

## Original Research Article

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# Utilization of health facility delivery services in the Jomoro District of the Western Region of Ghana

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## Abstract

**Background:** In the year 2000, member states of the United Nations pledged to work towards a three-quarters reduction in the 1990 maternal mortality ratio by 2015 in line with Millenium Development Goal 5, but this could not be achieved. This pledge became imperative given the high maternal mortality being recorded, especially among developing countries. The high maternal deaths in developing countries have been attributed partly to the lack of access to skilled birth attendants during delivery.

**Objective:** This study aimed to investigate factors that influence the utilization of health facility delivery services among pregnant women in the Jomoro District of the Western Region of Ghana.

**Methods:** The study used data from a cross-sectional survey among women aged 18 - 49 yr. living in the Jomoro District of Ghana and had given birth between 2012 and 2016 (n = 374). The study participants were randomly selected from women who attended child welfare clinics on clinic days with their babies in eighteen communities. The study used a structured questionnaire to solicit for information about the women's demographic and socio-economic characteristics, community characteristics and health systems factors likely to influence their decision to seek skilled delivery care as well as their experiences relating to their last delivery. Bivariate analyses were performed between the primary dependent variable and background characteristics of the respondents. Factors influencing the choice of place of delivery were estimated by multiple logistic regression analysis. Data analysis was performed using STATA Statistical Software, Release 14.

**Results:** About 61.0% (n= 228/374) of the women had their last delivery at a health facility while the remaining 38.8% (n= 145/374) delivered at home without skilled assistance. In multivariate analysis, women aged 25 - 29 yr. were less likely to have a skilled delivery (aOR, 0.40; 95% CI: 0.17 - 0.93). Also, professional women had 4.77 odds of having skilled delivery (aOR, 4.77; 95% CI: 1.53 - 14.93). Distance to the nearest health facility also had a statistically significant association with skilled delivery. Women living at 10 - 19 km to a health facility were less likely to have a skilled delivery (aOR, 0.56; 95% CI: 0.32 - 0.97). In addition, the presence of a midwife at a health facility increased the odds of skilled delivery among women (aOR, 4.59; 95% CI: 2.47 - 8.55).

**Conclusion:** Interventions aimed at increasing the uptake of delivery care services to achieve the SDG's target on maternal mortality must consider improving the socio-economic wellbeing of women in addition to removing the physical and health system barriers impeding access and utilisation of delivery care services.

**Keywords:** skilled delivery, utilization, health facility, Jomoro, Ghana

## INTRODUCTION

Given the global importance of maternal health, the United Nations (UN) member states in the year 2000 pledged to work towards a three-quarters reduction in the 1990 maternal mortality ratio (MMR) of 385 deaths per 100,000 live births by 2015 [1,2]. Though the 75% target of the Millenium Development Goal (MDG) 5 could not be achieved by 2015, the world's MMR fell by 44% between 1990

and 2015 [3]. The 2015 global MMR estimates suggest that between 291,000 and 349,000 maternal deaths occurred in 2015 making maternal mortality the second leading cause of death among women 15 - 19 yr. old [1]. While developing countries accounted for 99% (n = 302,000) of these global deaths, sub-Saharan Africa (SSA) alone accounted for about 66% (n = 201,000). In 2015, the MMR in Ghana was estimated at 319 maternal deaths per 100,000 live births. This represented nearly 50% reduction instead of 75% reduction of the Global MDG 5 target.

Many of these maternal deaths in Ghana as it is in many low- and middle-income countries have been attributed to

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hemorrhage, hypertension, abortion, sepsis, embolism and several other indirect causes including HIV/AIDS [3]. Many of these causes of maternal deaths could be prevented by women seeking quality maternal health care services. As complement to the gains of MDG 5, the global Sustainable Development Goals (SDGs) therefore call for an acceleration of current progress in order to achieve a global MMR of 70 maternal deaths per 100,000 live births, or less, by 2030 by working towards a vision of ending all preventable maternal mortality [1]. Among the SDGs' strategies to reduce maternal mortality is the need to ensure universal health coverage for comprehensive reproductive and maternal health care. In Ghana, the coverage of skilled attendance at birth is 60% in rural areas compared to 90% in urban areas. It is also 97% among the richest households compared to only 47% among poorer households [4, 5]. For the period 2007 through 2014, births attended by skilled health personnel were 51% in the African region and 67% in Ghana [6].

