



## Community health workers' knowledge, attitudes and practices on maternal health provision in Huye District, Rwanda

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### Abstract

The Government of Rwanda, in the context of its vision 2020 and related community health sector reforms and policies, has been investing in the essential health interventions for reducing maternal mortality. The maternal mortality ratio in Rwanda has been reduced by 78% from 1,300/100,000 live births (1990) to 210/100,000 in 2016 with fewer women dying from preventable causes of maternal death. The research was to emphasize on how the CHWs put into practices the trainings on maternal healthcare to achieve the target of maternal death reduction, 168/100,000 live births by 2020 as well as 126/100,000 live births by 2024. Objective of the research was to determine knowledge, attitudes and practices of CHWs on maternal healthcare provision in Huye District. The population of the study was 508 CHWs and the sample size was 224 CHWs. Sampling technique was multi stage sampling and data collection tool was questionnaire. Data were analyzed using of SPSS 21 and descriptive statistics using frequencies and percentages were presented. Chi-square test was used to establish factors associated with the dependent variable. Logistic regression was used to identify the independent factors associated with practice. P-value was set at 5%. The present study indicates that, in bivariate analysis, significant socio-demographic characteristics for good maternal health care provision are age (COR=3.930(1.548-9.978) and P-value <0.05), level of education (COR=0.015(0.003-0.083) and P-value <0.001), marital status (COR=0.118(0.043-0.321) and P-value <0.001), occupation (COR=0.015(0.003-0.083) and P-value <0.001) and social economic class (COR=0.103(0.027-0.396 and P-value <0.001). In multivariate analysis, there is a significant association between maternal health provision and education (COR=0.001(0.000-0.0320) and P-value<0.001 as with occupation (COR=110.062(10.265-1180.035) and P-value< 0.001). This study indicates that 42.9% (COR=0.532(0.236-1.199 and P-value<0.128)) of CHWs have high level of knowledge. The positive maternal health provision attitudes is slightly higher at 52.7% (COR =1.299(0.767-2.198 and P-value<0.331) of CHWs. The adequate maternal health provision practices is 52.2% among CHWs. Health care providers should learn and maintain good collaboration with CHWs to strength technical support. Ongoing training efforts on maternal health care provision can be more effectively planed and maintained in multiple formats to provide maximum accessibility and value and to adopt the more appropriate practices,

customer care growth to improve maternal health services in the community.

## Introduction

Maternal health is one of the major worldwide health challenges (1)(2). Currently, the unacceptably high levels of maternal mortality are a common subject in global health and development discussions (3). Although some countries have made remarkable progress, half of the maternal deaths in the world still take place in Sub-Saharan Africa where little or no progress has been made (4,5).

Worldwide, about 140 million women give birth every year. Whilst much is known about the clinical management of labor and childbirth less attention is paid to what, beyond clinical interventions, needs to be done to make women feel safe, comfortable and positive about the experience. One of the key recommendations of WHO recognizes that every birth is unique, while some labors progress quickly, others don't and unnecessary medical interventions should be avoided if the woman is in good condition (6).

In sub-Saharan Africa, maternal death rates are high. The half of maternal deaths in the world still takes place in Sub-Saharan Africa (7). The relationship between the maternal mortality ratio and some educational, sanitary, and economic factors was observed. 20 countries with the highest maternal mortality ratio, 19 are in Sub-Saharan Africa, only Afghanistan is not in this region, Liberia 1,100; Chad 880; Somalia 740; Sierra Leone 980; Centrafrica Republic 850; DRC 720; Burundi 730; Guinea 640; South Sudan 730; Cote d'Ivoire 650, 510 deaths per 100,000 live births in general (8).

Rwanda has made a remarkable progress of maternal health provision (9). There has been a significant decrease in the maternal mortality ratio, with Rwanda making good progress towards achieving the MDG target of reducing the rate by 78% between 1990 (1300/100,000 live births) and 2015 (290/100,000 live births) and 2016 (210/100,000 live births). 2005: 750; 2007: 480; 2010: 476; 2013:320, 2015:290, 2016; 210 maternal deaths per 100,000 live births (10). The main reason for the improvement is an increasing number of women giving birth in a health care facility attended by a qualified health care professional (midwives, trained nurses and Doctors) and the introduction of a maternal death audit (11).

