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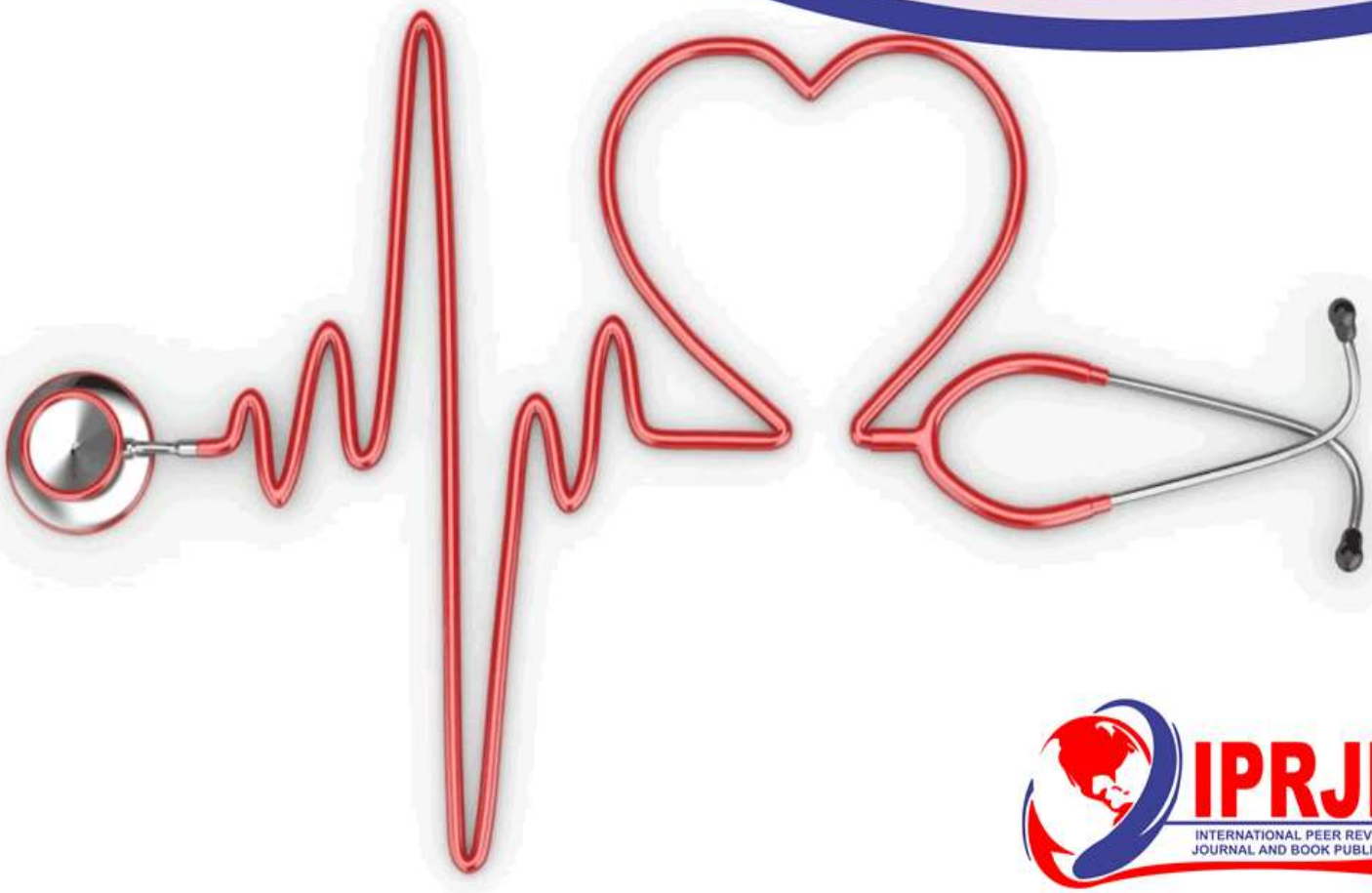

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Health-System Factors Associated with the Occurrence of Stillbirths among Women Delivering in Selected Hospitals of Marsabit County

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Abstract

Purpose: The study sought to determine Health system factors associated with occurrence of stillbirths in selected hospitals in Marsabit County, Kenya

Methodology: The study employed a cross-sectional descriptive study design, targeting 387 women who delivered in selected hospitals in Marsabit County, to collect qualitative and quantitative data. Quantitative data were analyzed using the Statistical Package for Social Sciences version 24.0 while qualitative data were analyzed using N-Vivo software version 22. Inferential statistics were calculated using Chi Square and Fisher's Exact Tests at 95% confidence interval and $P<0.05$ was considered significant.

