CAUSES OF NEONATAL MORTALITY IN SUB-SAHARAN AFRICA: THE CASE OF GHANA

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Abstract: **The paper examines the causes of neonatal deaths in sub-saharan Africa with a particular focus on Ghana. Various diseases such as diarrhoea, tetanus, preterm, asphyxia, congenital diseases account for Neonatal deaths in sub-Sahara Africa and Ghana in particular. Preterm and asphyxia are known to be major causes of deaths jointly contributing to about 51 percent of the deaths (Lawn, Cousens and Zupan 2005). The cause of death varies between the early and the late neonatal periods, with preterm and birth asphyxia and congenital defects occurring predominantly during the first week of life and infection being the major cause of death afterwards. In this presentation, I seek to outline and discuss these causes with statistical evidence or data to support where possible.**

Keywords: **causes of neonatal deaths, Sub-Sahara Africa, Preterm, asphyxia.**

1. INTRODUCTION

[1]Neonatal deaths most of which are preventable in modern times still accounts for more than a quarter of a million deaths in Africa and Ghana even after the second global elimination deadline has passed. Most of these deaths still occur in 20 countries in Asia and sub-Saharan countries (Lawn, Cousens and Zupan 2005). Most of the factors accounting for this situation in Ghana and elsewhere in Africa are various diseases and socio-cultural practices. I will discuss these causes in the context of data that I collected from various sources mostly on web base. Various interventions have been proposed for curbing the phenomenon. Given, the focus of this paper, that is to look at the causes, a discussion of the interventions is beyond the scope of this present paper. This does not suggest that cursory reference will not be made to some intervention where it is necessary to do so to illustrate a point or provide support.

The paper is organised as follows: section 2. looks at the various diseases that are responsible for neonatal deaths with section 2 focusing on the determinants of neonatal deaths.

2. DISEASES

2.1. Diarrhoea

Of the many diseases, Diarrhoea is known to be one of the main causes of neonatal deaths in Ghana and elsewhere in Africa. It is the passage of loose or liquid stool more frequently than is normal. It may be watery (e.g. cholera) or passed with blood (e.g. dysentery). Despite the advances in health and sanitation, sub-Saharan Africa continues to show pattern of high childhood mortality mainly due to infectious and parasitic diseases with diarrheoa as one of the leading causes (Kirkwood, 1991; WHO, 1995). According to the world Health Organization, each child in the region experiences an average of five episodes of diarrhea per year resulting in about 800,000 annual deaths (WHO, 1996). Diarrhoea diseases thus pose as a major threat to neonatal health and survival in sub-Saharan Africa. There have therefore been studies and

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[1] Neonatal deaths are defined as the probability of dying within the first four weeks of birth.

research policy and interest in understanding the etiology and preventive measures. It is widely recognized that exposure to the diarrhoea pathogen is conditioned by a variety of household environmental factors, particularly water and toilet facilities (Ahiadeke, 2000 ; Esrey, 1996;Esrey et al., 1991;Habicht et al., 1988; Johannes et al., 1992; Root,2001; Ryland & Raggers, 1998; Tagoe, 1995; Woldemicael, 2001). For instance in 2000, about 1.3 million children in developing countries were estimated to have died from diarrhoea diseases as a result of unsafe water, sanitation and hygiene (WHO, 2002). This is due to the fact that a significant number of people in sub-Saharan Africa lack access to facilities such as treated water and adequate sanitary facilities in reducing the risk of childhood diarrhoea as expected. Moreover, since diarrhoea is transmitted through a variety of agents, (Cutting, 1991; van Ginneken and Teunissen, 1992), argued that other parental provided inputs combine with household facilities can be used in determining a child's vulnerability. According to them good home management practices such as boiling water could potentially reduce the risk of childhood diarrhoea even in households with poor sanitary facilities.

Caldwell (1979), Cochran et al. (1980), Meeggama (1980), Ware, (1984) associated high levels of maternal education with better understanding and appreciation for hygiene and health related matters. This means educated mothers could for instance, decontaminate untreated water and dispose of faeces in a sanitary manner than their less educated counterparts and by so doing will reduce the Vulnerability of their children. Exclusive breast-feeding is a method adopted in most developing countries including Ghana to help minimize the diarrhoea epidemic.

