

## SURVIVAL OF INFANTS AND CHILDREN BORN TO WOMEN WHO DIED FROM PREGNANCY AND LABOUR RELATED COMPLICATIONS

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### ABSTRACT

**Objective:** In response to concern raised on the high rate of maternal mortality in developing countries, this cross-sectional survey was conducted to assess the survival of infants born to mothers who died during the process of child birth.

**Methodology:** The survey was conducted in Gwoza and Konduga Local Government Areas of Borno State, Nigeria over a 12 week period; January to March, 1996.

**Results:** Sixty four live-born infants of 76 deceased mothers were studied. The majority of the infants were either nursed by the deceased's sister or mother. Alternative or donor breast milk by a surrogate mother (usually the deceased close relation), goat or cow milk were the common form of feeding from birth to 6 months of age followed by groundnut enriched pap. Twenty (31.3%) of the infants survived upto 5 years of age while 44 (68.6%) did not. Factors favouring infant survival include nursing, up-bringing and breast-feeding by a surrogate mother (who is usually either the deceased's sister or mother), infant feeding with goat's or cow's milk, Immunization, hospital treatment of ailments, hospital delivery or maternal death in the hospital and finally when the caretaker is of low party and upper social class status. Factors responsible for infant death included prematurity, cause of maternal death was due to sepsis as a result of prolonged labour or premature rupture of fetal membranes, birth asphyxia, tetanus, respiratory problems, fever, convulsions, diarrhoea and vomiting and malnutrition.

**Conclusion:** These babies are readily accepted by the society because it is believed that the caretaker would receive a lot of blessing from God. On the other hand, the death of such babies is considered a double loss even though there is a low expectation for their survival. .

**Key words:** maternal death; Survival of infant born alive.

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### INTRODUCTION

Maternal mortality accounts for over 500,000 deaths in women every year world-wide and accounts for 25% of deaths in women aged between 15 and 50 years.. This means that 1,440 women die every day from pregnancy related complications world wide<sup>1-5</sup>. Of these deaths, 98.2% occur in the developing countries<sup>1-5</sup>. Africa accounts for 150,000 of these deaths out of which 75,000 occur in Nigeria<sup>1-5</sup>. Reports in Nigeria indicate that 75% of Nigeria mothers deliver their babies outside standard hospitals or at home<sup>1,4,6,7</sup>.

The health of a new-born depends on that of its mother. Previous reports have shown that between 60 and 70% of infants born to women who died at childbirth in developing countries do not survive the neonatal period and between 10 and 20% of such births occur in women aged between 15 and 19 years<sup>7,8</sup>.

It is because of these concerns that this study attempted to assess the survival of infants born alive from the time of the mothers deaths to 5 years following these deaths. The study also attempted to identify factors influencing the survival of these infants and the causes of death in those infants who died.

### PATIENTS AND METHODS

This study was conducted in six rural villages, three each in Gwoza and Konduga Local Government Areas of Borno State in North Eastern Nigeria. There are four general hospitals, comprehensive health centres, dispensaries and clinics in these areas.

This is a community based survey which involved visiting households to collect relevant information using questionnaires. The target population was women who died during pregnancy, childbirth or within 42 days after delivery over the past five years (January 1993 to December 1997). The prime information was concerned with the

infants who were delivered alive at the time of these deaths. In each household, a relative of the deceased mother, for example sister, brother, husband, mother was interviewed alone or in a group.

#### **Data collection and sampling size:**

Systematic random sampling was used in selecting homes visited. In conducting interviews and data collection each of the 6 districts were divided into 4 geographical regions of North, South, East and West. A village each was randomly chosen from each of the 24 regions. The study covered a period of twelve weeks. Wards in every village were taken as constituents for the study. When any alternate ward was visited every other house in a street was selected. This was aimed at covering as much area as possible and to reduce bias to minimum levels.

