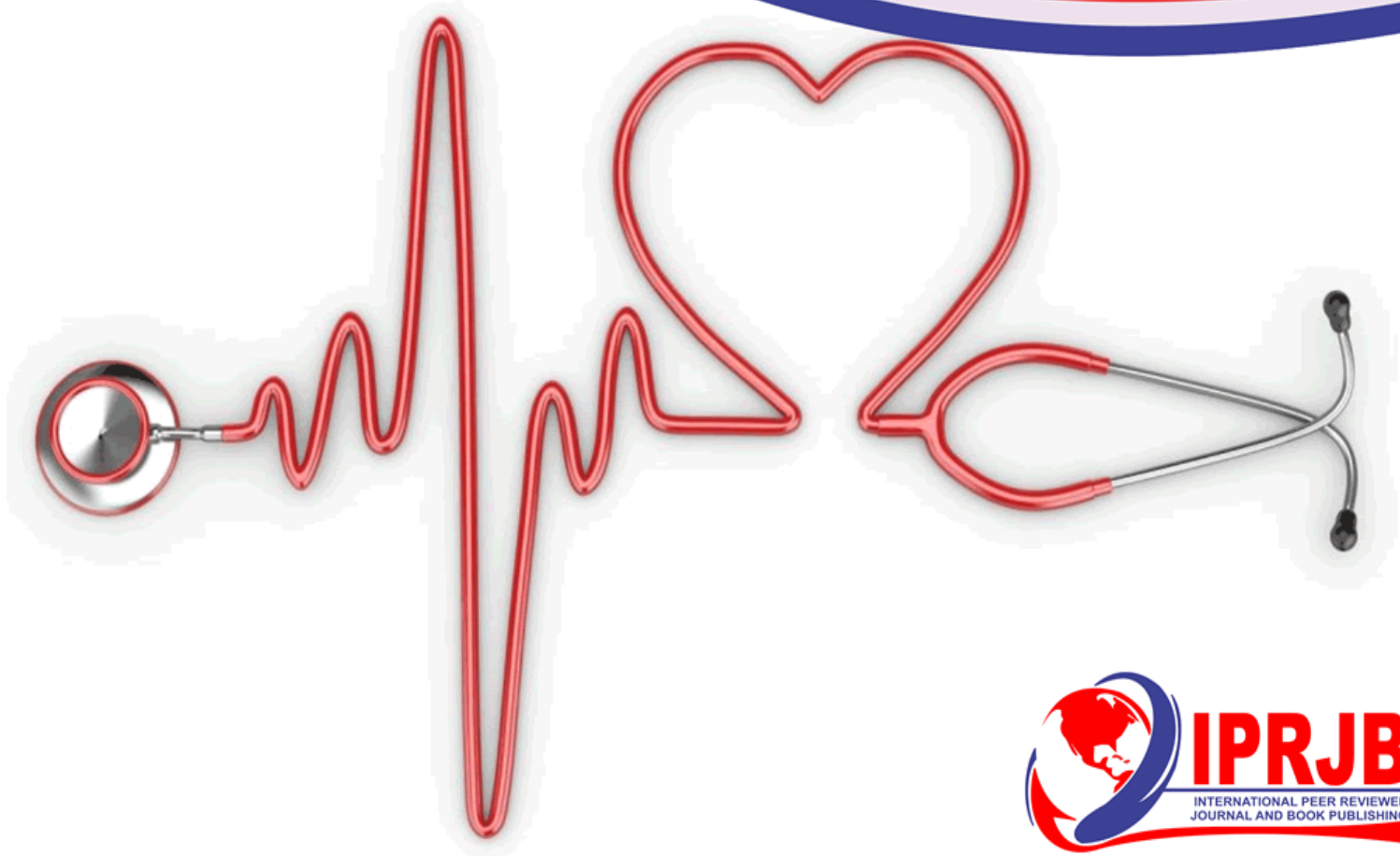


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MATERNAL AWARENESS, PERCEIVED DISPOSITION AND HABIT DETERMINANTS TO NEONATAL MORTALITY AMONG MOTHERS DELIVERING AT A COUNTY REFERRAL HOSPITAL, KENYA

Stella Jepkoech Kulei



**MATERNAL AWARENESS, PERCEIVED DISPOSITION AND HABIT
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DELIVERING AT A COUNTY REFERRAL HOSPITAL, KENYA**

Stella Jepkoech Kulei

Lecturer: Department of Nursing, Egerton University, P.O. Box 536-20115, Egerton, Kenya.