2.2. HIV/AIDS

A number of studies have shown that increased child, infant and neonatal mortality is as a result of HIV AIDS epidemics. This is a natural conclusion based on the evidence that vertical transmission of HIV occurs in approximately 32 percent of births to HIV infected mothers in countries where breast-feeding is prevalent (Walker, 2003) and 60 percent of children who are infected with AIV AIDS will die before their fifth birth day (Spira et al. 1999). However, according to them, questions about what proportion of the increase in child mortality is due to vertical transmission and what proportion is due to other factors are still been debated. However, at the aggregate level, Adetunji (2000) reviewed Demographic and Health Survey (DHS) data from 25 countries and found increases in under five mortality levels and high rate of neonatal mortality in countries with prevalence over five percent. Moreover, he concluded that not all of the stagnation in child and neonatal mortality can be directly attributed to the prevalence of HIV AIDS and was not able to separate the effects of AIDS from other courses. Walker and others (2002) estimated the increase in child mortality due to HIV/ AIDS in sub-Saharan Africa and determine that HIV is not the only cause of the increasing rate in child mortality. They went on to determine that correcting for competing causes of mortality, HIV infection caused only eight percent of under five deaths in Africa in 1999. More recent research by Walker and Ng'weshemi (2003) estimated that ten percent of child mortality and neonatal mortality in Africa was due to HIV infection. According to them, it is evident that the increase in child and neonatal mortality is due to direct transmission from mother to child, and some of it is caused by indirect effect due to maternal illness or maternal death, But (Rut stein, 2000) assets that the resurgence of malaria and lower levels of vaccination coverage and health care utilization are also contributing to the reversal in child mortality trend. According to him these negative trend in high prevalence settings could be due to the overload of health resources due to HIV AIDS. Consequently, as a case study, Hill and others (2001) attempted to tease out the causes for a 25 percent increase in child and neonatal mortality in Kenya between the late 1980s to 1990s. Proverbial level HIV prevalence was included as a key variable to analyze the factors associated with an increase in child mortality. HIV prevalence in a community was found to be associated with an increase in child and neonatal mortality. According to this research, a number of control variables were used in the analysis including social, bio-demographic and health sector factors, and even while controlling for these, HIV was still found to be significant, suggesting strongly that the direct effect was important. Crampin and others (2003) used data from a longitudinal study site in Malawi to measure child and neonatal mortality to HIV positive women versus HIV negative women. They also found significant difference of child and neonatal mortality levels for HIV-positive mothers (46 percent) versus HIV-negative mothers (16 percent). Whether this increase mortality was due to vertical transmission or to the negative impacts of an ill parent is not distinguished. The confirmation here is that there is clear evidence for a correlation between mother and child mortality in high HIV-prevalence settings.

3. DETERMINANTS OF NEONATAL MORTALITY IN SUB-SAHARAN AFRICA AND GHANA

According to Pojda and Kelly (2000), maternal health and health care are important determinants of neonatal survival. Neonatal outcomes are affected by female health through out of the life cycle from child through adolescent into

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pregnancy. Also, obstructed labor and mal presentation presents highest risk and require skilled intervention at birth (Lawn, Cousens and Zupan, 2005). Accordingly, a mother's death at birth increases the risk of neonatal death by half. Other indirect causes of neonatal death globally are poverty, wars and famine and so on. The direct causes are the diseases identified by (WHO, 2005) as pneumonia, diarrhea and tetanus forming 36 percent

