

Knowledge and Attitude of Nurse-Midwives Regarding Maternal Health Care Quality Standards in Two Regional Teaching and Referral Hospitals in Kenya

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Abstract

Introduction: Maternal mortality remains a major health concern in Sub-Saharan Africa and Kenya in particular. Providing quality maternal health care has the potential of preventing over 75% of maternal deaths. The quality of maternal health care requires the utilization of maternal health care quality standards. **Objectives:** The objective of this study was to determine the nurse-midwives knowledge and attitude toward the use of maternal health care quality standards. **Methodology:** This study was a descriptive cross-sectional survey carried out at Embu and Meru teaching and referral hospitals in Kenya, between August and December 2021. Eighty-five nurse-midwives working in the maternity unit participated in the study. Data was collected using a self-administered semi-structured questionnaire and analyzed using SPSS version 27.0. Pearson's correlation coefficient and Chi-square at Alpha level of 0.05 were used to test the relationship between the variables which were the nurse-midwives knowledge, attitude, and use of the quality standards. **Result:** Most (84.7%, n = 72) nurse-midwives were female and 44.7% (n = 38) were aged 20 - 29 years. Majority (64.7%, n = 55) were diploma holders and almost half (44.7%, n = 38) had practiced for 1 - 9 years. The average score for knowledge was 5.0 with 69.4% (n = 59) having a score of <7. Most nurse midwives (88.2%, n = 75) supported the use of the standards even though only 67.1% (n = 57) indicated that they use them. The support for the standards is significantly related to the gender of the respondents and their duration in maternity. There was no significant association between knowledge and use of maternal health care quality standards ($X^2 = 0.433$, $r = -0.085$). There is no association between support for the standards and their

use ($X^2 = 0.008$). Knowledge and attitude toward the maternal health care quality standards are not significantly associated ($X^2 = 0.156$). **Conclusion:** The knowledge and attitude of the nurse-midwife neither influence each other nor do they influence the use of maternal health care quality standards.

Keywords

Maternal Health Care, Quality, Standards, Nurse-Midwife, Kenya

1. Introduction

World Health Organization (WHO) defines maternal death as “a death occurring in a woman during pregnancy or within 42 days after delivery or miscarriage the location and gestation notwithstanding, as long as it is due to factors that are related to or worsened by pregnancy or its management but not due to accidental or incidental causes” [1]. In 2017, 295,000 maternal deaths occurred globally out of which about two-thirds (66%) occurred in sub-Saharan Africa [2].

Although there has been a reduction in maternal mortality ratio (MMR) over the years since the year 2000, the level is still below that envisioned in the sustainable development goal target 3.1 of reducing MMR to less than 70 per 100,000 live births by 2030 [2]. In Kenya, the current MMR is 362 maternal deaths per 100,000 live births, which is way below the target of 147 maternal deaths per 100,000 live births [3]. More than half of the maternal deaths arise from hemorrhage, hypertensive disorders, and sepsis which are preventable through use of appropriate strategies [4].

One of the strategies that have been adopted in Kenya is increasing access to skilled attendants through the introduction of maternity services free of charge by the government in June, 2013. This covered all public health facilities across the country and increased the number of facility based deliveries by 26.8% [5] [6]. However, increasing access alone may not be adequate in achieving the desired maternal health outcomes [7]. Indeed, a review of 2014 maternal death case notes in Kenya found that in 75.4% of the cases one or more health worker-related factors were to blame [8].

Quality maternal health care can be accomplished through the use of maternal and newborn care guidelines detailing best practices that are known to produce desirable outcomes [9]. One such guideline is the “Standards for Improving Quality of Maternal and Newborn Care in Health Facilities” developed by WHO in 2016 [10]. This document has a set of standards containing eight domains of quality of care to guide health facilities in assessing and continually improving the quality of care provided [10].

In Kenya, 61% of the deliveries occur in a health facility and 46% occur in a public sector facility. Targeting the nurse-midwives is likely to produce favorable outcomes in maternal health care since they conduct seventy percent of delive-

ries in public sector facilities [3]. This study thus sought to determine the knowledge and attitude of nurse-midwives regarding the use of maternal health care standards and guidelines which are some of the factors that may influence their utilization.

2. Materials and Methods

2.1. Study Design

This study was a descriptive cross-sectional survey that was carried out between August and December 2021 at the Maternity units of Embu and Meru Level 5 Teaching and referral hospitals in Kenya.

