for their sick children to improve their chances of survival (Mondal *et al.*, 2009). The proportion of childhood mortality was highest for children whose mothers had parity of 7 or more for both 2003 and 2008 (12.3% and 11.7% respectively) and lowest for children whose mothers had parity of 1-3 for both periods (6.6% and 4.9% respectively) (Table 1). It is clear that childhood mortality proportions increased with an increase in parity for the study period (Lucas & McDonald, 1980). However, some literature suggests that births of parity one and high parity births are associated with higher deaths (Caldwell, 1979).

Logistic regression analysis was carried out for the independent variables in three successive models for both periods. Model 3 (M3) outlines the combined effect of all the three categories of the independent variables (socio-demographic, household/environmental and biomedical) (Appendices 1 and 2). The logistic regression model have estimates on the extent to which socio-demographic variables (maternal age, maternal education, marital status, religious affiliation, ethnicity, maternal work status and parity) affect the likelihood of a child

dying before age five for both survey years. The study established that there was a significant relationship between parity and childhood mortality for both 2003 and 2008. The odds of childhood mortality were higher for children whose mothers had parity of 7 or more compared to children whose mothers had parity of 1 to 3 for both 2003 and 2008 (1.90 times and 1.68 times respectively). It implies that the risk of childhood mortality increased with increasing level of parity. This affirms the findings of Caldwell (1979) that births of parity one and high parity births are associated with high child mortality risks.

Furthermore, evidence from the logistic regression results indicates that there was significant relationship between religious affiliation and childhood mortality for 2008 only (Appendices 1 and 2). The odds of childhood mortality for 2003 were higher (1.33 times) for children of Muslim mothers and lower (0.69 times) for children of mothers who had no religion compared to Christian mothers while for 2008, the odds were higher (1.74 times) for children of traditional/spiritual mothers compared to Christian mothers. This echoes what Ahiadeke (1982) found that childhood mortality risk is lower among Christian mothers than Muslim mothers. Also, there was significant relationship between maternal work status and childhood mortality for 2003 only. For 2003, the odds of childhood mortality were lower (0.24 times) for children whose mothers were not working compared to children of mothers who were working (Wharton, 2009) while for 2008, the odds were higher (1.34 times) for children of mothers who were not working compared to children of mothers who were working (Bawah, 2001).

Childhood mortality and household/environmental characteristics

From Table 2, the proportion of childhood mortality was highest for children from small households for both 2003 and 2008 (9.0% and 7.4% respectively) and lowest for children from large households (7.1%) and medium sized households (5.2%) for 2003 and 2008 respectively. It is observed that whereas in 2003, childhood mortality proportion decreased with increasing household size, the proportion for 2008 was higher for children from small and large households and lower for medium sized households depicting a U-shaped relationship between household size and childhood mortality. The finding for 2003 is therefore consistent with what some researchers have found that household size is negatively correlated with childhood mortality (Burstrom *et al.*, 1999), but contrary to that for 2008. The proportion of childhood mortality was found highest for children from middle households for both 2003 and 2008 (8.9% and 7.7% respectively) and lowest for children from rich households for both periods (7.5% and 5.5% respectively). It becomes clear that there was an n-shaped relationship between wealth index and childhood mortality for both 2003 and 2008. This confirms what Bawah (2001) found that children from rich households have better chances of survival than those from middle and poor households. However, it contradicts what Uddin *et al.* (2009) found that children born in households with low standards of living index experienced highest childhood mortality and that the relationship between mother's SLI and childhood mortality is negative.

From Table 2, proportion of childhood mortality was higher for children from rural areas for both 2003 and 2008 (8.6% and 6.3% respectively) and lower for children from urban areas for both periods (7.5% and 5.8% respectively). This echoes the findings from studies by Tetey (2003) and Gyimah (2004) that children living in rural areas had higher risks of childhood mortality relative to children living in urban areas.

was bottled water for both 2003 and 2008 (7.1% and 3.2% respectively) (Table 2). However, there was no death recorded for children whose source of drinking water was rain water in 2008, even though rain water as a source of drinking water recorded highest proportion of childhood mortality in 2003. Bottled water was a safe and improved source of drinking water for childhood survival than