3.1. Poverty in Ghana

Poverty is the root cause of many maternal and neonatal deaths, either because it increases the prevalence of the risk factors such as maternal infection or because it reduces access to care. From a study and analysis by UNICEF and WHO (2000) using the demographic and health surveys between 1985 and 2002 reveals that the regions with the lowest quintiles have a neonatal mortality rate that is, on average 20 to 50 percent higher than that for the higher income quintile. Unfortunately in Ghana, 7 million out of 18 million Ghanaians are poor according to 1998/99 living standard survey. Many of these people work in agriculture mostly as crop farmers. Others are engaged in micro and small enterprises, or finding a survival income as daily casual labour. Two thirds of these people are outside agriculture sector and are very active in the informal economy and many are persistently poor, particularly women and are not able to overcome their health needs and that of their children, thereby giving rise to the increasing rate of child and neonatal mortality as experienced in the country. Poverty in Ghana is prevalent in rural communities. Seventy percent of the country's poor people live in rural areas (GSS, 2016), where they have limited access to basic social services, safe water, all-year round, and electricity and telephone services. The incidence of poverty is highest in the northern parts of the country, where rainfall sometimes is below average to give farmers adequate yield of their crops. All these affects child survival after birth, it is therefore not surprising to see higher rates of mortality particularly in the rural areas and that of the Northern parts of the country (GSS, 2016). See the trend of poverty in the map below in Figure 1
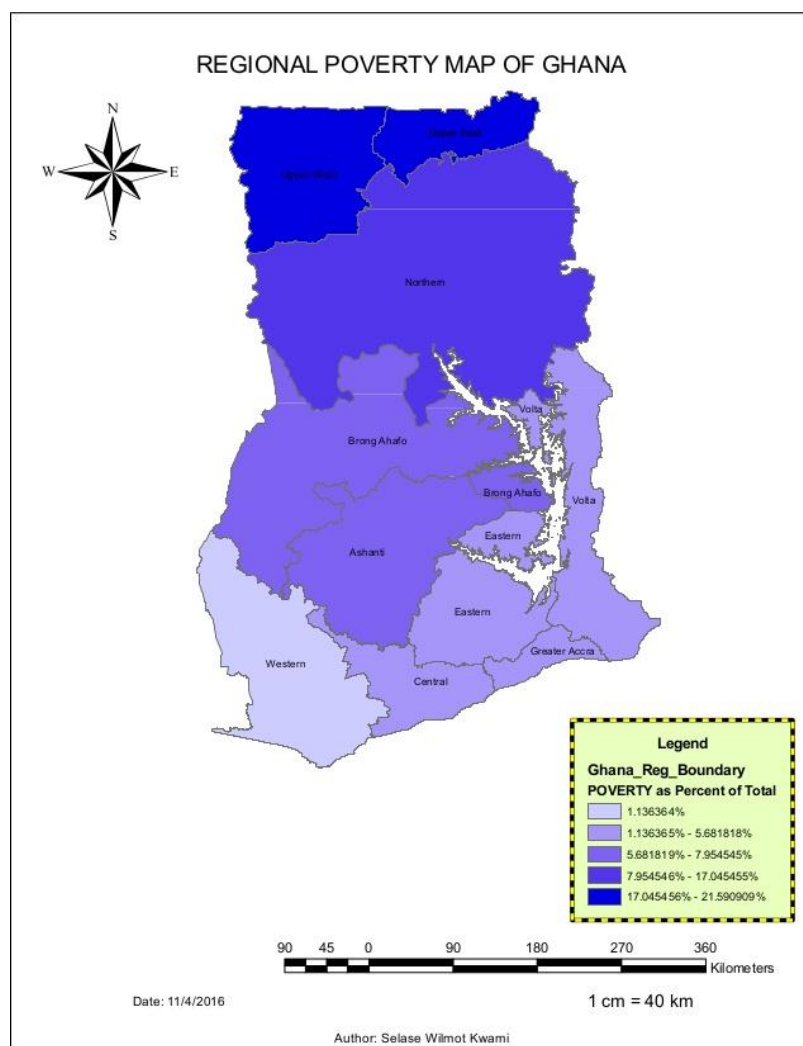
3.1.1. Measurement of poverty

The measurement of poverty is difficult and contentious. Researchers for many decades have used proximate measures of poverty while an effort is still being made to provide a measure for poverty. Rowntree's (1901) measure of poverty is applied at the household level and many other measures. Other type of measure disaggregate to the individual level, so as to capture intra-household factors and different types and causes of deprivation affecting men, women, children, old people and so many other groups. An important measure of poverty was described by Atkinson (1987) and Foster (1998) using income and expenditure, and asset index (wealth status) to determine who is poor or rich. For the use of universal poverty measure like the international poverty line of below US$1 a day by the (UN, 2000) as absolute poverty is very questionable especially in developing countries and Ghana in particular since poverty at these regions depends on consumption of food, use of shelter, clothing and social services such as education and health, the cost of which cannot be predicted over time since the economy is not stable and the currency keep on fluctuating.