#### **Overall 224 wards were sampled.**

Two types of questionnaires were used. The first one registers the overall population of the household. Thereafter the inquiry was on whether any woman had died in the house as a result of pregnancy, childbirth or within 42 days following childbirth within the previous 5 years. In case of a positive answer, more information was obtained concerning the survival of the infants from the time of delivery by the deceased mothers. The second questionnaire consists essentially of two parts. The first sought information on the respondents name, age, sex and how he or she was related to the deceased woman. The second part sought the following demographic information on the deceased. These include maternal age, parity, time of death, social-economic status, booking status for antenatal care, duration of pregnancy, relationship of time of death to time of delivery, place (home or in hospital) and cause of maternal death. Inquiry was also made on whether the baby was born alive. Additional information sought included the persons who took care of the infant (relationship to the deceased), the age of the child alive or at time of death, immunization status, the cause and place of death if the infant was not alive. Did the baby die at home or hospital? Information was also sought on the general mode of feeding of the surviving infants and on the people's opinion on such babies.

The socio-economic status of the caretaker family and that of deceased mother was determined according to the criteria put forward by Oyediji<sup>4</sup>.

#### **Analysis:-**

For analysis of data collected, descriptive statistics was used. The level of significance was put at  $P < 0.05$ . This serves as a device for organizing

data to bring out the essential characteristics of the study for the purpose of reaching conclusion. The results are presented as tables.

## **RESULTS**

One thousand five hundred and fifty households were interviewed. There were 76 maternal deaths 64 of these mothers had living infants at birth, 6 were antepartum and intrapartum deaths, 5 had stillbirths and one was an abortion related death. Among the 64 deceased mothers with surviving infants at birth, 10(15.6 percent) delivered and died in a hospital (4 by caesarean) while 54(84.4 percent) delivered and died at home. Obstetric haemorrhage, prolonged labour, puerperal pyrexia, pre-eclampsia and eclampsia and anaemia were the main causes of maternal deaths.

Twenty of the infants survived up to 5 years. Table 1 show that infant survival is better when the caretaker mother is of high socio-economic class and also when the mother had delivered and died in the hospital. The chance of infant survival was, also better when the caretaker is of lower parity.

Table II shows the proportion of infant surviving in relation to the position of caretaker within the family. Survival was better with deceased's sister or mother. The type of infant feeding in relation to its survival is also shown in Table III. The chance of survival was better when infant was breast fed by a surrogate nursing mother (deceased's sister or mother), breastfeeding by a non-lactating nulliparous or parous sister or mother of deceased and to some extent breastfeeding by even postmenopausal women. Among the 44 non-survivors, 4 infants were earlier fed on the biological mother's breast milk from 10 to 35 days duration before maternal death, two others were again relocated to another caretaker, all these 6 did not survive.

An inquiry was made on the breast feeders to give a subjective assessment of the volume of breast milk as well as the infant response. The volume was alleged to be very satisfactory in already nursing mothers; 80% of non-lactating parous women said the volume and response was good; while only 50% of nulliparous and postmenopausal women agreed that the volume and response was satisfactory.

All agreed that the infant response to alternative breast milk was poor when the infant had already commenced breastmilk before its mother's death. The mean duration of breast feeding was 10 months in nullipara and menopausal volunteers and 18 months in already nursing mothers.

The majority (93.3%) of the survivors had groundnut enriched and other local cereal paps and other and other foods from the ages of 6 months:

The others (6.7%) received cerelac.

The probable causes of infant death is shown in table IV. Prominent among these are sepsis, respiratory infections, fever and convulsions, diarrhea and vomiting, malnutrition, measles and tuberculosis. Only 4 (9%) out of the 44 who died received treatment and died in a hospital, 32(73%) were treated with traditional herbs at home and 8 did not receive any form of treatment.

Table V shows the percentage mortality from birth to a period 5 years of childhood. By the end of six months and 2 years of life about 50% and 73% of the deaths had occurred respectively.

Common among factors influencing infant survival were immediate postpartum care, nursing of the infant and provision of surrogate breastfeeding by sister or mother of deceased, immunization, and hospital treatment of childhood ailments (table VI) Cultural beliefs concerning the care and survival of these infants are diverse. While the caretaker is blessed, neglecting these infants carries a curse.

