



## Determinants of Access to Skilled Birth Attendants by Women in Galkacyo District, Somalia

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author MSY designed the study, performed the statistical analysis and wrote the protocol. Author FM wrote the first draft of the manuscript. Authors MK, JGK and FM managed the analyses of the study. Author MSY managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Globally over half million women of reproductive age (15-49 years) die every year as result of pregnancy and childbirth complications, and 300 million women endure from debilitating injuries. Barriers to accessing skilled birth attendant services are many. In Somalia, one out of six women received appropriate care due to lack of accessible basic and obstetric emergency care resulting into high levels of maternal mortality and morbidity. About 55.5%, of pregnant mother prefer to deliver at homes instead of health facilities and the availability and accessibility of traditional birth attendants influenced their choices. This study determined factors influencing access to skilled birth attendants by women.

**Methods:** This was descriptive cross-sectional study conducted among 384 women of reproductive age (15-49 years) in Galkacyo District, Puntland, drawn from two villages selected randomly. Data was collected using a pretested questionnaire and entered in a Microsoft package. Data was analysed using Statistical Package for Social Science (SPSS) version 20 using chi-square, logistic regression and association was considered significant at  $P < 0.05$ .

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**Results:** Among the women who were interviewed, 27% were delivered by a skilled birth attendant. There was significant association between access to skilled birth attendant and respondents level of education (OR=10.11; 95% CI: 4.8 – 21.28; p<0.001), Marital status (OR=0.23; 95% CI: 1.11 – 0.46; p<0.001), Husband's level of education (OR=4.99; 95% CI: 2.285 – 10.90; p<0.001), Decision maker about delivery (OR=0.15; 95% CI: 0.03–0.66; p=0.012), Respondent's occupation (OR=3.17; 95% CI=1.52-6, 62; P= 0.002), Husband's occupation (OR=2.69; 95% CI: 1.02-7.09; P=0.046) and Household's monthly income (OR=0.20; 95% CI: 0.11-0.37, P<0.001).

**Conclusion:** There is need to educate young girls, to enable them make informed choices for their health outcomes. The Ministry of health should increase community health educations to overcome socio-cultural practices influencing access to skilled birth attendants. Also women should be empowered economically to enable them access quality health services including delivery care.

*Keywords: Skilled birth attendants; women; childbirth.*

## 1. INTRODUCTION

Though pregnancy and childbirth are natural phenomenon, and it is often an eventful process [1]. Globally, over half million women of reproductive age (15-49 years) die every year as result of pregnancy and childbirth complications and almost half of them are in Sub-Saharan Africa [2]. Between 2000 and 2015, the global maternal mortality ratio, or number of maternal deaths per 100,000 live births, declined by 37 per cent, to an estimated ratio of 216 per 100,000 live births in 2015. Almost all maternal deaths occur in low-resource settings and can be prevented. Globally, 3 out of 4 births were assisted by skilled health-care personnel in 2015 [3]. Globally One third of births occur at homes without the assistance of Skilled Birth Attendants [4]. In Africa, two million women die during child birth [5,6]. In developed countries, WHO estimate that skilled birth attendance has reached 99.5%. In Africa, less than 50% of births are performed by SBAs [7]. However, increasing the percentage of births performed by Skilled Birth Attendants could help reducing maternal and neonatal mortality rates [8]. It has been documented that more than three-fourths of maternal deaths are related to direct obstetric causes, which are easily preventable and treatable, and 77% of deaths occur during or soon after childbirth (within 24 hours) [9].

In Somalia, the combination of conflict, insecurity, mass displacement, recurrent droughts, floods and extreme poverty coupled with very low basic social service coverage, two decades of internal conflict and collapsed health sector had left 80% of Somalia's population without access to basic health services and Prospect of giving birth in the presence of SBA [10]. MDG on health related indicators concerning Somalia are among the worst in the