Rwanda has been investing in the essential health interventions for reducing maternal mortality especially in community health interventions. Maternal mortality ratio decreased by 78% between 1990 (1300/10,000 live births) and 210/10,000 live births in 2016 and is still intolerable high and far from the target of 168/100,000 live births by 2020 and 126/100,000 live births by 2024 (12). This research emphasized on the daily practical interventions of CHWs toward such target of 2020 and 2024 in maternal healthcare provision. How they implement their healthcare tasks as CHWs, (home visits, pregnant woman education, identifying warning signs) as volunteers for maternal healthcare provision even they have their own development family activities.

## Materials and Methods

### Study design and setting

The study was a cross sectional using quantitative approaches in order to obtain the detailed information regarding practices, attitudes and knowledge of CHWs toward maternal healthcare provision form the community of Huye District. The study was conducted in Huye district from Kabutare District Hospital especially in some of its Health Centers.

### Study population and sampling techniques

The target population of this study was 508 CHWs in charge of maternal and new born health in Huye district from Kabutare Hospital ( Kabutare report,2017). Multi stage sampling technique was most efficient to meet with objectives of the study. Stage one out of 16 health centers of Huye District, 8 of them were selected randomly. Stage two was CHWs of 8 health centers (326 CHWs), where 224 were selected randomly, using SPSS Version 21. The list of CHWs from each Health Centre was entered into SPSS Version 21. Then the required sample size from each Health Centre was generated randomly using SPSS.

### Sample population

The correct sample size, depend on both population and research questions. Sample size must be considered in relation to the number of categories required.

Due to limitations of resources and time, the entire study population could not be covered that why sample size was taken.

According to Yamane (1968), the sample size is calculated as follows:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{508}{1 + 508(0.05)^2} = 224$$

N is a number of total population, (e) is a marginal error. At a desired level of 95 percent, a marginal error (e) is equal to 5 percent or 0.05. The total population is 508 CHWs

**N:** Total population

**n:** sample size

**e:** marginal of error

## **Data collection method**

Quantitative data was collected using a questionnaire. Multiple choice questions were more efficient to meet objectives of the study. Two researcher assistants were needed for data collection of 224 questionnaires in 8 Health Centers during the desired time frame. To ensure the quality of data collection, data collectors were trained prior to data collection and the collaboration with the nurses who work permanently in ANC service. At the end of each day, the researcher checked the questionnaire for completeness, only completed questionnaires were considered for data entry and consisted of background and biographical information.

## **Data analysis Procedure**

Data entry and analysis of each objective was done using Statistical Package Social Sciences software (SPSS version 21) for quantitative data, and inferential test was used as method where frequency, percentages and interpretation in responses to research questions was drawn. The researcher determined the knowledge and practice of CHWs about healthcare provision using 5 multiple choice questions, 2 questions for knowledge and 3 for practice and 10 sub questions for each. All questions were corresponded to 20 points. CHWs were considered to have high level of knowledge if they had rank score  $>15$ , moderate level if they had rank score between 10 and 14 and low level if they had rank score of  $<10$ . CHWs were considered to have good practice if they had rank score  $>14$  and poor practice if they had rank score  $<14$ . The CHWs' attitudes were measured using five points scale (strongly agree, agree, neutral, disagree, strongly disagree) for five questions. Each question corresponded to four points. CHWs were considered to have positive attitude if they had rank score  $>10$  and negative attitude if they had rank score  $<10$ . Some of scales were considered positive (strongly agree and agree) and other negative (neutral, disagree and strongly disagree)

## Results

### Socio-demographic characteristics of the CHWs

**Table 1 indicates that** a total of 224 CHWs aged more than 18 years old in Huye district were recruited. The range of ages was between 20 to above 50 years. The participants were grouped into four age categories where 35.7.0% were in the age group of 30-39 years which was dominant group among CHWs in Huye district followed by 40-49 age groups (28.8%). 44.6% of respondents attended primary school and more than 53.1% community health workers were married. Among 224 CHWs three quarter (76.3%) are private.