**Table 1: Socio-economic Class Order of Caretaker and Infant Survival (20 survivors)**

Socio-Economic Class	No of Caretakers	No of Infants Nursed	No of Survivors & %
Upper Social Class (1-2)	12	12	10(83.3%)
Lower Social Class (3-5)	52	52	10(19.2%)
<b>TOTAL</b>	<b>6</b>	<b>64</b>	<b>20(31.3%)</b>

P.0.005

**Table II: Caretaker's Relations to the Decease and Infant Survival**

Caretaker	No of Infants Nursed	No of Survivors & percentage
*Deceased's Sister	28	11(39.3)
*Deceased's Mother	20	7(35.0%)
Deceased's Mother-In-Law	6	1(16.7%)
Friends & Others relatives of deceased	10	1(10.5%)
<b>TOTAL</b>	<b>64</b>	<b>20(31.3%)</b>

P.< 0.005

**Table III: Caretaker's Relations to the Decease and Infant Survival**

Method of Feeding	No of Infants Fed	Survivor & Percentage
Alternative breastfeeding by a surrogate mother (sister or mother) of 32 deceased that was nursing her own biological infant.		10(31.3%)
Alternative breastfeeding by young surrogate mother (nulliparous and non-lactating parous sisters; of deceased.	6	3(50.0%)
Alternative breastfeeding by a surrogate mother (nulli-parous and non-lactating parous friends) of deceased in addition, cow and goat milk were given.	5	1(20.0%)
Goat and cow milk	10	3(30.0%)
NAN:+ Cow and Goat Milk	3	0(0.0%)
NAN Only	2	0(0.0%)
Alternative breast milk + NAN	2	1(50.0%)
<b>TOTAL</b>	<b>64</b>	<b>20(31.3%)</b>

- Type of feeding is on the advice of the elderly and available resources.
- Only 48(75%) gladly accepted to nurse the babies (80%) lactating and parous non-lactating women.
- Nulliparous were not very willing but accepted for sympathy sake.

**Table V: Percentage of Mortality at Different Stages of Infant Growth and Development within a 5 year span (44 Infant Deaths)**

Infant Age	Mortality & % Base Over 5 Year Mortality (nU = 44)
First seven Days of Life	9(20.5%)
First Month of Life	15(34.1%)
Six Months	21(47.7)
Two Years	32(72.7%)
5 Years	44(100%)
<b>TOTAL</b>	<b>44(100%)</b>

**Table IV: Possible Causes of Infant and Childhood Mortality up to 5 years of age.**

<b>Causes of Death</b>	<b>No of cases &amp; % Proportion Out of 44 Deaths in Parenthesis</b>
<u>First seven Days</u>	
Prematurity	1(2.3)
Premature rupture of fetal Membranes (Sepsis)	1(2.3)
Prolonged labour and Sepsis	3(6.8)
Birth Asphyxia	1(2.3)
Tetanus	1(2.3)
Neonatal Jaundice	1(2.3)
<u>Eight to 28 Days</u>	
Respiratory difficulty and fever (? Pneumonia)	3(6.8)
Fever and Convulsions	3(6.8)
<u>One to Six Months</u>	
Respiratory difficulty and fever (? Pneumonia)	2(4.5)
Diarrhoea and Vomiting	2(4.5)
Fever and Convulsions	1(2.3)
<u>Six months to 5 Years</u>	
? Pneumonia	2(4.5)
Fever and Convulsions	2(4.5)
Diarrhoea and Vomiting	5(11.4)
Malnutrition	5(11.4)
Measles and Meningitis	5(11.4)
Tuberculosis	1(2.3)
Anaemia	4(9.1)
Cause not known	4(9.1)
<b>TOTAL</b>	<b>44(100)</b>

**DISCUSSION**

Maternal death is one of the greatest tragedies befalling a family. An infant that is born alive and is immediately followed by the mother's death puts additional burden on the family. The chances of survival of infants in Nigeria, especially such a motherless newborn is hampered by prevailing diseases like childhood anaemia, malaria, infections, diarrhea and vomiting, malnutrition and tuberculosis. Primarily such infants lack emotional bonding with the mothers and a stable supply of quality breast milk. These are factors that may precipitate the demise of the infants.