Findings: The rate of stillbirth occurrence was 5.9%. Health system factors such as distance ($p=0.002$), cost of transport ($p=0.036$), health information ($p=0.004$), type of insurance ($p=0.029$) and culture ($p=0.031$) were significantly associated with outcome of delivery.

Unique Contribution to Theory, Practice and Policy: The respondents from Marsabit County experienced relative high rates of stillbirth compared to the national figure. The outcome of delivery was significantly influenced by Health System Factors Contributing to Stillbirths Incidences in Marsabit County. These results may help address the high rate of stillbirth across the country and improve the delivery outcomes of pregnancies among mothers delivering in public hospitals.

Keywords: *Stillbirths, Health System Factors, Midwifery Care, Reproductive Health Care*

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INTRODUCTION

Stillbirth refers to a baby born with absolutely no signs of life at or after 28 weeks of pregnancy according to International Classification of Diseases (ICD-10). Globally, it is estimated that 2.6 million stillbirths occur each year (WHO, 2015). Of these, 98% occur in low and middle income countries with more than half (55%) occurring in sub-Saharan Africa (Auger *et al*., 2012). Developing countries have higher rates of stillbirths as compared to developed countries with significant variations between countries (Lawn *et al*., 2016). The rate of stillbirths in developing countries is 25.5/1000 births with sub-Saharan Africa and South Asia having the highest rates of 32.2/1000 and South Asia 31.9/1000 births respectively (Stanton *et al*., 2012).

In East Africa, Kenya has the third highest rate of stillbirths estimated at 23/1000 births (You D, Hug L. et al. 2015). This prompted the government of Kenya to structure interventions such as Beyond Zero campaigns and universal healthcare enshrined in the government's four agenda thus improve maternal health and curb the rising number of stillbirths.

The government is also implementing the framework of Every Woman Every Child structured under Sustainable Development Goals (SDGs), a strategy aimed at addressing the issue of stillbirths worldwide (Agaba *et al*., 2016). High rates of still births in developing countries are associated with lack of access to good-quality obstetric care, resulting to intra-partum deaths (Blencow *et al.*, 2016).

The numbers of still births reported might be low since they rely on the reported cases (Bhutta, 2017). To improve on reporting, reporting systems have been put in place to classify and report stillbirths, despite this, it is difficult to determine the exact cause because of confounding factors like poor nutrition, communicable and non-communicable infections in pregnancy and lifestyle factors thus leaving a considerable number unexplained (You D, Hug L. et al. 2015).

Problem Statement

Despite implementation of several measures to ensure improved delivery outcomes such as Beyond Zero campaigns, the Big Four Agenda (Universal Health Care) and free maternal delivery, the rates of stillbirths remains questionable. Beyond Zero Campaign was initiated by Her Excellence Margaret Kenyatta the First Lady of the republic of Kenya in 2014 with an aim of preventing maternal and children deaths and registering Zero maternal deaths through promotion of access to quality maternal and neonatal healthcare services for all in Kenya (Beyond Zero, 2014).

Stillbirth rate in Kenya stood at 23/1000 birth (UNICEF, 2015). The government of Kenya has a lot to do to meet every Newborn Action Plan (ENAP) target of less than 12 stillbirths/1000 births by 2030 (Blencow *et al.*, 2016).

The rate of stillbirths in Kenya stood at 23/1000 birth (KDHS, 2017). The government of Kenya has a lot to do to meet the Every Newborn Action Plan (ENAP) target of fewer than 12 stillbirths/1000 births by 2030 (Blencow et al., 2016). In North-Eastern Kenya, about 2% of all deliveries are stillbirths.