Table 2. Proportion of childhood mortality by household and environmental characteristics

Variables	Year of survey	
	2003	2008
Household size		
Small (1-4)	9.0	7.4
Medium (5-7)	8.1	5.2
Large (8+)	7.1	5.8
Wealth status		
Poor	8.3	5.9
Middle	8.9	7.7
Rich	7.5	5.5
Type of residence		
Urban	7.5	5.8
Rural	8.6	6.3
Region of residence		
Western	9.6	3.7
Central	7.9	8.5
Greater Accra	5.9	4.9
Volta	9.7	2.9
Eastern	6.9	5.9
Ashanti	9.2	6.4
Brong Ahafo	8.5	4.1
Northern	8.6	9.4
Upper East	4.2	3.4
Upper west	11.1	12.2
Source of drinking water		
Piped water	7.4	6.5
Well water	8.1	6.3
Surface water	8.8	5.9
Rainwater	17.6	0.0
Tanker truck	13.3	18.8
Bottled water	7.1	3.2
Type of toilet facility		
Flush toilet	5.2	6.6
Pit toilet	8.1	5.7
No facility	8.5	7.1
Others	16.4	0.0
Use of mosquito bed net		
Yes	7.2	5.3
No	8.6	8.2

Source: Computed from 2003 and 2008 GDHS data sets

For both 2003 and 2008, the proportion of childhood mortality was highest for children from Upper West Region (11.1% and 12.2% respectively) and lowest for children from Upper East Region (4.2%) and for children from Volta Region (2.9%) for 2003 and 2008 respectively (Table 2). This finding is contrary to the study by Twum-Baah *et al.* (1994) which found that northern region appears to have the highest mortality risk and the lowest rate being in Greater Accra. The proportion of childhood mortality was found highest for children whose source of drinking water was rain water (17.6%) in 2003 and for children whose source of drinking water was tanker truck in 2008; and lowest for children whose source of drinking water

surface water, well and piped water for the five year period preceding the two surveys while rain water was the safest for 2008. This is contrary to the finding from a study by Massawe (1991) which found that water from rivers and taps (which are more likely to be contaminated) are strongly related to higher levels of childhood mortality compared to that obtained from wells, and Kembo and van Ginneken (2009) which found that the odds of dying during childhood for children born in households with access to piped drinking water are reduced relative to those born in households without access to piped drinking water. From Table 2, proportion of childhood mortality was highest for children who used other toilet facilities such as bucket and pan (16.4%) and for children who

had no toilet facility (7.1%) for 2003 and 2008 respectively; and lowest for children whose toilet facility was flush toilet (5.2%) and children who used pit toilet facility (5.7%) for both periods respectively. However, no death was recorded for children who used other types of toilet facilities in 2008. Children from households that used other toilet facilities and those without toilet experienced a comparatively more childhood deaths in 2003 and 2008 respectively. This may be possibly because these people had to use public toilets, bush or any other means that are comparatively unhygienic and perilous to the health of children. This affirms studies by Mondal *et al.* (2009), and Kembo and van Ginneken (2009) which found that households having hygienic latrines have considerably lower childhood mortality level than those without such facilities and that childhood mortality increases when sanitary conditions decrease. For both 2003 and 2008, the proportion of childhood mortality was higher for children whose households did not use mosquito bed nets (8.6% and 8.2% respectively) and lower for children whose households used mosquito bed net for both periods (7.2% and 5.3% respectively) (Table 3). It is obvious that the use of mosquito bed nets in households has a positive effect on childhood mortality. This affirms a study in Southern Tanzania by Gosoni *et al.* (2008) which found that the ownership of household bed net was the only factor that was significantly associated with childhood mortality reduction. The logistic regression model also established that there was a significant relationship between household size and childhood mortality for both 2003 and 2008.

times for 2003 and 2008 respectively) and children of mothers from large sized households (0.20 times and 0.32 times for 2003 and 2008 respectively) compared to children of mothers from small sized households. Additionally, the test results show that there was significant relationship between use of mosquito bed net and childhood mortality for 2003 only. For both 2003 and 2008, the odds of childhood mortality were higher for children of mothers who did not use mosquito bed nets (1.73 times and 1.40 times respectively) compared to children of mothers who used mosquito bed nets. Thus, children of mothers who did not use mosquito bed nets in their households were more likely to die before age five for both periods.

