Full Length Research Paper

Adequacy of vital signs monitoring in post delivery mothers at the Naivasha District Hospital of Nakuru County, Kenya

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The Millennium Development Goal 5 aims at lowering the maternal mortality by 75% by 2015 from the 1990 baseline statistics [1. However Kenya has not achieved this target and the maternal mortality has increased [2]. The major contributors to this increase are postpartum complications such as Postpartum hemorrhage (PPH), sepsis, and complications of hypertensive diseases in pregnancy. About 15% of all pregnancies are likely to complicate [3]. If detected early, maternal mortality may be prevented by managing these complications faster. With adequate monitoring of maternal vital signs, post delivery complications can be detected early. The study evaluated the monitoring and documentation of postpartum maternal vital signs at Naivasha District Hospital of Nakuru County, Kenya. This was a cross sectional study where 96 participants were interviewed and their medical records reviewed to assess monitoring and documentation of vital signs after ethical and administrative approval. We analyzed the data using SPSS Version 17. 96 (vaginal delivery 66; Caesarean Section 33) participants were recruited into the study. Their mean age was 25.5years (±6.2). 95.8% had BP taken at least once while only 58.4% had temperature recorded, 34.2% never had pulse rate measure at all and only 17.1 had respiratory rate measured more than once during their hospital stay. The monitoring and documentation of vital signs for post natal mothers at Naivasha District Hospital was sub-optimal. There is need to put more emphasis on monitoring and documentation of maternal vital signs as a means of early detection of post delivery complications.

Keywords: Post delivery care, vital signs, Hospital, Kenya

INTRODUCTION

Background

More than three hundred thousand women die during pregnancy and childbirth every year worldwide. For every woman who dies another 30 suffer long-lasting injuries and illnesses (The Millennium Development Goals Report, 2010; Bennett et al., 2008). Maternal health is inextricably linked with the survival of the newborn. In Kenya, it has been established that 92% of all women attend the antenatal clinics at least once during their pregnancy ((KNBS) and ICF Macro, 2010.

Unfortunately the Kenya Demographic Health Survey indicated that only forty four percent of all women in Kenya deliver under supervision of skilled birth attendants. There are gross disparities in health seeking habits between rural and urban populations, uneducated and educated populations as well as variation from one income bracket to another ((KNBS) and ICF Macro, 2010; Bennett et al., 2008). Of all pregnancies, it is estimated that fifteen percent are likely to complicate

and endanger the life of the mother, the fetus or both (CBS, MOH, ORCM, 2004). Pregnancies that are likely to complicate cannot be adequately predicted (WHO/ UNFPA/UNICEF/World Bank, 2000). Therefore, all pregnancies must be treated as potentially risky in order to take precautions that will reduce maternal and neonatal mortality and morbidity. A large proportion of maternal and neonatal deaths occur during the first forty eight hours after delivery (Fortney et al., 1996). It is expected that when the woman comes to a health facility, necessary caution is taken to pre-empt or identify complications at the earliest opportunity when interventions are likely to be successful (WHO, 2003). Hence, postnatal care is important for both the mother and the child for early detection and management of complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child. Reducing maternal mortality is one of the targets of Millennium Development Goal 4. Review of the Millennium Development Goals (MDGs) indicates that Kenya, like other resource poor and least developed counties, has not met the set targets (The Millennium Development Goals Report, 2010). A major obstacle to achieving the health related Millennium Development Goals (MDGs) is the weakness of the health systems in many low- and middle-income countries, and their struggle to effectively provide health care to populations in need (The Millennium Development Goals Report, 2010; (KNBS) and ICF Macro, 2010).

The global statistics indicate that there is increase in pregnancy related deaths (Samb et al., 2009). In Kenya, the estimates of deaths related to pregnancy and childbirth have increased over the decades (Kenya National Bureau of Statistics (KNBS) and ICF Macro. (2010). This trend is occasioned by interplay of factors that have both direct and indirect effect of maternal outcomes. These are largely patient factors, societal factors and system, structural or policy issues (Alliance for Health Policy and Systems Research, 2007). Maternal mortality remains one of the main challenges in sub-Saharan Africa and indeed many other resource poor settings (Bennett et al., 2008). The direct causes of maternal deaths occur after delivery within the first 24 to 72 hours. The most important period in which maternal mortality can be predicted and prevented is the first hour after deliver (Fortney et al., 1996). It is possible to reduce the number of maternal complications by strictly monitoring the vital signs (Magadi and Zulu, 2003). Other relevant observations monitored include the amount and nature of lochia, presence of genital injuries, maternal pulse rate, temperature and respiratory rate (Campbell and Graham, 1990).