world [7]. Maternal deaths in Somalia are currently estimated at 1,400 per 100,000 live births. Most causes of maternal deaths are hemorrhage, obstetric in labour, unsafe abortions and infections [1]. This worried deterioration trends of maternal deaths is thought to be due to absences of SBAs and the use of traditional birth attendants who lack the required skill [11]. Skilled delivery care service utilization in Somalia is still far-below any acceptable standards only 6% of women receive assistance from skilled birth workers either at homes or at health institutions [12]. In order to ensure that women remain safe during childbearing years, it is vital that a competent health worker with midwifery skills be present at every birth. In Somalia, the majority of births (55.9 percent) take place with the help of Traditional Birth Attendants (TBAs), who often lack training on how to manage birth complications. Conversely, only 3.4 percent of deliveries are handled by medical doctors, 9.4 percent are assisted by family members, and 25.4 percent are aided by nurses and midwives [9]. The study objective was to identify utilization of reproductive health services and determinants of access to skilled birth attendants by women during delivery.

## 2. MATERIALS AND METHODS

### 2.1 Study Site

This study was carried out in Galkacyo District Puntland, Somalia which lies 700 KMs away from north of Mogadishu the capital city of Somalia and 400 KMs south from Garowe. It is a capital city of semi-regional autonomy of Puntland, north-east of Somalia. Geographically Puntland is 30% of Somalia and Galkacyo is one of the largest and oldest towns in southern and central Somalia. It has been devastated by long-lasting civil war and ongoing hostilities among clans in

Somalia. Galkacyo population is estimated currently at 380,000 people. Stability and peace in Puntland where Galkacyo is located has aspired many Somalis' and the town hosts thousands of internal displaced people (IDPs) who had displaced from southern regions of Somalia. Despite Puntland has been in calm situation since 1998, still it lacks the capacity to handle community necessities, such as maternal health services. Maternal and neonatal death rates in Somalia are almost same [13].

## 2.2 Study Population

Study population consisted of women of reproductive age 15-49 years who delivered in the past 6 months. The inclusion of the study subjects was based on consenting women of reproductive age (15-49 years) and had been residents in the study area more than 6 months. Those who were excluded were either below 15 or above 49 years and had not delivered in the past 6 months.

## 2.3 Study Design and Sampling Procedure

This study was a descriptive cross-sectional study that used two villages selected randomly using the lottery method. Each village was given a unique number, placed in a bowl and mixed thoroughly. The researcher picked two numbers from the bowl and the villages having selected numbers were sampled. Convenience sampling was used to select 384 respondents to participate in the study. Purposive sampling was used to select key informants.

## 2.4 Data Collection

A structured, pretested questionnaire and qualitative tools such as interview guide were used to record information. The questionnaire captured Socio-demographic characteristics (occupation, income, religion, employment, means of transport and road network), socio-cultural beliefs, healthcare system factors, knowledge and attitude of the mothers. Qualitative data was recorded in narrative form.

## 2.5 Statistical Analysis

Data was coded and entered into a computer database using MS-Access and analysis

performed using Statistical Package for Social Sciences (SPSS) data entry program. Chi-square statistics was used to get the relationship between independent and dependent variables and P-values set at  $< 0.05$ . Odds ratio was to check the direction of association and to test hypothesis. Logistic regression was done to measure the outcome of independent variables. Qualitative data was transcribed and analyzed thematically and used in the discussion of results. Information generated was then presented in the text in the form of tables, bar graphs and pie charts.

## 2.6 Ethical Clearance

Ethical clearance was sought from Kenyatta university graduate school and Ministry of Education and Ministry of Health of Puntland administration. Prior consent was sought from women of reproductive age to participate in the study. During the interview privacy and confidentiality was observed.

## 3. RESULTS

### 3.1 Social-demographic Characteristics of Respondents

A total of 384 women aged between 15-49 years and had delivered in last months were recruited. Majority of the respondents (44.3%) are aged between 26-35 years while the least proportion (4.9%; 19) aged above 45 years. Most of the study participants (35.2%; 135) had no education. The respondents who had primary education were 31.3(120), while only (13.5%; 52) were post-secondary level. A significant high proportion of the respondents were married (60.9%; 234). Majority of the respondents (58.1%; 223) stated that the community encourages delivering at health facility while the least (41.9%; 161) had reported that their community does not encourage women to deliver with skilled birth attendants. Most (49.7%; 191) of the respondents revealed that delivering at hospital/with SBA is much better while (48.1%; 185) supported delivering at home and few number (2.1%; 8) of the participants were not sure the best place to deliver their babies. Majority (47.7%; 183) of the respondents reported that the right person to attend their births is SBA while same number (47.7%; 183) of the respondents reported TBA, and the least (4.7%; 18) of the women were not sure and they reported any of the above two is the right person to attend their deliveries. Most (35.5%; 135) of