Culturally, alternative steps had been taken by families in order to ensure the care, feeding, health, growth and development of these infants. From the appalling number of survivors with virtually 70% of the infants dying within 5 years, it definitely means that these methods are either inefficient or poorly applied. Sai<sup>8</sup> earlier reported that about 70% of these

**Table VI: Factors influencing infant Survival**

<b>Factors and No of Surviving Infant Beneficiaries in Parenthesis</b>	<b>Percentage of the 2 Survivors who Benefited From Factor</b>
Immediate Care and nursing and alternative breast feeding by a sister or mother of deceased (n=32)	10(50%)
Immunization (n=20)	15(75.0%)
Hospital treatment of childhood Ailment (n=26)	13(55.0%)
Infants delivered in the hospital Before the mothers death (n=10)	8(40.0%)
Maternal death within 12 hours of Delivery (n=23)	13(65.0%)
Caretaker is of Nulliparous state Or of parity 1 to 3 (n=30)	12(60.0%)
Caretaker is of upper socio-economic Class status (n=12)	10(50.0%)
Provision of goat and cow milk pap and local food in Later of life (n=12)	10(50.0%)

infants do not survive upto 5 years of age. A similar figure had been cited in Nigeria<sup>7</sup>.

It is obvious from the survivors in this survey that, to improve the health and safe growth of the infant; immediate surrogate breast-feeding be provided by a woman who at the time of the deceased's death is also nursing an infant. This is better achieved if the surrogate mother is either a sister, mother or close relative of the deceased because their commitment will be much higher than that of different relatives or friends. This way the infant develops a bond with the adopted mother and also receives readily available milk to sustain it. The value of breastfeeding is immense<sup>10</sup>.

Surrogate breastmilk as noted in these survivors may not be the sole factor for survival but is an important contributory factor. Similar observations have earlier been noted<sup>8</sup>. Other contributory factors to infant survival include prompt immunization of the infant, hospital treatment of

childhood ailments, caretaker parents are of upper social class order and parity below three. Additional factors include infants whose mothers delivered and died in the hospital. (These infants possibly received appropriate care, immunization and medication). Another favourable factor is death of a mother within twelve hours of delivery and to a less significant extent the provision of animal milk (goat or cow) and finally infant feeding with groundnut enriched pap in later life.

One notable observation from this survey was the failure of 6 infants to survive on surrogate breastmilk, 4 of these had commenced on breastmilk of the biological mothers for periods ranging from 2 to 5 weeks before the death of the mothers, 2 others had to be relocated to another or more alternative mothers. On death of the mothers and following relocation, the infants could not effectively tolerate milk from the surrogate mother. We share the speculation of these rural people in explaining the failures of these 6 to thrive on the grounds that the emotional trauma suffered by the infant having been bonded to the biological mother or first caretaker may prevent the infant from adjusting to another mother or type of feeding.

Babies who have been separated from their mothers after birth fall to thrive (without organic cause) more often than those who have not been separated<sup>13</sup>.

Poor early neonatal feeding, especially insufficient artificial or animal milk, childhood infections, anaemia, malnutrition and diarrhea and vomiting which contributed to most of the infants deaths; are not different from those of earlier reports<sup>11, 12</sup>.

It is also apparent that these infants tend to die within 2 years of life. In spite of these valuable methods designed by these people to salvage these infants, the majority of these methods are not employed or poorly applied.

In conclusion, an infant born alive to a mother just before her death has an increased risk of dying within 5 years. It is therefore pertinent to apply all the favourable means of ensuring the health and safe growth of these infants from the above methods. Health education of these people on the benefits of antenatal care and hospital delivery will cost only prevent these maternal deaths, but will also ensure the survival of these infants. In addition more research needs to be done to evaluate objectively the validity of the traditional methods of caring for these infants.

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