Corresponding Author Email: kuleistella@gmail.com

Abstract

Purpose: The study sought to establish the maternal awareness, perceived disposition and habit determinants to neonatal mortality among mothers delivering at a County Referral Hospital, Kenya.

Design: A descriptive cross-sectional hospital-based study. The study was carried out in Nakuru county referral Hospital, Kenya, in the postnatal wards in the maternity unit. Mothers who delivered and gave consent in the maternity unit in Nakuru county Referral Hospital were recruited. Mothers who did not deliver and were referred to Nakuru county referral hospital and declined to give consent were excluded from the study. The sample size was determined using Fisher et al 1999 formula. The targeted sample size was therefore 278 mothers. The study respondents were identified using systematic random sampling. Quantitative data was collected using a pre-tested questionnaire by the research assistants. Data was entered into the computer and analyzed using SPSS version 20. Univariate analysis was presented using descriptive statistics like graphs, bar charts, pie charts and tables. Bivariate analysis was presented using inferential statistics like chi square and probability estimations to test for significance.

Results: Neonatal mortality was significantly associated with the maternal determinants. Maternal awareness ($p < 0.001$), disposition ($p = 0.001$), habits ($p = 0.009$) all had significant relationships. From qualitative data, there was a linkage between neonatal deaths and cultural factors such as traditional practices and home delivery. Inadequate health care providers' services, like lack of counseling to mothers on prevention of neonatal deaths before and after delivery, were strongly stated by the participants as being associated with neonatal deaths.

Unique contribution to theory, practice and policy: The Health care providers should ensure that mothers are empowered with knowledge on prevention of neonatal mortality which should include counseling on risk factors during pregnancy and the health education should be spread from pregnancy to discharge and during follow-up visits.

Keywords: *Maternal Awareness, Neonatal Mortality, Maternal Disposition, Maternal habits.*

1.0 INTRODUCTION

Neonatal mortality is defined as the death of a live born infant occurring from the time of birth upto 28 days old after birth. Neonatal period is divided into two; i.e. early neonatal period (1st seven days of life) and Late neonatal period (7-28 days of life) (1). Neonatal mortality is one of the most traumatic outcomes of pregnancy. Expectant mothers are the most affected (2).

Neonatal mortality is a major global health concern especially in the developing countries like the African continent. It accounts for approximately 40% of all child mortality for those less than 5 years of age worldwide. Sub-saharan Africa had the highest neonatal mortality rate at 27 deaths per 1,000 live births. Neonatal mortality is one of the most traumatic outcomes of pregnancy. The link between neonatal mortality and maternal empowerment is intricate and cannot be underestimated. Per day, a newborn is 45 times more likely to die within the first 28 days of life compared to all under 5 years old children (3). Approximately 4.0 million neonatal deaths in the world occur annually in the 1st 4 weeks after birth. This represents more than half of total 7.7 million annual childhood deaths. 98% occur in developing regions. 28% occur in least developed countries. This gives an overall of 30 neonatal deaths per 1000 live births globally (5/1000 in developed regions, 33/1000 in developing regions and 42/1000 in least developing regions). The risk of death from neonatal period is therefore greater than 6 times in developing regions and 8 times in least developed regions compared to developed regions. The most affected area is sub-Saharan Africa (1). In 2015, approximately 45% of the under five year old deaths occurred during the first month of life (neonatal period) (4).

Globally, 2.7 million babies die every year in 1st month of life. Up-to a half of these deaths occur within the 1st 24 hours of life. 75% occur in the first week. Globally about 4 million neonatal deaths occur annually in the first month of life. About 1.16 million of these are in southern Asia (SA) and sub-Sahara Africa alone. It's estimated that every minute there are 7 neonatal deaths globally. About 415 of the deaths occur hourly. Kenya is in the sub-Saharan region and therefore shares part of the problems (5). 98 % of the deaths are in developing countries in low income and middle income areas. Many more are also still-born (2).