the respondents reported that they as a couple made decision on where to deliver their babies while (28.4%; 108) of the women made their decisions on place of delivery, the least (1.1%; 4) of the respondents reported that TBA made decisions for them. Majority of the respondents (73%; 254) reported that they delivered at home without the assistance of skilled health worker while (27%; 115) of the respondents delivered at health facility. Respondents who delivered at home (91.6%; 163) stated that their TBAs understand their culture while (2.2%; 4) of the respondents reported that hospital delivery deficits them as weak women. Most of the respondents (31.8%; 122) earned monthly income between 100-200 USD while (28.4%; 109) of the respondents monthly income was above 200 dollars, and the least (11.7%; 45) of the respondents reported that they earned monthly income less than 45 USD. Majority (39.1%; 150) of the respondent's homes were 500 meters-1 KM far from nearest health facility that provides delivery services, while the least (12.5%; 48) of the respondents whose place of residence was more than 2 KMs far from the health facility.

### 3.2 Social-demographic Characteristics Influencing Access to Skilled Birth Attendants

Relationship between accessing skilled birth attendant and selected demographic characteristics was analyzed as presented in Table 1. Three of the four assessed demographic factors were significantly associated with access to skilled birth attendants. A significantly high proportion of respondents who had attained secondary level of education accessed skilled birth attendants (40%) compared to respondents who had no formal education (15.7%), (OR=3.57; 95% CI: 1.82 – 7.01; p<0.001). Similarly, a significantly high proportion of respondents who attained Post-Secondary level of education sought assistance from skilled birth attendants (65.4%) compared to respondents had no formal education, (OR=10.11; 95% CI: 4.8 – 21.28; p<0.001). A significantly small proportion of divorced respondents accessed to skilled birth attendants (11.6%) compared to those who were married (36.8%), (OR=0.23; 95% CI: 1.11 – 0.46; p<0.001). A significantly small proportion of respondents whose husbands had no education accessed to skilled birth attendants (25%) compared to respondents whose husbands

acquired secondary and tertiary education (84%) (OR=4.99; 95% CI: 2.285 – 10.90; p<0.001) as shown in Table 1.

### 3.3 Skilled Birth Attendants in Relation to Social-cultural Characteristics of the Respondents

Relationship between accessing skilled birth attendance and selected social-cultural characteristics was analyzed as presented in Table 2. Six of the eight assessed social-cultural factors were significantly associated with accessing skilled birth attendance. A significantly high proportion of respondents who accessed skilled birth attendance indicated that the community encouraged it (42.8%) compared to respondents who indicated that the community did not encourage seeking skilled birth attendance (9.9%), (OR=6.78; 95% CI: 3.78 – 12.16; p<0.001). A significantly small proportion of respondents who indicated that their husbands did not accompany with them during delivery accessed skilled birth attendance (5.5%) compared to those whose husbands accompanied with them during delivery (52.8%), (OR=0.05; 95% CI: 0.03 – 0.11; p<0.001). A significant small proportion of respondents who indicated that Traditional birth assistants were the best people to attend to their deliveries accessed skilled birth attendance (3.9%) compared to respondents who indicated that Skilled birth assistants were the best people to attend to their deliveries (57%), (OR=0.03; 95%CI: 0.01-0.07; p<0.001). Decision maker about delivery was significantly associated with access to skilled birth attendance. A significantly low proportion of families whose decision maker about delivery was the mother in law sought assistance from skilled birth attendants (10%) compared to families whose decision maker was both husband and wife (43.2%), (OR=0.15; 95% CI: 0.03 – 0.66; p<0.012). Similarly, a significant high proportion of families whose decision maker about delivery was the mother accessed the assistance from skilled birth assistants (12.1%) compared to families whose decision maker was the couple (43.2%), (OR=0.18; 95%CI: 0.08 – 0.41; P<0.001). A significant small proportion of respondents prefer to deliver their next child with the help of a skilled birth attendant (6.4%) compared to respondents who prefer to deliver their next child with the help of Traditional birth attendant (48.5%), (0.07; 95%CI: 0.04-0.14; P<0.001) as shown in Table 2.