Several factors inhibit pregnant women in SSA from accessing quality maternal health care services. These factors include difficult physical access to health facilities because of poor road network, lack of transport and long distances to health facilities. Others include poverty and high cost of maternal health care services, negative cultural norms and practices, misinformation and poor quality of maternal health care services [7]. In Ghana, antenatal care (ANC) coverage is tremendously higher in comparison to skilled delivery. Antenatal care attendance figures in most parts of the country are over 90% coverage whilst skilled delivery is fairly below 65% [8]. The ANC coverage in the Western region of Ghana was about 99% compared to 74% of deliveries at a health facility. In the Jomoro District of the Western region, however, the proportion of delivery at a health facility was about 68% in 2015, lower than the regional average of 74% [9,10]. This study aimed to explore the personal, family, community, and health systems factors which influence health facility delivery among pregnant women in the Jomoro District of Ghana.

## MATERIALS AND METHODS

### Study setting

The study was a cross-sectional survey among women in their reproductive age in the Joromo District of the Western region of Ghana. The district covers a total land area of 1,495 km<sup>2</sup>. The capital town is Half-Assini. The district has a total population of 169,045 of which the majority (65%) are rural dwellers [11]. The indigenes are predominately Nzemas and Aowins with a few other minority settler ethnic groups including Fantes, Ewes and other Akans. Agriculture employs about 65 - 70% of the total labor force [11]. The oil and gas industry has a significant economic impact since the discovery of oil in commercial quantity within the Tano basin off the coast of Jomoro District in 2007 [12,13]. For health administration and service delivery, the district is divided into six sub-districts. The district has 37 health facilities including one district hospital, four health centers, five clinics and 27 Community Health Planning and Services (CHPS) zones. Only 10 of the health facilities in the district provide skilled delivery services [14].

Table 1: Variables used for the model estimation.

Variables	Variable description
Dependent variable	
Delivery	Place of delivery with reference to last one. 1 = Health facility, 0 = Otherwise
Explanatory variables	
Socio-demographic characteristics	
Age	Respondent's age in years. 0 = 20 - 29, 1 = 30 - 39, 2 = 40 - 49
Ethnicity	Ethnicity of respondent. 0 = Nzema, 1 = Akan, 2 = Ewe, 3 = Aowin, 4 = Others
Religion	Religious affiliation of respondent. 0 = Christian, 1 = Muslim, 2 = Other
Marital	Marital status of respondent. 0 = Single, 1 = Married, 2 = Divorced, 3 = Widowed
Parity	Children ever born. 0 = 2, 1 = 3, 2 = 4, 3 = 5, 4 = > 5
Education	Educational attainment of respondent. 0 = No formal education, 1 = Primary/Junior Secondary, 3 = Senior Secondary, 4 = Tertiary
Occupation	Occupation of respondent. 0 = Unemployed, 1 = Farmer, 2 = Trader, 3 = Professional
Community factors	
Facility	Availability of a health facility in community. 1 = Yes, 0 = No
Distance	Distance to the health facility with skilled attendant. 0 = < 10 km, 1 = 10 - 19 km, 2 = 20 - 39 km, 3 = ≥ 40km
Transportation	Transportation cost to the nearest health facility with skilled attendant in Ghana Cedi's. 0 = No transport cost, 1 = < 20 GHC, 2 = 20 - 50 GHC, 3 = > 50GHC
Health system factors	
Midwife	Availability of midwife in the nearest health facility. 1 = Yes, 0 = No
Attitude	Perception of attitude of health personnel to clients during antenatal and delivery. 1=Good, 0=Otherwise
Deterrent	Whether attitude of health personnel is perceived as a deterrent to the use of health facilities for delivery. 1 = Yes, 0 = No