**Table 1 Socio-Demographic of participants**

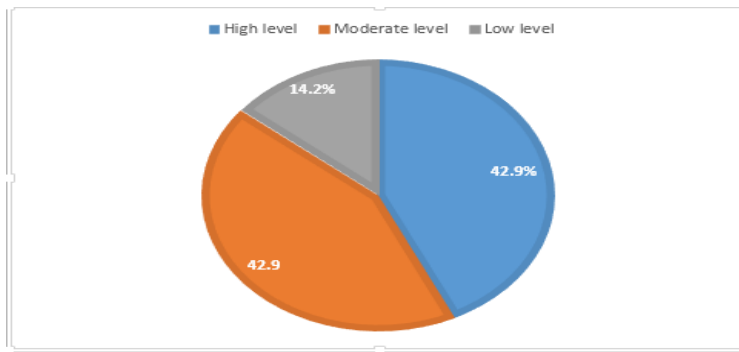
Variables	category	Frequency	Percent
Age group	20-29	52	23.2
	30-39	80	35.7
	40-49	60	28.8
	50-above	32	14.3
Social economic class ( <i>ubudehe</i> )	Class 1	47	21
	Class 2	42	18.7
	Class 3	135	60.3
	Class 4	0	0
Highest school attended	Primary	100	44.6
	Secondary	112	50.0
	University	12	5.4
Marital status	Single	66	29.5
	Married	119	53.1
	Widowed	39	17.4
Occupation	Government	17	7.6
	Private	171	76.3
	No job	36	16.1

**Source: Researcher, 2019**

### The level of knowledge among CHWs on maternal health care provision in Huye District

Figure 1 shows that the 96 respondents of CHWs (42.9%) have a high level of knowledge as well as CHWs with moderate level and finally 32 CHWs (14.2%) have low level.

**Figure 1: Total score of knowledge about maternal healthcare provision**

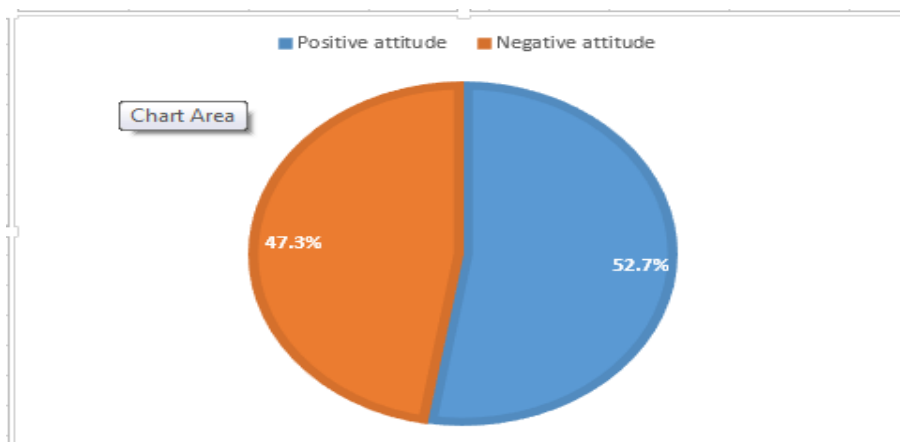


Source: Researcher, 2019

#### **Attitudes towards maternal healthcare provision among CHWs in Huye District.**

Figure 2 shows that the most respondents 119 (52.7%) have positive attitude and 105 (47.3%) have negative attitude about maternal healthcare provision among CHWs in Huye District.

**Figure 2: Total score of attitudes about maternal health care provision in Huye District**



Source: Researcher, 2019

#### **Practices towards maternal health care provision among CHWs in Huye District**

Figure 4.4 shows the adequate maternal health care provision among CHWs in Huye district, where 117 (52.2%) CHWs were complying with **maternal** health care provision among CHWs in Huye district as guided by questionnaire of the current study and 107 CHWs (47.8%) have inadequate practice.

**Figure 3: Total score of maternal health care practices among CHWs in Huye district**



**Source: Researcher, 2019**

Table 2 indicates that single CHWs (OR=0.118; 95% CI=0.043-0.321;  $P<0.001$ ) were less 0.118 times less likely to practice maternal health care provision than married ones. Since the p value is less than 0.001, the relationship between maternal health care provision and marital status is statistically significant at 0.1% level.

The practice regarding maternal health care provision decreases with social class (*Ubudehe*), i.e. those in class 3 (OR=0.071; 95% CI=0.020-0.250;  $P<0.001$ ) were less likely to practice maternal health care provision than their counterpart in lower classes. Since the p value is less than 0.001, the relationship between maternal health care provision and social class is statistically significant at 0.1% level.