Many stillbirth cases remain undocumented as a major public health problem despite it being heartbreaking losses to women leading to breakage of marriages (KDHS, 2014).

Therefore, the study sought to determine Health system factors associated with occurrence of stillbirths in selected hospitals in Marsabit County, Kenya.

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METHODOLOGY

The study adopted a cross-sectional mixed method study design to collect and analyze both quantitative and qualitative data. The study was carried out in Marsabit County, one of the Counties from the Upper Northern Kenya. The County has four Sub-Sounties namely Saku, North Horr, Laisamis and Moyale. The study was carried out in all public Sub counties hospitals in the County which includes Marsabit County Referral Hospital, Moyale Sub-County Referral Hospital, Laisamis Sub-County Hospital and Kalacha Sub-County Hospital (in North Horr Sub County). The hospitals are moderately equipped to provide comprehensive health services to the catchment population.

Study population: The study population included all mothers who delivered in the facilities within a period of six months between September 2018 and February 2019.

Marsabit County was purposively chosen since it exhibits high rates of stillbirths. All sub-counties were included in the study. Four health facilities were purposively selected based on the number of deliveries conducted. Moyale Sub-Sounty Referral Hospital, Marsabit County Referral Hospital, Laisamis Sub-County Hospital and Kalacha Sub-County Hospital formed the study sites.

Sampling and sample size: Using fisher's formula for infinite population,

$n=Z^2*p*(1-p)/d^2$

Where: n = Sample size for large population

Z = Normal distribution Z value score, (1.96)

p = An attribute of the study population

Where P= is the percentage of mothers delivering stillbirths, which was assumed to be 50%.

d = Precision level desired or the significance level which is 0.05 (5%) for the study

The substituted values in determining the sample size for a large population were as follows.

$$n= \frac{(1.96)^2*(0.502)(0.502)}{(0.05)^2}= 384$$

To cater for attrition, 10% of the sample size (n=38) was added to cater for attrition making a total of 422, however, only 387 respondents were accessed to fill the questionnaire. Potential respondents were selected using systematic sampling where samples were picked on the K^{th} mother from the admission numbers at the point of discharge.

$$K = \frac{population\ size}{Sample\ size} = 1950/384 = 5.07$$ Therefore k = 5.

The respondents will be sampled at an interval of 5. To achieve the representative sample, the 5^{th} mother was chosen from the admission numbers at the point of discharge. Number 3 was randomly chosen between 0 and 9 which was then used as a starting point, the mothers were then systematically selected until the required 387 respondents in total in all facilities was reached. The number of respondents selected from each facility was proportion to the number of postnatal women delivering in each facility. Eight (8) nurses who were in a position to give informative data as Key Informants were purposively selected and interviewed to provide additional information for the study. The key informants helped to confirm ANC attendance for the mothers against their responses in the questionnaire.

Data collection: Pretesting of research tools ensured clarity of questions to respondents thus eliciting the required information. The researcher also incorporated expert opinions (supervisors) to construct well-structured research instruments. The researcher used interviews in which structured questionnaires were administered by research assistants to collect quantitative data (Sekeran, 2013. The respondents were guided to fill their responses by the trained research assistants. In case the respondent was not able to understand the questions in English, the questionnaire was translated into local language and filled in English with assistance of the trained research assistants. Qualitative data was collected through key informant interviews with eight selected nurses working in the selected hospitals. Two nurses (maternity ward in-charge and the deputy) were purposively selected from each hospital to give more information as key informants. The main researcher moderated the Key Informant Interviews (KII) sessions from which views and suggestions were captured by research assistants. The interviews were recorded, then transcribed to verbatim for analysis.

Ethical considerations: The researcher sought approval of the study from Kenyatta University Graduate School. Ethical clearance to carry out this research was obtained from Kenyatta University Ethics Review Committee (KUERC). A research permit from the National Commission for Science, Technology and Innovation (NACOSTI) was also obtained. The researcher further sought permission from County Commissioner, County Education Officer and the Director of Health Services from Marsabit County. The research was given authorization from the hospital management of the selected facilities prior to data collection after clarifying the purpose of the study. An informed consent to participate in the study was gotten from each respondent. Study respondents were assured of privacy and confidentiality of information given. They were treated with the respect they deserved and participation in the study was voluntary without due coercion.