**Table 1. Social-demographic characteristics influencing skilled birth attendants**

Variables	SBA		TBA		OR	95% CI		P value
	n	%	N	%		Lower	Upper	
<b>Age category</b>								
15-25years	41	36.3	72	63.7	0.85	0.28	2.57	0.779
26-35 years	40	23.5	130	76.5	0.46	0.15	1.38	0.165
36-45 years	18	25.4	53	74.6	0.51	0.16	1.63	0.256
> 45 years	6	40	9	60	Ref			
<b>Level of education</b>								
Primary level	23	19.2	97	80.8	1.27	0.66	2.45	0.479
Secondary level	28	40	42	60	3.57	1.82	7.01	<b>&lt;0.001</b>
Tertiary	34	65.4	18	34.6	10.11	4.8	21.28	<b>&lt;0.001</b>
No education	20	15.7	107	84.3	Ref			
<b>Husband's level of education</b>								
No education	23	11.1	114	88.9	4.99	2.285	10.907	<b>&lt;0.001</b>
Primary level	25	36.6	36	63.4	23.04	11.054	48.024	<b>&lt;0.001</b>
Secondary and above	84	74.2	34	25.8	Ref			
<b>Marital status</b>								
Single	2	50	2	50	1.72	0.24	12.44	0.591
Separated	7	26.9	19	73.1	0.63	0.26	1.57	0.324
Divorced	10	11.6	76	88.4	0.23	0.11	0.46	<b>&lt;0.001</b>
Widowed	0	0	19	100	UD	UD	UD	0.998
Married	86	36.8	148	63.2	Ref			

UD - Undefined

**Table 2. Skilled birth attendants in relation to social-cultural characteristics of the respondents**

Variables	SBA		TBA		OR	95% CI		P value
	N	%	N	%		Lower	Upper	
<b>Community encourage delivering at hospital</b>								
Yes	89	42.8	119	57.2	6.78	3.78	12.16	<b>&lt;0.001</b>
No	16	9.9	145	90.1	Reference			
<b>Husband's accompany during delivery</b>								
No	10	5.5	171	94.5	0.05	0.03	0.11	<b>&lt;0.001</b>
Yes	95	52.8	85	47.2	Reference			
<b>Right person to attend your birth</b>								
Any of the above two	0	0	18	100	UD	UD	UD	0.998
TBA	7	3.9	172	96.1	0.03	0.01	0.07	<b>&lt;0.001</b>
SBA	98	57	74	43	Reference			
<b>Decision maker about delivery</b>								
Mother in law	2	10	18	90	0.15	0.03	0.66	<b>0.012</b>
TBA	0	0	4	100	UD	UD	UD	0.999
Friends/Neighbours	0	0	4	100	UD	UD	UD	0.999
Mother	8	12.1	58	87.9	0.18	0.08	0.41	<b>&lt;0.001</b>
Me	31	28.7	77	71.3	0.53	0.31	0.91	<b>0.021</b>
Husband	7	20	28	80	0.33	0.13	0.81	<b>0.015</b>
Couple	57	43.2	75	56.8	Reference			

UD – Undefined

### 3.4 Socio-economic Factors Influencing Access to Skilled Birth Attendants

Relationship between access to skilled birth attendance and selected social-economic characteristics was analyzed as presented in Table 3. Respondent's occupation was

significantly associated with access to skilled birth assistance. A significant high proportion of respondents who had salaried employment sought skilled birth attendance (56.9%) compared to respondents who were in business (29.4), (OR=3.17; 95%CI: 1.52 – 6.62; P<0.002). A significant high proportion of respondents

whose husband's occupation was civil servant accessed to skilled birth attendance (37%) compared to respondents whose husband's occupation was unemployed (14.6%), (OR=2.69; 95%CI: 1.02-7.09; P=0.046). Similarly, respondents whose husband's occupation was Merchant sought skilled birth assistance compared to those who husbands were unemployed (14.6%), (OR=2.69; 95%CI: 1.02-7.09; P=0.046). Mothers whose husbands were students accessed skilled medical assistance (66.7) compared to respondents who their husbands were unemployed (14.6), (OR=11.67; 95%CI: 4.07-33.46, P<0.001). There was no

significant difference between respondents whose husbands were casual labourers and the respondents whose husbands were unemployed, P>0.05.