3.1.2. Measurement of poverty using a wealth index

Generally in developed countries, measuring incomes and expenditure is quite easier due to the availability of consumption and expenditure data. This is absent in developing countries. Therefore, an alternative approach is to use the Demographic and Health Surveys data (DHS) on ownership of assets to create asset index. An asset index is a proximate measure of household welfare. Therefore, by using assets on ownership as in the DHS such as ownership of a bicycle, motor bicycle, and car, housing characteristics such as flooring, type of wood, type of toilet facilities used in the house and sources of drinking water in the house as well as the use of electricity in the house, an asset index can be constructed (Filmer and Pritchett, 1999). Sahn and Stifel (1999) have taken a similar index approach to making comparisons of relative poverty over time across countries, using DHS data for nine countries in Africa including Ghana.

The various approaches used in the constructing of asset index in the literature are only differentiable by the method of weighting to aggregate the asset variables. The unavailability of the quantity, quality and price of the variables in the data has led to different ways of weighting the asset variables without any generally acceptable method of weighting. The appropriateness of the weighting depends on the method used. However, Sandi ford et al (1995) used a multivariate regression analysis for their study of the impact on women literacy on health. This same method was used by Bonilla-Chacin and Hammer 1999; Gwstkin et al. 2000; Stecklov, Bommer, and Boama 1999 to examine the differences in other socio-economic outcomes in the DHS data such as mortality, morbidity, utilisation of health facilities, fertility, and contraceptive use. This approach was criticised by Filmer and Pritchett (2001) as not been able to estimate wealth effect since many of the asset variables have direct and indirect effect on incomes. Filmer and Pritchett therefore proposed and used principal component[2] analysis to estimate the weights. The first principal component of a set of variables is the linear index of all the variables that capture the largest amount of the information that is common to all of the variables. For more details, see extensive work on this by Lindeman, Merenda and Gold: Statacorp (1999.)

The use of asset index is quite a good proxy measure of household welfare, but some of the variables, for instance electricity, are both household and community asset. Therefore for any household to have electricity depends on whether the community has the electricity or not, unless the household has its own source of power (Deaton, 1997). The other problem is how the assets were acquired and whether they are in working condition or not and how often the assets were in use.

3.2. Place of birth (Skilled attendance, before, during and after birth)

A report from (WHO, 1990) suggests that an estimated shortage of almost 4.3 million doctors, midwives, nurses and support workers worldwide are required. This shortage is most severe especially in sub-Saharan Africa and Ghana is no exception. Therefore a radical reduction of neonatal deaths is possible by training more nurses and doctors to acquire the necessary skills to run the health system of the countries, without necessarily been specialists. The ideas of Governments investing in sophisticated technology alone do not solve these health problems (WHO, 2005). According to this report,

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[2] A principal component or factor analysis is a technique for extracting from a set of variables those few orthogonal linear combinations of the variables that capture the common information most successfully.

intensive care facilities, specialists and expensive equipment are useful to reduce neonatal mortality further only after very low levels have already been achieved. It stated that Nicaragua and Vietnam lowered their neonatal mortality rates to 17 and 15 per 1000 births respectively, while their spending on health in the 1990 was only US$45 and US$20 per capital. The report therefore suggested setting up health care systems with (1) continuity between care during pregnancy (2) skilled care at birth and (3) care given when the mother is at home with the newborn.

The antenatal period presents an opportunity for identifying threats to the unborn baby's health as well as counselling on nutrition, birth preparedness', parenting skills and family planning. (WHO, 2005). Effective midwifery ensures non-traumatic births and reduces neonatal mortality and morbidity from birth asphyxia while at the same time strict asepsis at delivery and cord care reduces the risk of infection. Skilled care makes it possible to resuscitate babies who cannot breathe at birth and to deal with or refer unpredictable complications as the happen to the mothers or babies. Births managed by skilled workers are much safer for both mothers and newborns (WHO, 2005). Moreover, Professional support at home is very important for the health of the baby. If the mother has good parenting skills, she can breastfeed and keep the baby warm. In Nepal, the development of a net work of women's group led to 30 percent reduction in neonatal mortality rates, mainly through better uptake of service (WHO, 2005).