It was noted that those aged between 30-39 years (OR=3.965; 95% CI=1.667-9.432;  $P=0.002$ ) were likely to practice maternal health care provision than others. Since the interval does not include 1 which is null value for logistic regression, the relationship between maternal health care provision and age is statistically significant at 0.5% level.

The odd of practicing maternal health care provision among CHWs decreases with educational level where CHWs with primary level of education (OR=0.015; 95% CI=0.003-0.083;  $P<0.001$ ) were less likely to have good practice. Since the p value is less than 0.001, the relationship between maternal health care provision and educational level is statistically significant at 0.1% level.

**Table 2: Bivariate analysis of association between socio-demographic characteristics and maternal health care provision among CHWs in Huye district**

Variables	Indicators	Practice score		COR(95%CI)	P-Value
		Good n(%)	Poor n(%)		
Marital status	Single	26(39.4)	40(60.6)	0.118 (0.043-0.321)	<0.001
	married	58(48.8)	61(51.2)	0.173 (0.067-0.443)	<0.001
	widow	33(84.6)	6(15.4)	Ref	
Social class (Ubudehe)	class1	35(74.5)	12(25.5)	0.365 (0.093-1.431)	0.148

	class2	19(45.2)	23(54.8)	0.103 (0.027-0.396)	<b>&lt;0.001</b>
	class3	39(36.9)	69(63.9)	0.071 (0.020-0.250)	<b>&lt;0.001</b>
	class4	24(88.9)	3(11.1)	<b>Ref</b>	
<b>Age</b>	20-29	35(67.3)	17(32.7)	3.930 (1.548-9.978)	<b>&lt;0.05</b>
	30-39	54(67.5)	26(32.5)	3.965 (1.667-9.432)	0.002
	40-49	17(28.4)	43(71.6)	0.755 (0.301-1.895)	0.549
	50 and above	11(34.4)	21(65.6)	<b>Ref</b>	
<b>Education</b>	Primary	7(7.0)	93(93.0)	0.015 (0.003-0.083)	<b>&lt;0.001</b>
	Secondary	100(89.3)	12(10.7)	1.667(0.326-8.523)	0.540
	University	10(83.4)	2(16.6)	<b>Ref</b>	
<b>Occupation</b>	Government	3(17.6)	14(82.4)	1.071(0.233-4.919)	0.929
	Private	108(63.2)	63(36.8)	8.571(3.382-21.724)	<b>&lt;0.001</b>
	No job	6(16.7)	30(83.3)	<b>Ref</b>	
<b>Level of knowledge</b>	High	42(43.7)	54(56.3)	0.532(0.236-1.199)	0.128
	Moderate	56(58.3)	40(41.7)	0.958(0.424-2.162)	0.917
	Low	19(59.4)	13(40.6)	<b>Ref</b>	
<b>Attitude</b>	Positive	58(49.2)	60(50.8)	1.299(0.767-2.198)	0.331
	Negative	59(55.7)	47(43.3)	<b>Ref</b>	

**COR: crude odd ratio, 95% CI: 95% confidence interval**

Table 3 indicates multivariate analysis of factors associated with practices regarding maternal health care provision among CHWs where only the relationship with education level and occupation were statistically significant at 0.1% ( $p < 0.001$ ) respectively.

**Table 3: Multivariate analysis of factors associated with practices regarding maternal health care provision among CHWs in Huye district**

		<b>Practice score</b>		<b>AOR(95% CI)</b>	<b>P-Value</b>
<b>Variables</b>	<b>Indicators</b>	<b>Good n(%)</b>	<b>Poor n(%)</b>		
<b>Marital status</b>	Single	26(39.4)	40(60.6)	0.917(0.049-17.211)	0.954
	Married	58(48.8)	61(51.2)	0.015(0.001-0.357)	0.009
	Widow	33(84.6)	6(15.4)	<b>Ref</b>	
<b>Social class</b>	class1	35(74.5)	12(25.5)	0.049(0.000-22.885)	0.336
<b>Ubudehe</b>	class2	19(45.2)	23(54.8)	0.010(0.000-4.863)	0.144
	class3	39(36.9)	69(63.9)	0.003(0.000-1.328)	0.061
	class4	24(88.9)	3(11.1)	<b>Ref</b>	
<b>Age</b>	20-29	35(67.3)	17(32.7)	2.565(0.199-33.069)	0.470
	30-39	54(67.5)	26(32.5)	15.069(1.647-137.840)	0.016
	40-49	17(28.4)	43(71.6)	1.609(0.179-14.444)	0.671
	50 and above	11(34.4)	21(65.6)	<b>Ref</b>	
<b>Education</b>	Primary	7(7.0)	93(93.0)	0.001 (0.000-0.032)	<b>&lt;0.001</b>
	Secondary	100(89.3)	12(10.7)	2.389(0.190-30.039)	0.500
	University	10(83.4)	2(16.6)	<b>Ref</b>	
<b>Occupation</b>	Government	3(17.6)	14(82.4)	2.586(0.162-41.376)	0.502
	Private	108(63.2)	63(36.8)	110.062(10.265-1180.035)	<b>&lt;0.001</b>
	No job	6(16.7)	30(83.3)	<b>Ref</b>	