2.2. Study Population

Participants were all nurse-midwives who were currently working at the maternity units and had been working there for at least six months. At the time of the study, there were a total of fifty-five and fifty nurse-midwives in Embu and Meru Teaching and referral hospitals' maternity units respectively.

2.3. Sample Size and Sampling Procedure

Cochran's (1967) formula for proportions was used to calculate the sample size resulting in a target of 83 nurse-nurse midwives. Ten percent of the participants were added to cater for non-responses taking the sample size to 93. Stratified random sampling was used to select the sample representatives.

2.4. Research Instruments

A quantitative, self-administered semi-structured questionnaire was developed and administered to assess the knowledge and attitude of Nurse-midwives regarding the WHO/national maternal health care quality standards. Questions on knowledge focused on infection prevention practices, and active management of the 3rd stage as well as management of postpartum hemorrhage and hypertension in pregnancy. Attitude questions focused on the support for the use of the standards and the reasons for or against their use. The questionnaire was pre-tested at Chuka level 4 Hospital and adjustments made as per the findings.

2.5. Data Analysis

Data analysis was carried out using Statistical Package for Social Sciences (SPSS) version 27.0. Nurse-midwives level of knowledge, attitude, and use of maternal health care quality standards were determined. Knowledge scores for each participant were calculated. Those who scored 7 and above were considered to have adequate knowledge and those who scored < 7 were grouped as having inadequate knowledge. Those who supported the use of maternal health care quality standards were considered to have a positive attitude. Association between variables was tested using Pearson correlation analysis and a Chi-square test at Alpha level of 0.05 (5%).

2.6. Scope of the Study

The study focused mainly on the WHO (2016) Standards for Improving Quality of Maternal and Newborn Care in Health Facilities. Out of these, the study concentrated on the standards that apply to labor, delivery, and the immediate postpartum period.

2.7. Ethical Approval and Permission

Ethical approval was granted by Kenyatta National Hospital and the University of Nairobi ethics and research committee vide KNH- ERC/E/468 as well as National Commission for Science, Technology, and Innovation (NACOSTI). Administrative approval was given by the County Health Committee. Written approval was sought from the Health facility managers. The participants were requested to fill in a consent form before participating in the study.

2.8. Abbreviations and Acronyms

KNH: Kenyatta National Hospital

MMR: Maternal Mortality Ratio

NACOSTI: National Commission for Science, Technology and Innovation

SPSS: Statistical Package for Social Sciences

WHO: World Health Organization

3. Results

3.1. Demographic Characteristics

Ninety-three nurse-midwives were recruited for the study out of which 85 participants responded, a response rate of 91%. Out of these participating nurse-midwives, forty-five (52.9%) and forty (47.5%) were working at Embu and Meru level 5 Teaching and referral hospitals respectively. Most (84.7%, $n = 72$) nurse-midwives were female, 44.7% ($n = 38$) were aged 20 - 29 years and 57.6% ($n = 38$) were married. The majority (64.7%, $n = 55$) of nurse-midwives were protestants and 64.7% ($n = 55$) were diploma holders with only two participants having a certificate qualification (**Table 1**). Almost half (41%, $n = 35$) were working in the labor ward and most (44.7%, $n = 38$) had practiced for 1 - 9 years (**Table 2**).

3.2. Nurse Midwives Use of Maternal Health Care Quality Standards

Fifty-seven (67.1%) nurse-midwives indicated that they used maternal health care quality standards in their practice (**Figure 1**). There was no significant association between the nurse-midwives' demographic characteristics and the use of the standards (**Table 3**).

3.3. Nurse-Midwives Knowledge about Maternal Health Care Quality Standards

Only 42.4% ($n = 36$) of nurse-midwives indicated correctly that quality maternal

Table 1. Nurse-midwives demographic characteristics.

Socio-demographic Characteristics of Nurse Midwives	Category	Frequency	Percent	Cumulative Percent
Gender	Male	13	15.3	15.3
	Female	72	84.7	100.0
Age	20 - 29	38	44.7	44.7
	30 - 39	20	23.5	68.2
	40 - 49	15	17.6	85.9
	50 - 59	12	14.1	100.0
Marital Status	Never married	32	37.6	37.6
	Married	49	57.6	95.3
	Divorced/separated/widowed	4	4.7	100.0
Religion	Catholic	29	34.1	34.1
	Protestant	55	64.7	98.8
	Muslim	1	1.2	100.0
Qualification Level	Certificate	2	2.4	2.4
	Diploma	55	64.7	67.1
	Degree and above	28	32.9	100.0
Facility	Embu	45	52.9	52.9
	Meru	40	47.1	100.0

Table 2. Nurse-Midwives years of experience.