3.3. Socio-cultural factors

Cultural factors can influence mortality. Society's beliefs about disease, for example may result in taboos or ritualistic treatments whose therapeutic effects may not be supported by modern medicine or treatment (Fabrega 1972). Cultural beliefs may lead to breastfeeding practices that are detrimental to infant's growth (van de Walle and van de Walle 1991, Lesdthage 1989). Basu (1997) contends that the behavioural underinvestment can underlie the biological determinants of mortality.

To determine whether if there are any cultural differences in the risk of neonatal mortality and whether the differences are due to intrinsic cultural norms or socio-economic disparities, in Ghana, Sam (1990) conducted a research using 1998 DHS data. The bivariate results of his analysis indicated significant ethnic differences. Relative to the Asante children, the researcher intimated that the risk of death was significantly higher among children whose mothers were from northern Ghana (e.g. Dagbani's, Grussi, Gruma, Dagarti) and Fanti from the south. In the multivariate analysis, the ethnic differences of the Fanti disappeared once socio-economic variables were controlled. The researchers therefore concluded that socio-economic disparities among ethnic groups in Ghana account for mortality differences in the country. Among the northern group for instance, it is suggested in the study that cultural practices for instance, deny women eggs and other protein food during pregnancy which affects their nutritional status, hence the birth weight of the child. Similarly, these same women are asked to avoid eating mangoes and ripped plantain for fear of miscarriages, particularly in their early months of pregnancy (Ghana and UNICEF, 1990).

Moreover, while breastfeeding is universal in Ghana (GSS and MI, 1999), there are ethnic issues with specific practices, which tend to deprive neonates from the vital nourishment. Among certain ethnic groups, the newborn is denied the rich colostrums for the few days after delivery, because of the belief that the yellowish milk is not only dirty but also causes the baby's head to be big and ugly (Ghana and UNICEF, 1990). This therefore is a denial of the baby from vital nutrients and thus deprives the child of the immunity against diseases and infections, thus increasing the susceptibility of the child's illness and death.

Other cultural practices that predispose infants to the risk of death are weaning practices, feeding patterns and food taboos and this vary by ethnic groups and cultural practices. For example, Akan mothers are discouraged from giving eggs to young children because of the believe that it predisposes the child to become a thief and Ewe mothers are known to offer specially prepared nutritious food for their young children (Candrella and Locoh, 1990) which could reduce the risk of infections and malnutrition. Further, among the Kasena- Nakane, of northern Ghana, for instance, soothsayers are consulted on a number of issues including those pertaining to morbidity and mortality (Adongo et al, 1997). The Akans according to Adongo explain convulsion in spiritual realms hence the local name "*esoro*" `don`t fear` and its treatment is often sought traditionally. Traditional medicine in the form of charms, amulets and talisman is often applied to remove the bewitching spirit before resorting to modern medicine.

Some children are also regarded as gifts from gods by some ethnic groups in Ghana and their welfare and care are by strict dictate of the deity. Therefore in times of sickness, the gods are consulted first before anything else can be done like

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seeking medical care. There are also the "spirit children" who are believe to be destructive to their families and communities and therefore are not meant to live in this world. Among the Gurene speakers of northern Ghana, such children are called *Kinkirego* 'dwarfs' and are immediately killed after birth once identified by the soothsayers (cf. Allotey and Reidpath, 2001).

It is also believed in some communities that difficult labour is as a result of the woman's infidelity and thus the commensurate punishment from the gods. The woman is therefore then made to bear the excruciating process for long periods with objective of extracting a confession. These often end up in fatal births or births that die shortly (Allotey and Reid path, 2001). Consequently, since cultural practices are not static but are rather constantly negotiated within changing socio-economic contexts, this impact affects groups who are least affected by modernisation and education, such as the Grusi, Gruma and the Dagartis. These groups of people have the highest infant mortality rates. This idea is backed by Diamonds (1997) studies, that found that the odds of a child not being vaccinated was 7.22 times higher for mothers with no education, compared with mothers with secondary education. Therefore, with the socio-economic practices, educated women are less subservient to norms and practices that adversely affect the health and welfare of their children.