The total monthly income of the respondents was significantly associated with access to skilled birth assistance, P<0.001. A significant small proportion of respondents whose monthly income was less than 45 USD sought skilled birth assistance (23.7%) compared to those who earned more than 200 USD (53.2%), (OR=0.27;95%CI: 0.12-0.63, P=0.002). Similarly, small proportion of respondents who earned

**Table 3. Socio-economic factors influencing access to skilled birth attendants**

Variables	SBA		TBA		OR	95% CI		P-value
	N	%	N	%		Lower	Upper	
<b>Respondent's occupation</b>								
House wife	48	22.7	163	77.3	0.71	0.38	1.31	0.267
Salaried employment	33	56.9	25	43.1	3.17	1.52	6.62	<b>0.002</b>
Business	20	29.4	48	70.6	Reference			
<b>Husband's occupation</b>								
Civil Servant	10	37.0	17	63	3.43	1.07	11.01	<b>0.038</b>
Merchant	29	31.5	63	68.5	2.69	1.02	7.09	<b>0.046</b>
Student	32	66.7	16	33.3	11.67	4.07	33.46	<b>&lt;0.001</b>
Casual labour	20	25.3	59	74.7	1.98	0.73	5.39	0.183
Unemployed	6	14.6	35	85.4	Reference			
<b>Monthly total income</b>								
Less than 45 USD	9	23.7	29	76.3	0.27	0.12	0.63	<b>0.002</b>
50-100 USD	19	18.3	85	81.7	0.20	0.11	0.37	<b>&lt;0.001</b>
100-200 USD	19	16.1	99	83.9	0.17	0.09	0.31	<b>&lt;0.001</b>
>200 USD	58	53.2	51	46.8	Reference			
<b>Distance from home to health facility</b>								
< 500 Metres	16	22.9	54	77.1	0.43	0.19	0.97	<b>0.043</b>
500 meters-1KM	40	28.0	103	72	0.56	0.28	1.13	0.107
1-2KM	31	27.7	81	72.3	0.55	0.27	1.15	0.111
More than 2 KM	18	40.9	26	59.1	Reference			
<b>Type of health facility used to deliver</b>								
Private hospital	58	100.0	0	0	UD	UD	UD	0.997
Public hospital	34	45.3	41	54.7	1.21	0.40	3.64	0.740
NGO	11	61.1	7	38.9	Reference			
<b>Amount spend in delivering in public hospital</b>								
Free	22	56.4	17	43.6	1.94	0.79	4.75	0.146
Less than 10 USD	16	40	24	60	Reference			
<b>Who financially supported your last delivery</b>								
Others	4	100.0	0	0	UD	UD	UD	0.999
Husband	65	31.6	141	68.4	1.71	1.05	2.79	<b>0.031</b>
Self-sponsored	32	21.2	119	78.8	Reference			
<b>Considerations in choosing where to deliver</b>								
Cost	0	0	163	100	UD	UD	UD	0.995
Nearness	13	17.3	62	82.7	0.15	0.07	0.32	<b>&lt;0.001</b>
Others	4	100	0	0	UD	UD	UD	0.999
I was referred there	45	84.9	8	15.1	3.98	1.63	9.69	<b>0.002</b>
Friendly workers	41	58.6	29	41.4	Reference			

UD – Undefined

between 50-100 USD accessed skilled birth assistance compared to those who earned more than 200 USD (53.2%), (OR=0.20; 95%CI: 0.11-0.37, P<0.001). A small proportion of respondents who earned a monthly income of between 100-200 USD sought skilled birth assistance (16.1) compared to those who earned more than 200 USD (53.2%), (OR=0.17; 95%CI: 0.09-0.31, p<0.001).