### Study sampling

The study population comprised mothers between 18 - 49 yr. with two or more children who were delivered within 2012 to 2016 in the Jomoro District. This target population was deemed appropriate because they were more likely to have multiple encounters and varied experiences on the subject. Employing the sampling formula by Cochran [15], the required minimum sample size was calculated to be 340

respondents. This figure was adjusted by 10% to account for non-responses resulting in a total sample size of 374 mothers for the study. The study participants were randomly selected from the women who attended child welfare clinics on clinic days with their babies in eighteen selected communities. Three communities were selected from each of the six sub-districts. The mothers were randomly selected and those willing to participate in the study were interviewed after obtaining their consent. The study used a structured questionnaire to obtain information from the respondents through face-to-face interviews.

### Statistical analysis

All statistical analyses were performed using STATA Statistical Software (Version 14, StataCorp LLC, College Station, TX). Bivariate analyses were performed between the “place of delivery” as primary dependent variable and the other relevant background characteristics of the respondents. A binary logistic regression model was used to assess the independent effect of personal characteristics, family, community, and health systems related factors likely to influence the choice of the place of delivery. The outcome variable was the “place of delivery by the pregnant woman with reference to the last delivery”. The explanatory variables for the estimation included socio-demographic characteristics such as age of the woman, ethnicity, religion, marital status, parity, educational level, and occupation (Table 1). Other variables were community and health system related variables; and included presence of a health facility in the community, distance to the nearest health facility, availability of a midwife in the nearest health facility, respondent’s perception about the attitude of health personnel to clients in the nearest health facility and whether the attitude of health personnel was a deterrent to the use of the facility [7,16,17,18-21].

## RESULTS

### Demographic characteristics

Table 2 presents the descriptive statistics on place of delivery by pregnant women with reference to their last delivery. A total of 374 women were interviewed, of which the majority (61.23%,  $n = 229$ ) reported to have delivered their last child at a health facility while the remaining 38.772% ( $n = 145$ ) delivered at home without skilled assistance. About 16.60% ( $n = 62$ ) of the women were aged between 20 - 24 yr. while 19.80% ( $n = 74$ ) were between 25 - 29 yr. Some (22.70%,  $n = 85$ ) were between 30 - 34 yr. while 8.0% ( $n = 30$ ) were 45 - 49 yr. Majority of the respondents (57.20%,  $n = 214$ ) were from the indigenous Nzema ethnic group and were significantly higher among those who delivered at the health facility compared to those who delivered at home [62.90% ( $n = 235$ ) vs 48.30% ( $n = 181$ ),  $p = 0.002$ ]. Nearly 76.0% ( $n = 299$ ) of the respondents reported to be Christians followed by Moslems (19.25%,  $n = 72$ ). Majority (63.90%,  $n = 239$ ) of the respondents were married. The proportion of unskilled delivery was higher among women who were single (29.14%,  $n = 109/374$ ), divorced (4.01%,  $n = 15/374$ ), and widowed (5.45%,  $n = 20$

/ 374) compared to married women. The difference was statistically significant ( $p = 0.028$ ). Though majority (58.56%,  $n = 219/374$ ) of the respondents had only primary or JSS education, a higher proportion of those who delivered at the health facility had higher education compared to those who delivered at home. In terms of occupation, there were higher proportions of traders (53.74%,  $n = 201/374$ ) and professional women (15.24%,  $n = 57/374$ ) among those who delivered at the health facility compared to those who delivered at home. About 18.45% ( $n = 69 / 374$ ) of those who delivered at home compared to 10.42% ( $n = 39/374$ ) of those who delivered at the facility were unemployed. The number of children ever born by the women ranged from two to nine with a mean of 3.7 children with no significant difference between the women who had facility and home deliveries. About 28.07% ( $n = 105 / 374$ ) of the women had three children while 25.13% ( $n = 94 / 374$ ) had five children or more.