Childhood mortality and biomedical characteristics

From Table 3, the results reveal that proportion of childhood mortality in 2003 was highest (6.1%) for children whose mothers sought their first prenatal care during the first trimester of pregnancy and lowest (2.9%) for children whose mothers sought their first prenatal care during the third trimester. However, in 2008, it was found highest (6.6%) for children whose mothers sought their first prenatal care during the third trimester of pregnancy and lowest (2.8%) for children whose mothers sought their first prenatal care during the first trimester of pregnancy. It is therefore evident that while in 2003, the proportions of childhood mortality decreased with increase in timing of first prenatal care, in 2008 the proportions increased with an increase in timing of first prenatal care. The result for 2008 is therefore consistent with findings from a study

Table 3. Proportion of childhood mortality by biomedical characteristics

Variables	Year of survey	
	2003	2008
Timing of first prenatal care		
First trimester	6.1	2.8
Second trimester	5.5	4.9
Third trimester	2.9	6.9
Place of delivery		
Home	7.6	6.1
Public sector	8.6	5.8
Private sector	5.6	5.5
Others	7.7	7.7
Type of delivery		
Normal	7.8	6.1
Caesarean section	8.2	6.5
Type of birth		
Single	7.5	5.7
Multiple	25.0	15.9
Sex of child		
Male	8.4	6.6
Female	8.0	5.6
Birth order number		
1	7.8	6.1
2-3	7.2	5.1
4-6	8.9	6.1
7+	10.0	10.5
Preceding birth interval		
<2 years	14.1	9.7
2-3 years	6.3	6.0
4+years	8.2	5.0
Duration of breastfeeding		
Never breastfed	88.7	45.8
<6 months	22.9	17.7
6+ months	2.8	2.1

Source: Computed from 2003 and 2008 GDHS data sets

conducted by Uddin *et al.* (2009) which found that childhood mortality risk was highest among children whose mother did not receive antenatal check during pregnancy and lowest for children whose mothers accessed their first antenatal check during the first four months of pregnancy; but contrary to the result for 2003. Furthermore, Table 3 shows that the proportion of childhood mortality was highest for children whose mothers delivered at public hospitals (8.6%) and for children whose mothers delivered at other places (7.7%) for 2003 and 2008 respectively. However, the proportions were lowest for children whose mothers delivered at private hospitals for both 2003 and 2008 (5.6% and 5.5% respectively). It is notable that there were relatively more childhood deaths for children of mothers who delivered at other delivery centres than for children of mothers who delivered at private hospitals for both periods. This is affirmed by the findings from a study conducted by Seckin (2009) which found that medical attention at the time of delivery and antenatal care are significant factors in the survival chance of the new born, and that survival is higher among children born in good health facilities and attended to by professional doctors than those born at home attended to by untrained personnel. Table 3 also indicates that the proportions of childhood mortality were higher for children who were delivered through caesarean section for both 2003 and 2008 (8.2% and 6.5% respectively) and lower for children who were delivered through normal deliveries for both periods (7.8% and 6.1% respectively). It is therefore indicative that childhood mortality proportions increased with an increase in complications during child birth for both 2003 and 2008.

On the contrary, Hossain and Mondal (2009) found that childhood mortality risks are higher among those children who were born through normal delivery than those who were born through caesarean section. Moreover, the proportions of childhood mortality were higher for children who were part of multiple births for both 2003 and 2008 (25% and 15.9% respectively) and lower for single birth children for both periods (7.1% and 3.2% respectively) (Table 4). It is therefore obvious that childhood mortality proportions increased with an increase in multiplicity of birth for both periods. Likewise, Kembo and van Ginneken (2009) found that multiple births are associated with an elevated mortality risk and that childhood mortality risk associated with multiple births is more than two times greater than among single births. Table 3 further reveals that for both 2003 and 2008, the proportions of childhood mortality were found higher for male children (8.4% and 6.6% respectively) and lower for female children for both periods (8.0% and 5.6% respectively). It is obvious that more childhood deaths occurred among male children than female children for both periods. This is consistent with findings from studies conducted by Masuy-Stroobant (2001) females have advantage over males in terms of survival, and contrary to findings from studies conducted by Hill and Upchurch (1995) preference for male child has led to a higher mortality in female children relative to males. Results from Table 3 also show that for both 2003 and 2008, the proportions of childhood mortality were highest for children whose birth order number were 7 or more (10.0% and 10.5% respectively) and lowest for children whose birth order number were 2-3 for both 2003 and 2008 (7.2% and 5.1% respectively). This suggests that the first and higher birth orders (7+) experienced a relatively more childhood deaths than middle birth orders and for that matter childhood mortality showed a J-shaped relationship with birth

