

Risk Factors of Neonatal Mortality in Rural Nigeria.

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Abstract- The study examined the risk factors of Neonatal mortality in Nigeria. These factor include; maternal education, maternal employment status, maternal age, family income, hypothermia status, asphyxia status, new born weight status, congenital disorder and Antenatal care (ANC). The study was conducted in South East Nigeria using Triangulation method with a total sample of 150 people consisting of 50 cases and 100 controls. The study reveals that socioeconomic and proximate factors affect neonatal death in rural Nigeria. The analysis of the study was done using logistic regression analysis and the result showed that newborn weight status was most influential factor on neonatal death. Health education and creating awareness in pregnant women and mothers in the communities is a sinequanon in order to curb neonatal mortality in rural Nigeria.

Keywords; Antenatal Care (ANC), Maternal, Neonatal, Mortality, Risk Factor.

I. INTRODUCTION

Neonatal is period that infant adapted new environment from intrauterine life to extra-uterine life [1,2]. The neonatal period is critical period for infant's life, two-third of infant death occurs within four (4) weeks after delivery and most of death (60%) occurs within 7 days after birth.

Neonatal mortality rate is the number of neonates dying before reaching twenty-eight (28) days of age, per 1,000 live births in a given year or it is the number of deaths during the first 28 completed days of life per 1000 live births in a given year.[3] Nigeria loses 37 death per 1000 live births. Neonatal deaths may be subdivided into early neonatal deaths, occurring during the first 7 days of life, and late neonatal deaths, occurring after the 7th day but before the 28th completed days of life. Neonatal accounts for 45 percent of all deaths under five years in Nigeria.

II. CAUSES OF NEONATAL MORTALITY

The proximate factors include maternal age, weight, and neonatal factors include gravidity (the number of previous pregnancies) Parity status (the number of previous births), asphyxia status (a condition where a baby had difficulty in breath after birth), Hypothermia status, congenital disorder and Antenatal care (ANC)[4].

Table 1. Contingency Statistical Analysis Odds Ratio (OR).

Risk Factor	Study Group		Total
	Case	Control	
Positive Risk(+)	E	F	E + F
Negative Risk(-)	G	H	G+ H
	E+F	F+H	E+F+G+H

Where E denotes the total number of people with positive risk factor (+)

F denotes the total number of people with positive risk factor (+)

G is the total people with negative risk factor (-)

H is the total people with negative risk factor (-).

Therefore, Odd Ratio (OR):

$$OR = e/f/g/h$$

$$OR = e.h/f.g$$

At Confidence Interval (CI) =95%

When $OR < 1$, then. the studied variable is the protective factor of the neonatal death occurrence.

If $OR = 1$, the studied valuable is less protective risk factor for the neonatal death events.

If $OR > 1$, the studied variables are the risk factor of the neonatal death occurrence.

III. RESULT

The result shows that the total number of 150 respondents involved in this study were 150 and most of respondents were mothers with in child bearing age that is between 15 years old and 45 years old. The number of case study was 50 respondents and 100 respondents as control study. The case and control group ratio was 1:2 of total samples as shown in table 2.

Table 2: Respondent status

NO 2	Respondent Status	Total	Percentage
1	Case	50	33%
2	Control	100	67%
Sum		150	100%

Table 3: Maternal education level.

NO 3	Respondent status	Total	Percentage
1	Primary school and below	105	70
2	Secondary School and above	45	30
Sum		150	100

Table3: Maternal education level.

There were 45 respondents had completed high school and above, and 105 respondents completed junior high school and below.

Table 4: family income

No 4	Family Income	Total	Percentage
1	< minimum wage	130	87
2	> minimum wage	20	13
Sum		150	100

Table 5: employment Status

No 5	Employment Status	Total	Percentage
	Employment	20	13
	Unemployment	130	87
Sum		150	100

Based on Table 5, 130 respondents were unemployment and 20 respondents were worked.