Also, there is a distinctive North-South regional disparity in development (Aryetey, 1987). According to his findings, socio-economic development and modernisation in the South are far superior to those in the North. The health situation in the North has been described as poor, with respect to curative, preventive, promotive, and rehabilitative (Nabila, 1992). This clear disparity brings about the higher infant and neonatal mortalities in the North relative to the South. The researcher (Nabila, 1992) also intimated that the savannah climate of the North with relatively long harmattan season has a serious effect (directly and indirectly) on the health of children thus bringing about the higher numbers of neonatal mortality.

4. OTHER INFLUENCING FACTORS

Other influencing factors to neonatal mortality shall be used as explanatory variables in the regression analysis to investigate the relationship between them and the response variable. The other influencing factors identified are: length of inter birth interval, maternal age at birth, sex of the child, multiple births, and birth order of the child, nutrition illness and injuries, maternal/ paternal, occupation, urban and rural residence and partners' education.

4.1. Length of interbirth interval

Rut stein (1984), Hobcraft et al, (1985) identified the pace of child bearing as the most important maternal factor contributing to neonatal mortality in sub-Saharan Africa. Short proceeding birth intervals are believed to increase neonatal risk of mortality because the mother's nutritional reserves have not fully been recovered from the previous birth. Short birth intervals also affect the older child as well by creating competition between the younger siblings for the mother's resources. Using DHS data from 17 countries (Boerma & Bicego 1992) identified prenatal mechanisms, especially those involving maternal nutrition/depletion, as the key factors causing children with short preceding birth intervals to experience high mortality. According to their research findings, children born after a short interval of less than 24 months are at an increased risk of mortality, and with a few exceptions, children born after a long interval of 48+ months are at a lower risk relative to 24 – 47 months category. For all countries considered together, they concluded that short preceding birth intervals are associated with 57 percent higher under-five mortality and long intervals with 25 percent lower risk than intervals which are 24 -47 months in length. By this research, the most pronounced influence of short birth interval length of mortality occurs during the neonatal and post neonatal periods, depending on the country and the weakest effect during 1 – 4 years age period. By the data studied the maternal depletion hypothesis predicted larger effects during the neonatal than the post neonatal periods.

4.2. Maternal age at birth.

The other important factor is the mother's age at birth and the birth order. Manda (1999) used proportional hazard models with data from Malawi DHS to demonstrate that both factors are important in determining risks primarily during infancy. In Sub Saharan countries, (Zenger 1992) intimated, where women marry at a younger age, their first births are always associated with very young mothers and theory suggest that these women's children carry a higher risk of 23 percent neonatal deaths , because young first parity mothers may not have reached their full physical and reproductive maturity. Their children also have 10 to 50 percent greater risk of dying within the first 4 years than children born to mothers of aged 25 – 34 years. The median excess under- five risk associated with young maternal age at birth (<20years) for all

countries combined is 31 percent. Children from older mothers and high parity vary more, but due to increase risk of delivering, a genetically impaired birth later in life also exposes such children to higher risk of death (Sullivan et al. 1994). The median excess risk for all countries in Africa associated with older age at birth is 15 percent. According to this research this effect is more pronounced during the neonatal period of about (43 percent for sub – Saharan Africa).

4.3. Sex of the child / child's weight at birth

In general, male sex has a higher mortality at all ages than their female counterparts (Sullivan et al., 1994).Taking all countries together using the DHS data, under – five mortality has extra risk of 11 percent higher among males than females. This extra risk is more pronounced in the first month of life (31percent), diminishes during the post neonatal period (6 percent), and disappears altogether during 12 – 59 months period. It is also estimated that each year 21.6 million low birth weight babies (weighing less than 2.5kg at birth are born, constituting 16 percent of all births, and 90 percent of whom are born in the developing world. The highest numbers of neonatal deaths in developing world are low birth weights (WHO, 1991). It is also reported that in Indian low birth weight constitute half of all neonatal deaths (WHO, 1991).