Nurse-midwives Years of Experience	Frequency	Percent	Cumulative Percent
Less than 1 year	17	20.0	20.0
1 - 9 years	38	44.7	64.7
10 - 19 years	15	17.6	82.4
20 - 29 years	9	10.6	92.9
30 years and above	6	7.1	100.0

Table 3. Relationship between nurse-midwives' demographic characteristics and use of maternal health care quality standards.

		Nurse-midwives' use of maternal health care quality standards
Gender	Pearson Correlation	0.119
	Sig. (2-tailed)	0.276
	N	85

Continued

Highest qualification level	Pearson Correlation	0.168
	Sig. (2-tailed)	0.124
	N	85
Years of experience	Pearson Correlation	0.167
	Sig. (2-tailed)	0.127
	N	85
Period in maternity	Pearson Correlation	0.119
	Sig. (2-tailed)	0.278
	N	85
Training on maternal health care standards	Pearson Correlation	0.51
	Sig. (2-tailed)	0.647
	N	84

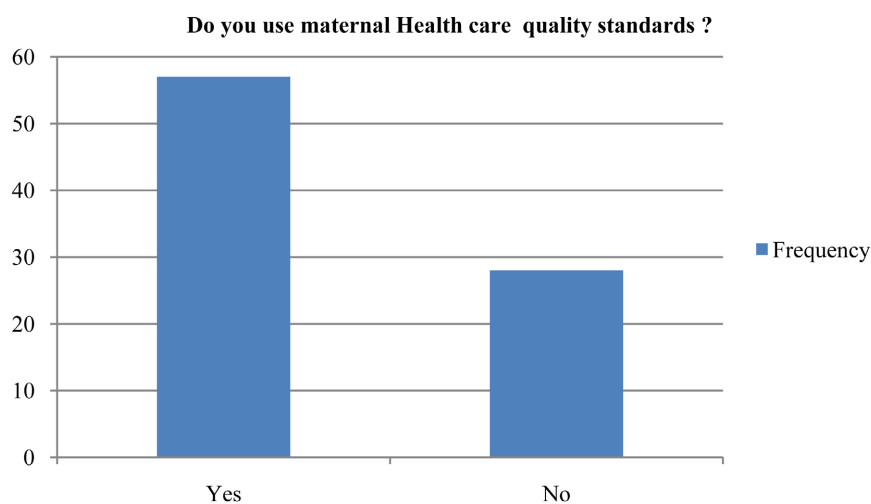


Figure 1. Use of maternal health care standards by the nurse-midwives.

health care is the care that meets the health care standards. Most (61.2%, $n = 52$) midwives had not been trained on maternal health care quality standards. Out of those trained, 39.4% ($n = 13$) were trained in college (Table 4). The average knowledge score for the maternal health care quality standards was 5.0 though individual average scores varied from between 4 and 8. Most (69.4%, $n = 59$) had a score of <7 (Table 3). The association between the participants' socio-demographic characteristics and their knowledge of the standards was not significant (Table 5).

3.4. Relationship between Knowledge and Use of Maternal Health Care Quality Standards

There was no significant relationship between nurse-midwives knowledge and use of maternal health care quality standards ($X^2 = 0.433$) (Table 6).

Table 4. Knowledge about maternal health care quality standards.

Variable	Category	Frequency	Percent	Cumulative Percent
What is quality maternal health care?	Care that makes the clients happy	7	8.2	8.2
	Care that delivers value for money	2	2.4	10.6
	Care that meets the needs of the clients	40	47.1	57.7
	Care that meets the laid down standards of care	36	42.3	100.0
Have you ever been trained on the use of maternal health care standards?	Yes	33	38.8	38.8
	No	52	61.2	100.0
Trainer	College	13	39.4	39.4
	NGO	5	15.2	54.6
	Hospital Management	9	27.3	81.9
	County Health Team	4	12.1	94.0
	Other	2	6.0	100.0
Maternal health care quality standards knowledge scores	4 - 6	59	69.4	69.4
	7 - 10	26	30.6	100

Table 5. Relationship between knowledge of maternal health care quality standards and participants' demographic characteristics.