### Factors influencing choice of place of delivery

Table 3 presents the estimates of factors which influence the choice of place of delivery by pregnant women in the Jomoro District of Ghana. The age of the pregnant woman was a significant factor. Compared to pregnant women aged 20 - 24 yr., pregnant women aged 25 - 29 yr. were about 60% less likely to go for a facility delivery [odds ratio (OR), 0.40; 95% confidence interval (CI): 0.17 - 0.92]. Home delivery among pregnant women however decreases with older women though this was not observed to be significant. Delivery at the health facility was significantly lower among the non-indigenous ethnic groups relative to the indigenous Nzema ethnic group. For instance, the other Akans were 40% (OR, 0.60; 95% CI: 0.34 - 1.07) less likely to delivery at the health facility while the Ewes were about 78% less likely to deliver at the health facility (OR, 0.22; 95% CI: 0.05 - 1.03). The results show a significant and positive relationship between a pregnant woman’s level of formal education and choice of place of delivery. The odds of facility delivery increase with women’s level of formal education.

Women with secondary education were 2.5 times more likely to deliver at a health facility and 3.2 times more likely for those with tertiary education relative to women with no formal education. Compared to unemployed women, pregnant women who farmer were 3.0 times more likely to go for health facility delivery. The odds of health facility delivery significantly increased with traders (OR, 3.15; 95% CI: 1.40 - 7.05) and professional pregnant women (OR, 4.77; 95% CI: 1.53-14.93). The distance to the nearest health facility also had positive and significant effect on the decision to choose a health facility delivery. The odds of health facility delivery decrease with increasing distance to the health facility. The results show that compared to women within less than 10 kilometers to the nearest health facility, those within 20 - 39 km were about 55% less likely to seek health facility delivery while this increases to 71% for women within 40 or more km from the nearest health facility. Having a midwife in the nearest health facility has a positive and significant influence on the

Table 2: Descriptive statistics by place of delivery of the last child

Variable	Place of delivery		Total n (%)	p value
	Otherwise (n=145)	Facility (n=229)		
Age of respondents in yr. (reference is 18 – 24 yr.)				
20 - 24	15.20	17.50	16.60	0.703
25 - 29	21.40	18.80	19.80	
30 - 34	26.20	20.50	22.70	
35 - 39	15.90	19.60	18.20	
40 - 44	13.10	15.70	14.70	
45 - 49	8.30	7.90	8.00	
Ethnicity				
Nzema	48.30	62.90	57.20	0.002***
Other Akans	36.50	21.40	27.30	
Ewe	2.80	2.18	2.40	
Aowin	5.50	1.70	3.2	
Other	6.90	11.80	9.9	
Religion				
Christian	75.90	82.50	79.9	0.036**
Moslem	19.30	16.60	17.6	
Other	4.80	0.90	2.40	
Marital status				
Single	31.70	29.30	30.20	0.028**
Married	58.60	67.20	63.90	
Divorced	4.10	2.60	3.20	
Widowed	5.50	0.90	2.70	
Occupation				
Unemployed	18.60	10.50	13.60	0.003***
Farmer	27.60	20.50	23.30	
Trader	48.30	53.70	51.60	
Professional	5.50	15.30	11.50	
Education				
No formal education	28.90	23.10	25.40	0.011**
Primary/JSS	62.80	55.90	58.60	
Secondary	6.90	15.30	12.00	
Tertiary	1.40	5.70	4.00	
No. of children (Parity)				
2	20.70	26.60	24.30	0.533
3	27.60	28.40	28.10	
4	24.80	20.90	22.50	
≥ 5	26.90	24.00	25.30	
Facility in community				
No	24.80	16.20	19.50	0.039**
Yes	75.20	83.80	80.50	
Distance to the facility with skilled attendant in km				
< 10km	29.00	44.50	38.50	0.027**
10 - 19	59.30	46.70	51.60	
20 - 39	8.30	6.50	7.20	
≥ 40	3.40	2.20	2.70	
Availability of a midwife in the nearest health facility				
No	75.90	46.70	58.00	< 0.001***
Yes	24.10	53.30	41.90	
Perception of attitude of health personnel in the nearest health facility				
Not good	48.90	42.80	45.20	0.243
Good	51.00	57.20	54.80	
Staff attitude as a deterrent to the utilization of the nearest health facility				
No	13.10	8.30	10.16	0.134
Yes	86.90	91.70	89.84	
Cost of delivery (in Ghana cedi)				
No cost	35.90	31.90	33.40	0.833
< 20	17.90	18.30	18.20	
20 - 49	16.50	19.60	18.40	
50 - 99	19.30	17.50	18.20	
≥ 100	10.30	12.70	11.80	