4.4. Multiple births

Multiple births such as twins, triplets, etc. experience much higher deaths than single births (Piston, van de Walle, and Sala- Diakanda, 1989). Mortality according to them is especially high for children of multiple births during the neonatal period. Important mediating factors include low birth weight, complications before and at birth, and competition for time and material resources after birth. Twinning is a very rare event; about 2 percent of births in the last ten years of countries studied were twin births. Among all countries, twins are five times as likely to die during neonatal period as singleton; 2.5 times as likely to die during the 12 – 59 months period. Rutstein (1984) found a relative risk of infant's death (twin to single birth) of 3.95 using WFS data from 41 countries, compared with 3.74 for 28 countries.

4.5. Birth order of the child

First child births are associated with a high risk of neonatal deaths following the biological facts, that many first births occurs before a woman has reached full physical and reproductive maturity, leading to perinatal risks (Mturi & Curtis 1995, Majumder et al. 1997). Also, first-time mothers will often be ill prepared to handle new roles in her life. Consequently, older high parity, women are also at an increased risk of complication during childbirth and for delivery of a genetically impaired child. This risk of mortality is therefore higher during the neonatal period of about 25 percent for sub-Saharan Africa. According to them, the association between high birth order and childhood mortality varies substantially among countries. For all countries combined, under-five mortality is 30 percent among very high order births (7+), and just 10 percent higher among high order birth (4 – 6) than among second and third order births.

4.6. Nutrition illness and injuries

The well-being of children depends on the health of their mothers. In developing countries, a mother's death in childbirth means almost certain death for the newborn and severe consequences for her older children. A recent study in Bangladesh of children up to ten found that a mother's death sharply increases the chances that her children, especially her daughters will die within two years. Children whose mothers die are three to ten times more likely to die within two years than those with living parents (Strong, 1992). Mothers who are malnourished, sick, or receive inadequate care in pregnancy, face fatal deaths, stillbirths or births that die within the first month of life (WHO, 1990 and UNICEF, 1992). Maternal anaemia and small pelvic size among women whose growth has been stunted increases the risk of infant mortality. Iodine-deficiency mothers are at risk of giving birth to infants with severe mental retardation and other congenital abnormalities. However, by the small arms survey (2002, pp.155-202), the misuse of small arms is a growing problem among developing countries. Massacres in Schools, armed conflicts, suicide bombers, and other wide spread social violence mostly have a disastrous effect on women and children. According to Cook and Ludwig (2002) millions of under-five children, pregnant women and babies with their mothers die in sub-Saharan countries as a result of these wars and conflicts. Most of those who survive suffer non fatal injuries that have lasting effects on their lives.

4.7. Maternal and paternal education

Maternal education has been discovered through research to have a strong impact on child survival (Trussell and Hammersloug 1983; Rao et al, 1997; McMurray 1997; Agha 2000). Taking all countries without exception, it was

realized that there is a strong positive association between higher level of maternal education and lower risk of neonatal mortality. (Sullivan, Rutstein, and Bicego, 1994) showed that under – five mortality varies by a factor of more than two between children of mothers with no education (164 per 1,000) and children of mothers with secondary education (71 per 1,000) using the DHS data. Moreover, a study by (Majumder et al. 1997) also shows that paternal education is a significant factor towards the child's mortality. Maternal and Paternal education is positively correlated with using modern health facilities including prenatal care (Shakhatreh, 1996). Therefore more education is needed to counteract neonatal and child mortality than infant mortality, presumably because older children are more reliant on health facilities, clean hygiene practices, and a quantity and variety of solid food, factors to which better educated parents are more likely to seek and gain access (Boerma, 1996). The use of health services, especially prenatal delivery care also reduces infant and neonatal mortality (Gaminiatime 1991, Forte 1994, and Ahonsi 1995), and the use of preventive health services, such as immunization programs, has been determined to influence survival later on in childhood (Ahonsi 1995, and Diamond 1990).

4.8. Urban and rural residence/ partners' occupation

Residence refers to the de facto location (urban or rural) of a place where the mother's interview was conducted, and is based on the official classification system of the country.