In this study we sought to assess the adequacy of post delivery maternal vital signs monitoring at the Naivasha District Hospital.

METHODS

Study design

This was a cross sectional study design. All participants recruited for this study were interviewed once and their medical records reviewed once to obtain data on vital signs monitoring. Women excluded from the study included those very sick to participate, those who declined to participate and those referred from other facilities in puerperium.

Study area

The study was carried out at the Maternity Unit of the Naivasha District Hospital. Naivasha District Hospital is owned and run by the Government of Kenya, situated in Naivasha Town of Nakuru County. Naivasha town is approximately ninety kilometers North West of Nairobi and located on the shores of Lake Naivasha. The facility serves an estimated population of 500,000 people. The hospital is a high volume centre. There are two dedicated functional maternity operation tables. The hospital has sixteen post delivery beds. There are two consultant obstetricians who provide services at the facility. There are five medical officers and ten midwifes in the Unit. The maternity unit runs on 24hours basis.

Study population, design and sampling

The target population was women who delivered at Naivasha District Hospital at the time the study was conducted. The participants were women who delivered at Naivasha District Hospital during the study period. They were randomly recruited after delivery. **:** Study participants were randomly selected. Once a client agreed to participate, a questionnaire was administered and her file retrieved for review of documentation using a standard schedule. If a client did not meet the inclusion criteria, or declined to participate, another paper was randomly picked. This study was carried out over two months.

Ethical clearance for the study

Ethical approval was obtained from the Kenyatta National Hospital/University of Nairobi Ethics Review Committee (KNH/UON ERC). Voluntary and informed consent was sought before the participants were recruited and interviewed. Confidentiality was strictly observed at all times. The completed filled questionnaires were kept in safe locked cabinets.

Table 1: Socio demographic characteristics of study participants n=96

Variables	Percent	Variable	Percent
Formal education of participant		**Occupation of the participants**	
Primary	67.7%	Employed	14.6%
Secondary	28.1%	Unemployed	70.8%
College	4.2%		
		Religion of the participants	
Marital status of participants		Christian-Protestant	74.0%
Single	12.5%	Christian catholic	25.0%
Married	87.5%	Muslim	1.0%
No. of children of participants		**Residence of the participants**	
One	44.8%	Within the municipality	68.8%
Two	28.1%	Outside the municipality	31.3%
Three	20.8%		
Four	5.2%		

Table 2: Description of vitals sign recording at Naivasha district Hospital N=96

Vital sign	Measured at least once	Not measured at all
Temperature	56 (58.3%)	40 (42.7%)
Pulse rate	63 (65.8%)	33 (34.2%)
Respiratory rate	70 (72.9%)	26 (17.1%)
Blood Pressure	92 (95.8%)	4 (4.2%)

RESULTS

Demographic characteristics

In table 1, a total of 96 participants were recruited in the study. Sixty six study participants had had vaginal delivery. The mean age was 25.5 (SD 6.2; range 16-40yrs). All the participants had attained some formal education; Majority of the participants (67.7%) had primary school level of education while 28% had secondary education. Only 4.2 percent of participants had tertiary education. 87.5% of respondents reported being married while the rest were single. Forty four percent of the participants had one child, twenty eight percent, had two children and twenty percent had three children. Seventy one percent of participants were unemployed, 99% were Christians and 69% resided within the Naivasha Municipality.

Monitoring the respondents for post partum hemorrhage at Naivasha district hospital

The parameters used to assess monitoring for post partum bleeding included verbal inquiry about bleeding and use of maternity pads. The investigator inquired whether the attending staff asked about bleeding and if they inspected the patients for evidence of vaginal bleeding. Ninety one percent of women who had vaginal delivery reported that they were examined within 24hrs to find out if they had vaginal bleeding or not. Post partum bleeding was monitored through counting maternity perineal pads (n = 87, 100%), asking clients orally about visible bleeding (n = 17, 19.5%). Only one respondent had her beddings inspected for evidence of postpartum bleeding. All women were provided with pads immediately after delivery by the midwives.

Post delivery monitoring and vital signs observation

Concerning the post delivery observations and recording of vital signs, clients' files were reviewed. There was discrepancy in the documentation of vital signs and other observation compared with data obtained from clients' interviews. The study found that most documented observation was blood pressure. The study showed that patients who delivered by Caesarean Section were more likely to have their blood pressure checked. The least checked vital sign from the records of study respondents was body temperature. Only fifty eight percent of all respondents had their temperature examined at least once during their stay in hospital. One third of the study respondents never had pulse rate recorded at all. The standard guideline is to document vital signs (temperature, pulse, respiratory, blood pressure) at least four hourly, meaning at least six recordings of each parameter (table 2).