Pearson's chi-square ( $\chi^2$ ) test for categorical variables: \*\*\*  $p$  value < 0.01, \*\*  $p$  value < 0.05, \*  $p$  < 0.1



decision to have a facility delivery or not. Pregnant women who were closer to a health facility with the availability of a midwife were 4.6 times more likely to seek facility delivery compared to those with no midwife.

## DISCUSSION

In Ghana, about one-third of deliveries occur at home without skilled care with its attendant adverse consequences to the health of the mother and newborn [6]. The decision to deliver at home or at the health facility is influenced by several factors including socio-cultural, economic, and geographical barriers. This study sought to explore the factors which influence the choice of place of delivery among pregnant women in the Jomoro District of Ghana as part of the efforts at addressing the negative consequences associated with unskilled delivery at home. The observed factors include socio-demographic, economic and health system related factors [22-24].

The age of the pregnant woman was observed to be significantly associated with the decision to seek health facility delivery among the pregnant women surveyed. Generally, younger pregnant women were more likely to seek health facility delivery. This could be attributed to the relatively high risk and inexperience associated with young and first-time pregnant women. Young women whose bodies may not be well developed to carry pregnancy are advised to seek skilled delivery care during pregnancy and childbirth so that any complications can be prevented or managed [25]. In their study on choice of delivery facility among expectant mothers in Ghana using the 2008 Ghana Demographic and Health Survey data, Nketiah-Amponsah and Arthur [26] explained that the likelihood of facility delivery reduces with the age of the pregnant women and this may be attributed to their experiences associated with previous facility deliveries and increases in parity.

The results also showed that while pregnant women from the indigenous Nzema ethnic group were more likely to deliver at the health facility, the opposite was the case among the pregnant women belonging to the migrant ethnic groups. This is because most of the migrant Ewe and other Akan women in the districts mostly engage in fishing and settler farming [27]. Their residence in remote locations for their fishing and farming activities may hinder their travelling to seek facility delivery in the Jomoro District which has poor transportation network especially during the rainy season. The study found a positive association between level of education and the decision to deliver at a health facility. Alvarez and colleagues [19] in their study across many countries in sub-Saharan Africa found that well educated women are likely to deliver at a health facility by skilled assistants compared to the illiterate women. Studies on the determinants of skilled delivery in rural Cambodia established that maternal education had a strong effect on facility delivery, and that women who had at least seven years of schooling being six times more likely to deliver babies at a health facility than those who did not attend school [28]. A similar observation was made among

the pastoralist women in Laikipia and Samburu in Kenya [7], among young women in Kenya [22], and in Ghana [20,

Table 3: Estimates of factors influencing place of delivery by pregnant women in the Jomoro District of Ghana