**AOR: Adjusted odd ratio, 95%CI: 95% confidence interval**



## Discussion of results

Knowledge, attitudes and practices are the most indicators that are used by different national and international organizations to assess the success of CHWs towards maternal health care provision programs.

Types and times of provision are part of health education and promotion of Huye educational and training program plan according to the managements board, and it is generally assumed that CHWs are well aware of basic about maternal health care provision to client especially mothers in reproductive age. The present study indicates that knowledge of good time to deliver care and danger signs to the pregnant woman is higher compared to other concepts among all age groups. The highest percentage of the respondents 96 (42.9%) had high level of knowledge on maternal healthcare provision, contrary to the study done in Tanzania, India shown the low percentage of awareness about maternal health care and lack of awareness about provision practices (13).

The present study indicate lack of knowledge about types or components of maternal healthcare provision which is contrasting with the survey done in Tanzania had found that the awareness about types was high and 48% of the respondent had better knowledge about types of care to provide and showed significance in educational level of respondents (13). The present findings are in contrary with the study done in peducherry, India among health professionals with another researcher who also has reported the similar findings revealed that about 4.8%, 3.6%, 6.8%, and 22.4% of respondents knew about the time of maternal health care provision, and respectively which indicated a relatively lower level of awareness of the respondents in the study area(14). The above study was carried out among health professionals which could be the difference revealed in the findings of the current study which carried out among CHWs in Huye district.

Some research workers reported higher level of maternal health care of the respondents in Addis Ababa.(15). The difference in the above two study could be due to dissimilarity in the provision of information about these concepts and health care systems. After computing the knowledge total score also the current study shows that CHWs in Huye distrcitrit are knowledgeable concerning maternal health care provision.

The current study is in agreement with another study done in United State which revealed likely similar results where participants reported how often they had transferred the client to health facilities. Majority of CHWs reported always identifies the danger signs on pregnant women (16). Similarly the above study revealed the same results as the current study were also majority of CHWs shows the ability of identifying danger signs from pregnant women.

The maternal health care provision program practices is slightly higher among CHWs with primary and higher education level compared to those with more than high school attendance (colleges). The study findings, revealed a good level of knowledge and adequate practices, however it also shows the knowledge of factors

associated with maternal health care provision as have been asked from the questionnaire.

## Conclusions and Recommendation

Maternal health is one of the major health challenges in Rwanda and the government of Rwanda has been investing in the essential health interventions for reducing maternal mortality especially in community health interventions. The Rwandan policy of community participation in the development and operation of primary health care strategic lead into the creation of CHWs how have been trained to deliver community maternal healthcare. Majority of CHWs (52.7%) in Huye District have positive feelings toward maternal healthcare provision, 52.2% have good practice and 42.9% have high level of knowledge on maternal healthcare provision in Huye District. The most important statistical significant demographics related to maternal health care practices were education, occupation, marital status and social class (*ubudehe*). CHWs promoted Maternal healthcare provision in Huye District and they have a help of interventions to achieve the target (216/100,000 live births by 2024) of reducing maternal death. Ministry of Health and Health care providers should maintain and promote good collaboration with CHWs to strength technical support and trainings in terms of refresher, positive feelings and friendship with pregnancy mothers. Ongoing training efforts on maternal health care provision can be more effectively planed if they can be adapted to the needs of an individual package or employee and are available in multiple formats to provide maximum accessibility toward maternal health care provision.

## Limitation

A limitation of this study was its restriction to the generalization of findings due to methodology used, which may not be representative of knowledge and practices in the informal working sector or whole communities.

## Competing Interests

The authors declare that they have no competing interests.

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