Africa registered neonatal mortality as causing 42% for all the under five year old children deaths globally and East Africa registering 41%. In the middle and low income countries this may be as high as 60% (6). Statistics have raised an alarm for attention to improve newborn health in developing countries especially in sub-Saharan Africa (6). Current newborn situation has been a major obstacle which partly made the 4th millennium development (MDG) goal unattainable. The objective of this goal was to reduce children mortality by 2/3 by the year 2015. This was not achieved (7).

Kenya being in the Sub Saharan Africa (SSA) region has experienced a remarkable decline in all levels of childhood mortality rates as observed in the 2008 KDHS. However the same cannot be said of the neonatal mortality rates in the country. Between 2003 and 2008 NMR has reduced slightly to 31/1000 live births. Neonatal mortality rate (NMR) contributes to 60% of the overall infant deaths in Kenya bringing to fore the pertinent question on Kenya's ability to meets its targets on reduction of childhood mortality (8).

However, as stated above, the trend of NMR in Kenya has not declined substantially between 2003 and 2008 (8), it is therefore evident that there is a significant problem of high Neonatal Mortality in Kenya. In Kenya neonatal mortality rates is still high and remains a

major problem even in well-equipped hospitals. It has not declined significantly between 2003 and 2008 with only a slightly reduction to 31/1000 live births (8). Its causes, contributing factors and trends have been well documented. However maternal awareness of their own contribution to it has not been explored. The Neonatal mortality rate in Kenya in a recent study has shown that the neonatal mortality rate between 2011 and 2015 was 27% on average (6). This is indicative of a worsening situation. It is therefore evident that there is a significant problem of high Neonatal Mortality Rate in Kenya.

The link between neonatal mortality and maternal health is intricate and cannot be underestimated. Kenya has an estimated maternal mortality rate of 488/100,000 live births (8). The trend of maternal mortality rate in Kenya has therefore not declined significantly either between 2003 and 2008 (8). Therefore, this study sought to establish the maternal awareness, disposition and habits determinants of neonatal mortality among mothers delivering in Nakuru county referral Hospital, Kenya.

Methods and Materials

Research design

A descriptive cross-sectional qualitative and quantitative design was used for the study.

Study area

The study was carried out in Nakuru county referral Hospital, Kenya, in the postnatal wards in the maternity unit. The hospital is situated in Milimani area of Nakuru County in Rift Valley Province of Kenya. Nakuru County covers an area of 72.423km² and has a population of 1,187,000 according to the 1999 population census. Nakuru County hospital is a teaching institution and the 4th largest referral hospital in Kenya which admits pregnant mothers from a wide range of ethnic and cultural background from different areas in the province and within its precinct. The hospital delivers about 1000 mothers per month and has all the departments of a major hospital.

Population and Sampling

Mothers who delivered and gave consent in the maternity unit in Nakuru county Referral Hospital were recruited. Mothers who did not deliver and were referred to Nakuru county referral hospital and declined to give consent were excluded from the study. The sample size was determined using Fisher et al 1999 formula. The targeted sample size was therefore 278 mothers. The study respondents were identified using systematic random sampling.

Data collection

Quantitative data was collected using a pre-tested questionnaire by the research assistants. This was done in both English and Kiswahili languages which are the common languages in Kenya. The data were checked for completeness before leaving the participants. Focused group discussion guide and key informants interview guide were used to obtain qualitative data. Notes were taken. The sessions were also audio taped. Qualitative data was organized into themes, sub-themes and probes. Probing was done by the key researcher. There was an observer, moderator and note taker for each focus group discussion. The FGD was conducted for 2 groups of 10 women.

Data Analysis

Data was entered into the computer and analyzed using SPSS version 20. Univariate analysis was presented using descriptive statistics like graphs, bar charts, pie charts and tables.

Bivariate analysis was presented using inferential statistics like chi square and probability estimations to test for significance. Qualitative data were transcribed, translated and grouped into themes and compared with quantitative findings. Verbatim reporting was also done for focused group discussions and key informant interviews.