Variable	Odds Ratio	95% CI	
		Lower	Upper
Age in years (20 - 24 = reference)			
25 - 29	0.40**	0.17	0.93
30 - 34	0.59	0.24	1.44
35 - 39	0.91	0.35	2.35
40 - 44	0.83	0.30	2.30
45 - 49	0.83	0.23	2.93
Ethnicity (Nzema = reference)			
Other Akans	0.60*	0.34	1.07
Ewe	0.22*	0.05	1.03
Aowin	0.16**	0.04	0.69
Others	1.10	0.42	2.87
Religion (Other = reference)			
Christian	2.85	0.41	19.96
Muslim	2.61	0.35	19.30
Marital status (Single = reference)			
Married	1.33	0.72	2.44
Divorced	0.69	0.17	2.78
Widowed	0.28	0.04	1.83
Parity (2 = 0)			
3	0.76	0.36	1.62
4	0.56	0.24	1.33
≥5	0.60	0.24	1.48
Education (No formal education = reference)			
Primary/JSS	1.01	0.56	1.83
Secondary	2.50*	0.98	6.39
Tertiary	3.24	0.42	25.18
Occupation (Unemployed = reference)			
Farmer	2.97**	1.20	7.34
Trader	3.15**	1.40	7.05
Professional	4.77**	1.53	14.93
Facility in Community (No = reference)			
Yes	1.16	0.60	2.22
Distance to the nearest health facility (< 10 km)			
10 - 19 km	0.56**	0.32	0.97
20 - 39 km	0.45	0.17	1.20
> 40 km	0.29	0.06	1.29
Midwife available in nearest health facility (No = reference)			
Yes	4.59***	2.47	8.55
Attitude of health staff (Not good = reference)			
Good	1.08	0.64	1.84
Staff attitude as deterrent to use of services (No = reference)			
Yes	0.63	0.28	1.46
Constant	0.31	0.04	2.72
Total observations	374		
LR chi <sup>2</sup> (30)	93.87***		
Pseudo R <sup>2</sup> (Cox-Snell)	0.222		
Hosmer-Lemeshow statistic ( <i>p</i> value > chi <sup>2</sup> )	11.06 (0.198)		

Pearson's chi-square ( $\chi^2$ ) test for categorical variables: \*\*\*  $p$  value < 0.01, \*\*  $p$  value < 0.05, \*  $p$  value < 0.1; CI, confidence interval; LR, Likelihood ratio.

26]. This positive and significant association may be attributed to the fact that educated women are more likely to be aware and knowledgeable about the risk factors associated with pregnancy and unskilled delivery. It is expected that the well-informed pregnant women will be more autonomous, assertive, and more likely to make rational decisions about life choices including childbirth [6, 22, 29-31]. The occupational status of the pregnant woman was also observed to be a determining factor in the decision to seek health facility delivery or not. Traders and women in professional employment were more likely to seek health facility delivery compared to the unemployed women and those engaged in farming. It was also observed that those engaged in farming were more likely to seek health facility delivery compared to the unemployed.

Very often, traders and professional women are more likely to be urban dwellers with better economic and physical access to health facilities compared to the rural farmers and the unemployed, whose income sources are often low and seasonal. Another study in Ghana confirmed that urban households and those in highest wealth quintile were more likely to seek health facility delivery [26]. This is because such women and their households would have the ability to pay the out-of-pocket payments associated with health facility delivery. Many pregnant women choose home delivery due to a wide range of factors associated with the formal health system. Home delivery is preferred because it is relatively cheaper, easily accessible, convenient, and accommodating to many women [32]. Though our bivariate analysis did not establish any significant difference in the cost of home delivery compared to health facility delivery, the result shows that two-thirds of the respondents made out-of-pocket payments for delivery services though antenatal and delivery care are expected to be covered by the National Health Insurance Scheme (NHIS) in Ghana for women who register with the insurance scheme.

About 64.0% of the women who delivered at home compared to 68.0% of those who sought health facility delivery made out-of-pocket payments during delivery. Out-of-pocket payment for delivery care at the health facility can therefore influence the decision to seek facility care during delivery [28]. Even for pregnant women who are registered with the NHIS, it is known that not all costs relating to delivery care have been eliminated by the NHIS [33, 34]. Another study among rural women in Ghana [35] discovered that the cost of delivery was the most important consideration why mothers choose home delivery among a wide range of factors. Another important factor related to the health system is the availability of skilled personnel at the health facilities to provide skilled delivery care. Availability of skilled personnel especially midwives at the nearest health facility improves women's perception about the quality of delivery care at the facility and this can positively affect the decision to seek delivery care from this facility. The shortage of midwives in health facilities and its adverse effects on uptake of skilled delivery services are well documented [21,29]. Related to the availability of midwives is the issue of staff attitude which could affect the

decision to seek skilled delivery care. It is apparent that disregard for needs, values, and insensitivities to pregnant women by skilled staff impede utilization of maternal care. Poor reception, poor provider attitude, poor interpersonal relationship between staff and their clients and not being attended to timely resulting in undue delays were emphasized as being responsible for low supervised delivery rates [37]. Geographical access to care at birth has been identified as one of the major barriers to the utilization of skilled delivery care in Ghana [10]. This difficulty often presents a major challenge especially for pregnant women residing in rural areas due to long distances to health facilities, poor road networks especially during the rainy season and lack of motorable vehicles coupled with the high cost of transportation to health facilities [7,21,26]. One study observed that urban women were about 16 percentage points more likely to deliver in public facilities relative to home delivery [26].