(Bicego et al., 1996) using the DHS data, said that the proportion of births occurring in urban and rural areas varies according to countries and the variation ranges from 5 percent to 66 percent in sub-Saharan African and that the infant and childhood mortality ratios taking all countries together is 31 percent lower in urban areas than in rural areas. The urban advantage increases with the increasing age of the child. Urban to rural relative risk falls from 0.78 in the neonatal period to 0.62 during ages 1 – 4 years. Thus mortality during ages 1- 4 years is sensitive to conditions that vary between urban and rural areas.

The household environment measured by factors such as source of drinking water and toilet facilities, are important determinants co-varying with older children chances of survival (Woldemicael 2000; Merrick 1985; Esrey & Habicht 1986). These factors according to them are important not only for their direct effect on child survival, but they also indicate the overall resource level of a child's family and more often these facilities are found in the urban areas than the rural settings. Poverty is identified as the key determinant of infant and child mortality in Africa. (Hussain et al., 1999; Cupa and Baghel 1999). The nature of the father's employment can have both positive and negative effects on a child's well being and survival chances. For instance professional employment may bring certain benefits to the mother and the child that are not associated with other type of employment. Such benefits can include health insurance and maternity leave. In addition ,occupation is an important determinant of economic circumstance (I.e. wealth and income), which in turn influences decisions regarding use of health services (Boerma, J. Ties, et.,al, 1991).Therefore the type of occupation of parents is a significant determinant of infant and neonatal mortality.

4.9. Migration

Indices of infant and child mortality have been consistently better in urban areas than in rural areas. These differentials are due primarily to rural residents having limited access to proper health services and sanitary conditions compared with urban residents (Brockerhoof, 1990; Farah and Preston, 1982). The survival advantage associated with urban residence in contemporary developing countries has been documented in a large body of demographic literature (Behm and Vallin, 1982; Davis, 1973; Hobcraft, McDonald and Rutstein 1984). Therefore many rural residents move to cities with the expectation of higher earnings and improved lifestyle. Intuitively, the search for improved economic status among these migrants is also expected to translate into better health for the family members including children. However, recent years, there has been growing recognition that this urban advantage is misleading as a guide for national health strategies in so far as it obscures enormous differences in health status and survival chances within the urban areas of developing countries (World health organization (WHO), 1991; Harpham and Stephens, 1991; Brockerhoff, 1995). Based on DHS data on 17 countries, a recent study demonstrates that the child survival prospects of rural-to-urban migrants are higher than those living in their rural place of origin, even lower than those of urban non- migrants (Brockerhoff, 1995). A similar pattern has been found when examining the use of health services among migrants and non-migrant groups (Tam, 1994; Zulkifli and others, 1994; Bender, Rivera and Madonna, 1993).

4.10. War and famine

Armed conflicts in many parts of Africa have often targeted civilian populations, resulting in a high casualty rates, widespread human rights abuses, and forced migration and in some countries, the total collapse of governance. These conflicts have significant impact on the health of pregnant women, and young children through the destruction of health services and infrastructure and resource allocation decisions detrimental to them. In sub-Saharan Africa, famines have been associated with excess mortality resulting from starvation and epidemic diseases. Famines and wars have devastated countries in sub- Saharan Africa such as Angola, Chad, Ethiopian, Mozambique, Rwanda, Sierra Leone, Somalia and the Sudan. Although the causal relationship between wars and famine is a confounded subject, famines have often been associated with wars. Children under 5 years, infants and babies have been the population most affected by famine and wars. These wars destroy food production and distribution, dislocates mass population and forces the relocation of refugees. Wars also undermine social services, in particular health services, as meagre government resources are taken away from social services to finance military build ups. Deliberate diversion of food supplies by various armed factions as well as the disruption of transport and marketing thus causing economic hardships and food shortage bringing about starvation and death of children especially those babies (Epidemiology 30(2001)).

5. SUMMARY

Neonatal mortality in Africa and Ghana as shown in this paper is determined by many factors. They include diseases such as diarrhoea, and HIV/AIDS. Other factors equally responsible for neonatal death include socio-economic factors, cultural factors, Health and sanitation as well as demographic factors e.g. sex of the child, birth order, size of the child at birth, birth interval including maternal factors, such as mothers age at birth, partners and the level of education or literacy attained significantly contributes to account for the effects of neonatal deaths.

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