Results

Table 1: Maternal awareness of factors contributing to neonatal mortality

	Yes	No	Don't know
Sexually transmitted disease	199(71.6)	33(11.9)	46(16.5)
Lack of antenatal clinic attendance	237(85.3)	24(8.6)	17(6.1)
Premature delivery	176(63.3)	54(19.4)	48(17.3)
Complications of pregnancy and delivery	226(81.3)	22(7.9)	30(10.8)
Unskilled delivery	227(81.7)	32(11.5)	19(6.8)
Lack of information	204(73.4)	41(14.7)	32(11.5)
Poor health service	234(84.2)	23(8.3)	21(7.6)
Delays in getting services	257(92.4)	15(5.4)	6(2.2)
Ignorance of danger signs and risk factors	209(75.2)	26(9.4)	43(15.5)
Lack of knowledge on prevention methods	226(81.3)	23(8.3)	29(10.4)

The study established that maternal knowledge influences the neonatal mortality as demonstrated in Table 2. Mothers with good knowledge reported lower neonatal mortality rates (n=15 out of 150, 10%) compared to those with moderate (n=31 out of 94, 33%) or poor (n=10 out of 34, 29.4%) knowledge on contributors to neonatal deaths ($p < 0.001$).

Table 2: Maternal knowledge and its association with neonatal mortality

Variable		Neonatal death				
		Yes	No	Chi	DF	P value
Maternal knowledge	Poor knowledge	10(29.4)	24(70.6)	21	2	<0.001
	Moderate knowledge	31(33.0)	63(67.0)			
	Good knowledge	15(10.0)	135(90.0)			

During the interview, a mother who had experienced a neonatal mortality said that personal initiative to know about the health status of both mother and baby would contribute to newborn survival.

She said, "The other problem is mothers not having interest in asking questions during pregnancy. If one is eager he asks. If you experience something strange you should ask a question. And if you ask, the health care provider will tell you even the things you didn't ask about. That is a good thing. So ask questions no matter how simple."

Table 3 shows how Susceptibility to neonatal deaths and severity of consequences of neonatal deaths were perceived by 64.3% and 53.6% of delivering mothers at Nakuru Level 5 Hospital as being causes of concern (Table 9). There was lower concern regarding cultural consequences (18.5%), ignorance of danger signs and risk factors (27.7%) and emotional trauma (33.8%) related to neonatal death.

Table 3: Perceived disposition of mothers to neonatal mortality

	None	Little	Enough
Susceptibility to have neonatal death	45(16.2)	58(20.9)	175(64.3)
Severe consequences of neonatal death	26(9.6)	103(37.1)	149(53.6)
Cultural consequences of neonatal death	59(21.2)	168(60.3)	51(18.5)
Ignorance of danger signs and risk factors	58(20.9)	143(51.4)	77(27.7)
Emotional trauma resulting from neonatal death	39(13.7)	145(52.2)	94(33.8)
Fear of having neonatal death	51(18.4)	138(49.6)	89(32.1)
Negative attitude of people towards neonatal Death	66(23.7)	134(48.2)	78(28.1)
Unpleasant/ embarrassing experience of having neonatal death	54(19.4)	89(32.1)	135(48.6)

Table 4 shows that there was a significant association between maternal perception of disposition to neonatal death and the prevalence of neonatal mortality ($p = 0.001$). Table 9 shows that mothers who were highly perceptive of their disposition had lower rates of neonatal mortality ($n=2$ out of 58, 3.4%) compared to those with moderate ($n=21$ out of 97, 21.6%) or low ($n=33$ out of 123, 26.8%) perception of disposition to neonatal mortality.

Table 4: Association between perception of disposition to neonatal death and neonatal mortality

Perceptions	Neonatal death		Chi	DF	P value
	Yes	No			
Maternal perception of disposition to neonatal mortality					
Low perception	33(26.8)	90(73.2)	13.6	2	0.001
Moderate perception	21(21.6)	76(78.4)			
Highly perceptive	2(3.4)	56(96.6)			

Table 5 shows that there were 13 (4.7%) smokers and 42 (15.1%) mothers who drank alcohol or illicit brews during their pregnancy. Most mothers attended follow up clinics (77.3%) and went for medical checkups (70.9%).

Table 1: Maternal habits related to neonatal mortality

Maternal habits	Neonatal Mortality	
	Yes	No
Smoking	13(4.7)	265(95.3)
Health seeking behavior like going for medical check ups	197(70.9)	81(29.1)
Attending follow up clinics	213(76.6)	65(23.4)
Past experience with neonatal death	70(25.2)	208(74.8%)
Having delays in seeking medical	164(59.0)	114(41.0)
Having home deliveries	208(74.8)	70(25.2)
Drinking any illicit brew or alcohol	42 (15.1)	236(85.0)

Table 6 shows that there was a significant association between positive maternal habits and lower reported neonatal mortality rates ($p = 0.01$). Among the mothers who reported observing all the seven positive habits in Table 11, neonatal mortality was 8.3% and this was significantly lower than the rate reported in mothers who did not observe each of the seven positive habits (23.4%).