Several factors are known to influence a pregnant woman's decision to choose a place of delivery. Among the well documented factors are the effects of socio-cultural and traditional beliefs and wealth status of the pregnant woman and the household. In addition, the availability of a health insurance package which covers delivery care at the health facility could positively influence the decision to seek skilled delivery care from a health facility. The selection of the study participants was from women attending Child Welfare Clinics with their babies in the selected communities. Though the coverage of postnatal care is quite high (84%), women who did not attend these clinics were excluded from the sampling. This could introduce some bias because if those women who were not attending were distinctively different from those who were sampled. Notwithstanding these limitations, this study generally reflects the situation in the Jomoro District and these findings could contribute positively to addressing the challenges in promoting skilled delivery utilization in the district.

## Conclusion

Our results show that socio-demographic characteristics of the pregnant women, their economic status, and health system related factors have significant influence on their decision to choose a place of delivery. Interventions aimed at increasing the uptake of maternal and delivery care services to improve on delivery outcomes must consider these factors by reducing the social, economic, and structural barriers impeding access and utilization. Evidence abounds to suggest that pregnant women who initiate antenatal care early and continue to have frequent contact with service providers are more likely to seek health facility delivery. Health care professionals should take advantage of the high coverage of antenatal care to convey very important and convincing health promotional messages that lead to behavioral change that improves the utilization of skilled delivery services. Vulnerable women must be targeted with health promotional messages relating to the need to seek skilled delivery care. This should be taken seriously by the District Health Management team

using traditional and modern information, communication, and technology channels to meet the needs of pregnant women with no or limited formal education. It is also equally important to ensure that any intervention aimed at increasing the uptake of skilled delivery services in the Jomoro District should lead to improvement in the physical access to these services. These services must be easily available, accessible, affordable, convenient, and culturally acceptable to pregnant women. This is where the role of CHPS Initiative becomes crucial. But the current situation where only 10 of the 37 health facilities in the district offer delivery services poses a big challenge to promote safe delivery in the district. Many of the twenty-seven CHPS compounds in the district are not functional. To address the shortage of midwives especially in rural Ghana, the Ghana Health Service piloted a program to train Community Health Officers as midwives in the Upper East region of Ghana 2005.

The results showed that this program contributed to expanded skilled delivery care access and utilization for rural women [36]. Such efforts must be sustained and expanded to benefit other rural districts including the Jomoro District. Efforts should aim at providing the needed infrastructure, equipment, and personnel with support from the government, the district assembly, and the community to bring delivery care services closer to the people. Our results showed that the availability of midwives at the nearest health facility is a positive and significant factor in the decision by the pregnant women interviewed to seek skilled delivery care, but the health personnel would be in a better position to provide the required services when they have the needed equipment and logistics.

## DECLARATIONS

### Ethical considerations

Ethical approval for the conduct of the study was sought from the Ghana Health Service Ethical Review Board. The District Health Directorate of the Jomoro District approved the conduct of the study. Informed consent was also sought from all study participants. Participants were assured of the strict confidentiality and privacy for any information given during the study.

### Consent to publish

All authors agreed to the content of the final paper.

### Funding

None

### Competing Interests

No potential conflict of interest was reported by the authors.

### Author contributions

SN and KOM designed the study and prepared the field tools. SN managed the data collection while AK led the data analysis and interpretation of the data. SN and KOM drafted the manuscript. KOM, SN and AK contributed to

the revision of the manuscript. All authors read and approved the final manuscript.

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## Availability of data

The dataset used and analyzed during the current study is available from the corresponding author upon a reasonable request.

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