		Knowledge about maternal health care standards
Gender	Pearson Correlation	0.101
	Sig. (2-tailed)	0.509
	N	85
Highest qualification level	Pearson Correlation	0.048
	Sig. (2-tailed)	0.664
	N	85
Years of experience	Pearson Correlation	0.032
	Sig. (2-tailed)	0.774
	N	85

Continued

	Pearson Correlation	0.137
Period in maternity	Sig. (2-tailed)	0.0211
	N	85
	Pearson Correlation	0.362
	Sig. (2-tailed)	0.001
	N	85

Table 6. Relationship between knowledge and use of maternal health care quality standards.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.614 ^a	1	0.433		
Continuity Correction ^b	0.284	1	0.594		
Likelihood Ratio	0.627	1	0.428		
Fisher's Exact Test				0.466	0.300
Linear-by-Linear Association	0.607	1	0.436		
N of Valid Cases	85				

3.5. Nurse-Midwives' Attitude towards Maternal Health Care Quality Standards

Majority (88.2%, n = 75) of the participants indicated support for the use of maternal health care standards with only ten participants (11.8%) not supporting (**Figure 2**). Among those supporting, half (50.7%, n = 38) did so since the maternal health care standards standardize the care provided. Out of the ten participants who don't support the use of maternal health standards, seven (70%) indicated that the standards would be time-consuming (**Table 7**).

3.6. The Relationship between Nurse-Midwives' Attitude towards the Use of Maternal Health Care Quality Standards and Demographic Characteristics

There is a significant association between nurse-midwives gender, the period in maternity, and support for the use of maternal health care standards at $r = 0.251$ and $r = -0.242$ respectively. The other demographic characteristics are not significantly associated (**Table 8**).

3.7. Relationship between Nurse-Midwives Knowledge, Attitude, and Use of the Maternal Health Care Quality Standards

Support for the standards is not significantly influenced by the nurse-midwives knowledge about the standards ($X^2 = 0.156$) (**Table 9**). There was no relationship between the support for and use of the standards ($X^2 = 0.008$) (**Table 10**).

Table 7. Nurse-midwives attitude toward the use of maternal health care quality standards.

Variable	Category	Frequency	Percentage	Cumulative Percentage
Do you support the use of Maternal health care standards?	Yes	75	88.2	88.2
	No	10	11.8	100.0
Reason for supporting the use of maternal health care standards	Care standardization	38	50.7	50.7
	Makes work easier	5	6.7	57.4
	Ensure quality of care	32	42.6	100.0
Reasons for opposing the use of maternal health care standards?	Time-consuming	7	70.0	70.0
	staff are highly qualified	2	20.0	90.0
	Requires a lot of resources	1	10.0	100.0

Table 8. Relationship between nurse-midwives' attitude towards the use of maternal health care standards and demographic characteristics and knowledge.

		Nurse midwives support for use of maternal health care standards
Gender	Pearson Correlation	0.251*
	Sig. (2-tailed)	0.021
	N	85
Age	Pearson Correlation	0.205
	Sig. (2-tailed)	0.060
	N	85
Marital Status	Pearson Correlation	0.046
	Sig. (2-tailed)	0.676
	N	85
Period in Maternity	Pearson Correlation	0.242*
	Sig. (2-tailed)	0.026
	N	85
Length of Practice	Pearson Correlation	0.162
	Sig. (2-tailed)	0.139
	N	85
Training on Maternal Health Care Standards	Pearson Correlation	0.026
	Sig. (2-tailed)	0.812
	N	84