order number for both 2003 and 2008. This finding is consistent with the results from studies conducted by Goro (2007) which found that child mortality risks are highest for children of high birth order (from birth order 5) followed by first born and lower for second and third born. Contrary to this, Wharton (2009) also found that higher birth order of a child (born later down the line) increases the chances of surviving anywhere from 40 to 85 percent. This may be so because high birth order children are born to older and wiser mothers. They may also have older siblings (hopefully), all of whom may aid in the younger child's development.

The proportions of childhood mortality were found highest for children whose preceding birth interval was less than 2 years for both 2003 and 2008 (14.1% and 9.7% respectively) and lowest for children whose preceding birth interval was 2-3 years (6.3%) and for children whose preceding birth interval was 4 and above years (6.0%) for 2003 and 2008 respectively (Table 3). This suggests that preceding birth interval had U-shaped relationship with childhood mortality in 2003 while childhood mortality proportions decreased with an increase in preceding birth interval in 2008 depicting a negative relationship with childhood mortality. It is therefore noteworthy that longer birth intervals improve the survival chances of the succeeding child (Bhalotra & van Soest, 2008). Also, the proportions of childhood mortality were highest for children who were never breastfed for both 2003 and 2008 (88.7% and 45.8% respectively) and lowest for children who were breastfed for 6 or more months for both periods (2.8% and 2.1% respectively). Thus, the proportions of childhood mortality decreased with an increase in duration of breastfeeding for both periods and for that matter long duration of breast feeding may help in ameliorating childhood mortality. This affirms the findings from a study conducted by Kyei (1999) the longer the duration of breastfeeding (from HIV negative women), the lower the risk of child mortality. Contrary to this, some literature on the determinants of childhood mortality indicates a positive relationship between duration of breastfeeding and child mortality risk (Guilkey & Riphahn, 1998). Furthermore, the logistic regression model (Appendices 1 and 2) revealed that there was significant relationship between duration of breastfeeding and childhood mortality for both 2003 and 2008. For both 2003 and 2008, the odds of childhood mortality were lower for children who were breastfed for less than 6 months (0.73 times and 0.37 times respectively) and children who were breastfed for 6 and above months (0.65 times and 0.015 times respectively) compared to children who were never breastfed. Evidently, children who were never breast fed were more likely to die before age five than children breast fed for 6 or more months for both periods. The chances of childhood mortality therefore decreased with an increase in duration of breastfeeding (Kyei, 1999). Additionally, the results from the test showed significant relationship between type of birth and childhood mortality for 2008 only. Thus, the odds of childhood mortality were higher for children who were part of multiple births for both 2003 and 2008 ((1.22 times and 2.76 times respectively) compared to children who were single born. This implies that children who were part of multiple births were more likely to die before age five than single birth children (Kembo & van Ginneken, 2009).

Conclusion

The study established that some socio-demographic, household/environmental, and biomedical variables including

parity (number of children), household size and duration of breastfeeding of child had significant influence on childhood mortality for both survey years. Thus, these factors consistently determined childhood mortality for the five-year periods preceding both the 2003 and 2008 Ghana Demographic and Health Surveys; while mother's work status and the use of mosquito bed net determined childhood mortality for 2003 only, and religious affiliation and type of birth for only 2008. It follows that exclusive breast feeding, fertility regulation as well as extensive distribution and use of mosquito bed nets should be the key focus of the Ghana government, if Ghana will be able to meet her MDG 4 by 2015. Parents also have a key role to play by giving absolute social and medical care to children, especially those children who are part of multiple births in order to improve upon their survival chances.

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