The study established that the frequency of measuring and documenting vital signs was way below this recommendation. Only 58.3% of the respondents had temperature recorded at least once while almost all the respondents (95.8%) had blood pressure recorded at least once. Table 3 shows the frequency of

Table 3: Frequency of documentation of vital signs for study participants by healthcare midwives at Naivasha District Hospital in 24hrs

Vital sign	Frequency of vital signs measurement in 24 hours		
	1-3	4-5	6 +
Temperature	n=56 49 (89%)	n=56 6(10.9%)	0
Pulse	n=63 56 (88.9%)	n=63 7(11.1%)	0
Respiratory rate	n=70 62 (88.6%)	n=70 8(11.4%)	0
Blood pressure	n=92 77 (84.6%)	n=92 13 (14.3%)	n=92 1(1.1%)

documentation of the four vital signs considered in this study.

DISCUSSION

The study established that there were gaps in the provision of post delivery maternal monitoring at the Naivasha District Hospital. Majority of women who delivered vaginally reported that they were checked routinely to assess if they had bleeding. Since post partum hemorrhage (PPH) has been cited as the leading cause of maternal mortality, most health workers often concentrate on this observation. The methods used to assess for PPH included verbal inquiry, inspection of the external genitalia, use of pads and checking the beddings. These findings concur with those by Seranath et al (2007) who documented strong emphasis on blood pressure. In the records however, there was minimal documentation as to whether this parameter was checked or not. This inadequacy in recording might have been due to work load, or lack of awareness on the need to document. AbouZahr (2003) noted that inadequate documentation impacts negatively during maternal mortality reviews once a mother died. Estimation of blood loss using perineal pads has been recommended by the WHO (2008). WHO has noted that this form of assessment of postpartum blood loss is fairly satisfactory and easy to standardize.

The study established that maternal vital signs were not adequately measured and documented. The least measured parameter under consideration was body temperature. Slightly more than half of the participants had their temperature recorded at least once during their admission for delivery. The finding concurs with what was observed by Campbell et al (1990). The body temperature rise in presence of infection is a well documented phenomenon. This also may be accompanied by increased pulse rate and respiratory rate. According to Ronsmans (2006) respiratory rate changes may indicate chest infection, pulmonary thromboembolism, amniotic embolism, maternal exhaustion and anemia. He notes that temperature and pulse rate are less frequently monitored vital signs

compared with blood pressure and respiratory rate. Our study identified that the most emphasized vital observation was blood pressure. A study by Fortney et al (1996) identified staff attitude, understaffing, lack of necessary equipment as some hindrances to adequate maternal vital signs monitoring. In Naivasha District Hospital, the high nurse to staff ratio might have contributed to this inadequate monitoring. Fortney further suggested that one effective way of promoting compliance to measurement and documentation of vital signs in periodic audits and feedback to health care provider. Ronsmans (2006) suggests that formulation of post delivery protocol may increase vigilance by health care providers in detecting delivery complications. According to Ronsmans, maternal mortality does not just happen but reflect deficiencies in the systems and procedures both at the community and health facility levels. Campbell (1990) and Lohr (2002) have also noted that facilities with clear structures and procedures are less likely to experience incidences of maternal mortalities.

CONCLUSION

The study concluded that the monitoring of maternal post delivery vital signs at the Naivasha District Hospital was not optimal. There was inadequate documentation in the patients' records. There was no structured way of measuring and recording vital signs.

RECOMMENDATIONS

It can be recommended from the findings of this study that:
1. There is need to emphasize documentation of vital signs for all mother who deliver at Naivasha District Hospital
2. Formulation of post delivery vital signs protocols/checklist is recommended to enhance adequate monitoring of vital signs at the facility

Recommendation for further study

Further study may be carried out to establish why vital signs are not adequately documented at the Naivasha District Hospital

Authors' contributions

1. Fredrick Kairithia Mibuku was involved in all stages of this work from conceptualization to manuscript drafting and revision.
2. Joseph G. Karanja participated in proposal development and preparation of the manuscript.
3. Eunice Cheserem was involved in proposal development and preparation of the manuscript.
4. Kinuthia John was involved in study proposal writing, data collection and preparation of this manuscript.
5. Chege was involved in data collection, retrieval of patient file, analysis and preparation of this manuscript for publication.
6. Wamalwa Dalton was involved in preparation of study proposal, formulation of study tool, data collection and preparation of this manuscript.

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Conflict of interest

The authors disclose no conflict of interest in this study and publication

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