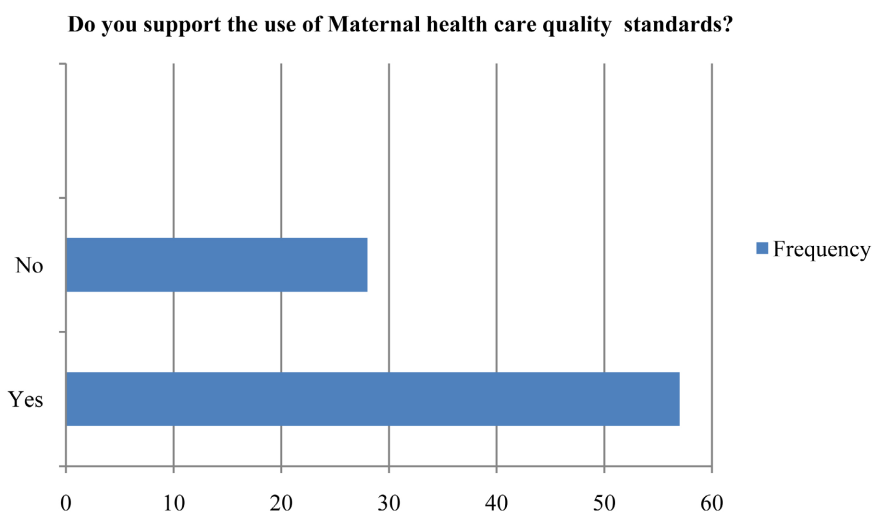


Figure 2. Nurse-midwives support for the use of maternal health care quality standards.

Table 9. Relationship between nurse-midwives' knowledge and attitude toward the use of maternal health care quality standards.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.011 ^a	1	0.156		
Continuity Correction ^b	1.109	1	0.292		
Likelihood Ratio	1.874	1	0.171		
Fisher's Exact Test				0.271	0.146
Linear-by-Linear Association	1.988	1	0.159		
N of Valid Cases	85				

Table 10. Relationship between nurse-midwives attitude and use of maternal health care quality standards.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.046 ^a	1	0.008		
Continuity Correction ^b	5.273	1	0.022		
Likelihood Ratio	6.579	1	0.010		
Fisher's Exact Test				0.013	0.013
Linear-by-Linear Association	6.963	1	0.008		
N of Valid Cases	85				

4. Discussion

In this study, majority of the participants (84.7%) were females and most of them were married. This finding may be because nursing originated as a caring

profession. In most cases, it is the women who are involved in caring for the sick. This is consistent with a study finding by Ndirangu *et al.* that the majority of the nurse-midwives are female [11]. Regarding the age of the participants, the majority of the participants were aged between 20 - 29 years. This might be due to the deployment pattern in the hospital. Maternity being a labor-intensive department the management tends to place younger nurses there since they are considered more energetic. However, this finding differs from the findings of Gitonga which showed that the majority of the nurse-midwives in maternity are aged 30 - 35 years [12]. Most of the participants in this study were diploma holders. This can be explained by the fact that the number of certificate training programs in Kenya decreased as up-grading programs from certificate to diploma were being introduced as well as the presence of many medical training colleges offering diploma training as opposed to those offering degree-level training. This finding is in tandem with that by Tallam *et al.* who in their study on Midwives' self-perceived confidence in their knowledge and skills in Kenya indicated that the majority of the participants were diploma holders [13]. Most of the participants had practiced for between 1 - 9 years. This may be because most of the nurse-midwives deployed in maternity are young.

Only 42.3% of the participants correctly specified that quality maternal health care is care that met the laid down standards with the majority indicating it refers to care that responds to the needs of the client. This could be due to the lack of training of nurse midwives on maternal health care quality and quality standards. Training in-service nurse-midwives is an important undertaking to ensure that they are abreast with the best practices. Incidentally, this study identified that only 38.8% of the nurse-midwives are trained on the maternal health care standards and most of these were trained in college. Furthermore, only 30.6% demonstrated adequate knowledge about maternal health care standards. This finding concurs with the assertion by WHO *et al.* that only 18.5% of health care workers are equipped with the necessary knowledge and skills to provide quality obstetric care [14]. Most of the in-service training is carried out by Non-Governmental Organizations which has dwindled since the inception of devolution in Kenya [12].

The majority of the nurse-midwives interviewed in this study supported the use of maternal health care standards since they standardized the quality of maternal care. This finding is consistent with several other studies such as those by Wahabi *et al.*, Melanie, and Hendaus *et al.* [15] [16] [17]. Most of the participants who do not support the use of the standards indicated that it would be time-consuming. This is maybe because a nurse-midwife is required to follow every step as stipulated in the guidelines. With the current nurse-to-patient ratio of 25:10,000 as opposed to the required ratio of 83:10,000, this becomes an issue. This finding is different from that of Zheng *et al.* [18].

5. Conclusion

The level of knowledge about maternal health care quality standards among

nurse-midwives is inadequate though their attitude towards them is positive. There is a need to carry out in-service education and training on maternal health care quality standards and specifically on the use of WHO (2016) standards for improving the quality of maternal health care. Maternal health care standards for quality improvement should also be added as content to the training curricula for diploma and bachelor nursing students.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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