Table 6: maternal age

No 6	Maternal age	Total	Percentage
1	15 – 35 years	120	80
2	>35 years	30	20
Total		150	100

Table 7: based on birth weight status

No 7	Birth weight status	Total(n)	Percentage
1	< 2500grams	30	20
2	≥ 2500-4000grams	120	80
		150	100

IV. DISCUSSION

The unemployed mother has greater potential in infant care compared to working mother during post-natal period. Besides, respondent in case group also were also worked as housewives. The infant mortality rate for working women was higher than nonworking women in Nigeria. Nevertheless, neonatal mortality also occurs among nonworking mother due to low education level. Hence, the maternal employment status was not related in neonatal mortality. The socioeconomic status also influenced in neonatal mortality. This socioeconomic status is based on income per month. The family revenue based on entire family income included husband and wife and other family member income in one month such as salary or wages. In this study, family income based on wages had earned in household per month. The neonatal mortality occurrence was affected by family income status due to lack of daily needed in family. In Nigeria average family income is still lower than regional minimum wages.

The study found socioeconomic status associated neonatal mortality in Nigeria. The socioeconomic influence was closely related to health status especially in Maternal -Child health. A study found there was no significant relationship between family income status and neonatal mortality rate in Nigeria [5]. In addition, another study also claimed family income status and low maternal education levels increased probability neonatal mortality [6].

The common trend in rural communities is early marriage among teenagers. In this study, there was no significant relationship between maternal age and neonatal mortality. Most of maternal age is aged between 14 years old and 35 years old. Maternal age lower than 20 years old is risk in unprepared in physically and mentally as well as emotionally for pregnant and birth delivery. The maternal age is caused maternal mortality instead of neonatal mortality. A study showed young maternal age (≤ 21 years) was correlated to higher incidence of premature, congenital malformation and neonatal death [7]. There was another study supported that young maternal age (12-15 years) had greater risk in neonatal mortality [8]. The maternal parity also affected neonatal mortality.

The hypothermia due to exposure to cold environment (low ambient temperature). There was significant relationship between hypothermia status and neonatal mortality. Ideal infant temperature was 36.5 °C-37.5 °C. The hypothermia caused by infectious disease, premature birth and asphyxia. Lack of facilities and infrastructure lead to hypothermia in infants. Most of patients referred special treatment in district hospital caused delay in handling since hospital distance and cost. The abnormal body temperature was low due to exposure of cold environment. Several studies were conducted to investigate the relationship between hypothermia status and neonatal mortality [9]. A study showed hypothermia in infants within 12 hours of birth increased neonatal mortality to 2 months of age after birth, especially among low birth weight infants [10]. The word; Asphyxia is condition where baby had difficulty in breath after birth. This occurs due to lack of blood flow through placenta resulted in lack of oxygen to the fetus. There was significant relationship between asphyxia and neonatal mortality. The spontaneous breath in infant was depend on fetus condition during pregnancy and labor.

Other factors such as maternal infections, prematurity and multiple births lead to birth asphyxia in the low resource, community-based setting [11]. Besides, low birth weight among major risk that caused birth asphyxia. The result also found associated between

birth weight status and neonatal mortality. The infant had birth weight less than 2500 gram considered as low birth weight. The infant health indicators is observed from their weight. The body weight is an anthropometric measure and used in infant health examination. Many risk factors affected low birth weight in infants was due to maternal, infant, environmental and antenatal care factors.

The main factor affected low birth weight occurrence is nutritional status in pregnancy women. In Bangladesh, the low birth weight had related to the neonatal mortality [12].

The congenital disorder was recognized during birth. The congenital disorder is due to abnormality in structure, function or body metabolism that lead to physical or mental disability. The congenital disorder caused by genetic and environment. This is due to poor family background and low education level among mothers. The older women experienced increment in the congenital disorder as well as maternal mortality such as hypertension and gestational diabetes. In South India, congenital disorder contributed toward neonatal mortality [13].

The pregnant women were to have at least 4 times ANC visit during pregnancy period; But, it was not so in rural Nigeria. Almost 80 % of pregnant women hardly go for antenatal care due to lack/inaccessible of health centers and low health knowledge. Some preferred to delivery at home or traditional birth attendant home [15]. The ANC visit had influenced by maternal education level [14]. A study found pregnant women that met both WHO recommendations for ANC visit had lower risk in neonatal mortality [16]

V. CONCLUSION

The study had revealed socioeconomic and proximate factor contributed to the risk factor in neonatal mortality issues in rural Nigeria. Based on multivariate analysis showed birth weight status was most influential factor in neonatal mortality cases. Creating proper awareness to pregnant mothers and mothers at the community's level using their own dialect can minimized neonatal mortality.

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