Distance from place of residence to the nearest health facility was significantly associated with access to skilled birth assistance, P=.043).

A significant high proportion of respondents who were financially supported by their husbands sought skilled birth assistance (31.6%) compared to those who sponsored themselves (21.2%), (OR=1.71; 95CI: 1.05-2.79, P=0.031).

A significant small proportion of the respondents who accessed skilled birth assistance indicated that nearness to the health facility was one of their considerations (17.3%) compared those who indicated that they considered friendly health workers (58.6%), (OR=0.15; 95%CI: 0.07-0.32, P<0.001). Similarly, a significantly high proportion of respondents who accessed to skilled birth assistance indicated that they were referred to the health facility compared to those who considered friendly health workers (58.6%), (OR=3.98; 95%CI: 1.63-9.69, P=0.002).

A significant high proportion of the respondents who sought skilled birth assistance indicated that they will deliver at the hospital if the services were made free (31%) compared to those who indicated that they will not deliver at the hospital even if the services were made free (12.5%), (OR=3.28;95%CI: 1.50-7.15,P=0.003) as shown in Table 3.

#### 4. DISCUSSION

Birth attendance by skilled birth attendant is considered as the most important factor in preventing maternal deaths by preventing stillbirths and improving newborn survival [14,15]. They are important during pregnancy, at child birth and at post natal period. The study demonstrates 27% of births within Galkacyo were attended by a skilled professional. This is lower than the 44% in Kenya [16] and 46.4% in Bangladesh [17]. Several factors have been identified as potential determinants of delivery by SBAs.

The study found out that education of women and their husbands has a significant influence on the utilization of skilled birth attendants. This is consistent with many studies that found women's and their husbands' education as potential determinants of delivery by SBAs [14,18]. The partner's level of education is important as it reflects the influence of the household head in making reproductive health decisions [19]. Educated women are more knowledgeable on the importance of maternal health services hence seek high quality services and also have ability to decide delivery place. Also educated husbands may have a better communication with their wives and willingness to discuss the use of maternal health services. The finding of this study is in agreement with similar studies which reported that the more a mother was educated, the more likely she was to deliver through a skilled birth attendant [20,21,22].

Marital status was found to have significant association with delivery by SBAs. This is in contrast with studies that showed no association with delivery by SBAs [23,24]. Findings by Ochoka showed that single women had higher autonomy and did not depend on other people for decision making than their married counterparts who depended on their husband's decision making [25].

In this study decision maker about delivery was significantly associated with access to skilled birth attendance. The study found that families whose decision maker about delivery was the mother accessed the assistance from skilled birth assistants (12.1%) compared to families whose decision maker was the husband and wife (43.2%). These study findings is similar study [26] that reported the same findings.

In this study, respondent's occupation was significantly associated with accessing skilled birth assistance. A high proportion of respondents who had salaried employment sought skilled birth attendance (56.9%). When women were employed or working, properly they were able to save some money in preparation towards their delivery. The results of this study are in agreement with similar studies which showed that that mother's occupation played an important role in delivery service utilization [14].

The total monthly income of the respondents was significantly associated with access to skilled birth assistance. This result concurs with the

findings from a study by Pathak who found that use of SBAs remained considerably lower among poor mothers relative to their non-poor counterparts [27].

Those women living 5km or less from a health facility was associated with increased likelihood of skilled birth attendance. The barrier effect of distance is linked to absence of means of transport such as ambulance to carry pregnant women to the health facilities in case they experienced labour. These finding are in agreement with a study that indicated the greater the distance from a health facility influences the mother's decision to utilize skilled birth attendant at birth [28].

## 5. CONCLUSION

The study found out that there is a relationship between a woman's education level, partner's education level and the outcome of skilled delivery. Low education level for the mother and her partner (none or primary school level) do not seek services of skilled birth attendant. Based on these findings, interventions in health related sectors such as community health education and behaviour change should be enhanced so as to increase demand for skilled delivery with an aim to improve maternal and child health. Quality and availability of healthcare services should be assessed to provide further insights relating to access of maternal, newborn and child health services. Also women should be empowered economically to enable them access quality health services including delivery care.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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