Table 2: Association between neonatal mortality and maternal habits

		Neonatal death		Chi Square	df	P value
		Yes	No			
Maternal habits	Positive	5(8.3)	55(91.7)	6.6	1	0.01
	Negative	51(23.4)	167(76.6)			

Maternal perceptions

Table 7 shows the association between maternal perception and neonatal deaths could be prevented ($p = 0.008$) and existing negative practices that hinder mothers from preventing neonatal deaths reported in community ($p = 0.028$) were significantly associated with neonatal mortality.

Table 3: Association between neonatal mortality and maternal perceptions on neonatal mortality

Maternal Perceptions		Neonatal death		Chi	D F	P value
		Yes	No			
Any positive practices in preventing neonatal mortality during pregnancy	Yes	22(23.7)	71(76.3)	0.2	1	0.623
	No	38(20.5)	147(79.5)			
Knows how neonatal death can be prevented	Yes	26(32.1)	55(67.9)	7.1	1	0.008
	No	34(17.3)	163(82.7)			
Existing negative practices that hinder mothers from preventing neonatal deaths reported in community	Yes	10(41.7)	14(58.3)	4.9	1	0.027
	No	50(19.7)	204(80.3)			
Cultural beliefs that hinder mothers from preventing neonatal deaths reported in community	Yes	4(20.0)	16(80.0)	0.7	1	0.406
	No	56(21.7)	202(78.3)			

Discussion

There was a strong association between level of maternal knowledge of predisposition to neonatal mortality and rates of neonatal mortality. In line with other studies, mothers who had

good knowledge reported significantly lower mortality compared to those with poor or moderate knowledge (9).

There was a link between knowledge and practice and neonatal mortality. Knowledgeable mothers were more likely to give appropriate care to their newborns and thus experience lower neonatal deaths (10).

Delays in decision making for health care utility, reaching adequately equipped health care facility in time or receive adequate care at the health facility causes some of the greatest problems as reported in other studies. Delays, which include caretaker delays (44%), delays in reaching health care facility (34%) and household and transport delay, must be effectively overcome (11). These experiences are influenced by maternal lack of appropriate information and practice.

In line with other studies, many newborns die because mothers fail to identify danger signs of illnesses with unnecessary delays in care seeking. The majority gets information from family members and health workers with reduced knowledge on some conditions like hypothermia and convulsions (12).

There are many disorders worldwide contributing to high neonatal morbidity and mortality especially in developing countries and sub-Saharan Africa. Among these is neonatal jaundice. Mothers may have good knowledge on treatment and complications but inadequate or wrong knowledge on the cause or danger signs (13).

Conclusion and Recommendations

The study showed a strong direct relationship between the level of maternal knowledge, perceived disposition and habit determinants to neonatal mortality. In line with other studies, mothers who had good knowledge reported significantly lower mortality compared to those with poor or moderate knowledge. There was a link between knowledge and practice and neonatal mortality. Knowledgeable mothers were more likely to give appropriate care to their newborns and thus experience lower neonatal deaths.

Neonatal mortality rates remain high in area of study with one in every five mothers in this study reporting that they had ever experienced a newborn death. This high neonatal mortality rate is consistent with the high rates seen in developing countries. It is especially comparable to other studies in the African region.

Promoting maternal knowledge and awareness on risk factors associated with neonatal mortality is important. Mothers should also be discouraged from engaging in habits that predispose newborns to death during neonatal period.

As evidenced by the above findings, the following are recommended:

The Health care providers should ensure that mothers are empowered with knowledge on prevention of neonatal mortality which should include counseling on risk factors during pregnancy and the health education should be spread from pregnancy to discharge and during follow-up visits.

The antenatal clinics and maternity units should have a teaching manual which gives instructions or information that must be given so that the midwives knows the information to be given to the mother and to obtain feedback to ensure retention of knowledge.

The mothers and their communities should be encouraged to eliminate harmful practices that predispose newborns to deaths during the neonatal period.

More studies in other establishments should be done to support and validate the findings of this study.

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