Data analysis: Quantitative data from questionnaires were cleaned, coded, double entered, double checked and stored into Microsoft Excel program for analysis. Data was then exported to SPSS version 24.0 for analysis. Descriptive statistics were presented frequency distribution tables. Inferential statistics were used to test the association between the study variables. This was achieved through Chi-square and Fisher's Exact Tests done at 95% confidence interval and p-values less than 0.05 considered significant. Qualitative data from KII was transcribed into verbatim and entered into N-Vivo version 11 software for analysis and were triangulated with quantitative data as narrations.

RESULTS

The results found out that slightly less than half 143/387 (37.0%) of the respondents reported that the distance to the nearest health facility was between 11-15km followed by 93/387 (24.0%) whose distance was less than 5km.The findings showed that half 194/387 (50.1%) of the respondents used between Kshs100-200 for their transport to the health facility followed by 99/387 (25.6%) who used more than Kshs 200.

Concerning the affordability of health services, majority 279/387 (72.1%) of the respondents said the services were affordable with only 108/387 (27.9%) reporting that they felt the services were not affordable to them. Whether the respondents had medical insurance, the results showed that most 323/387 (83.5%) of the respondents had insurance with only 64/387 (16.5%) of them lacking any medical insurance. Among the respondents who reported to be having medical insurance, more than half 215/323 (66.6%) of the respondents had Linda mama followed by 65/323 (20.1%) who had NHIF as their medical insurance.

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Regarding whether the respondent liked the reception they received at the health facility, the researcher found out that majority 236/387 (61.0%) liked the reception they got while 151/387 (39.0%) of them did not like a reception at all. The researcher further sought to find out whether the respondents received health information before service, the results revealed that slightly more than half 198/387 (51.2%) of the respondents were given health information with 189/387 (48.8%) of them saying they did not receive any health information. The results also revealed that slightly below half 193/387 (49.9%) of the responded felt that culture was not a hindrance to health service seeking while 151/387 (39.0%) of them feeling that culture indeed hindered their seeking of health services in one way or another. The results were as presented in Table 1 below:

Table 1: Health System Factors Influencing the Outcome of Delivery among Respondents

Independent Variable	Respondent response	Frequency (N)	Percentage (%)
Distance to health facility (Kilometers)	< 5	93	24.0
	6-10	65	16.8
	11-15	143	37.0
	≥ 16	86	22.2
Cost of transport to health facility (KShs)	< 100	94	24.3
	100-200	194	50.1
	> 200	99	25.6
Affordability of health services	Yes	279	72.1
	No	108	27.9
Medical insurance	Yes	323	83.5
	No	64	16.5
Type of medical insurance	NHIF	65	20.1
	Linda Mama	215	66.6
	Private cover	43	13.3
Liked reception at the facility	Yes	236	61.0
	No	151	39.0
Given health information	Yes	198	51.2
	No	189	48.8
Culture hinders seeking health services	Yes	151	39.0
	No	193	49.9
	I cannot tell	43	11.1

Influence of Health System Factors on Outcome of Delivery

The researcher sought to determine the association between health system factor and delivery outcomes among the respondents. The results revealed that majority 14/23 (60.9%) of the respondents whose distance to the nearest health facility was between 11-15km had stillbirths. There was an association between distance to the nearest health facility and delivery outcomes (p*=0.002). The results showed that most 15/23 (65.2%) of the respondents who said that the cost of transport to the nearest health facility was between Kshs100-200 had stillbirths. There was a significant statistical association between the cost of transport to the health facility and delivery outcome (p=0.036).

Concerning the affordability of health services, the researcher found out that most 17/23 (73.9%) of the respondents who said they thought the services were affordable had stillbirths. There was no statistical association between the affordability of the services and delivery outcome (p=0.339). Majority 21/23 (91.3%) of the respondents who had medical insurance had stillbirths. There was no significant statistical association between having a medical insurance and delivery outcomes (p*=0.395). With regards to the type of insurance, most 15/23 (71.4%) of the respondents who reported to be having Linda mama type of insurance had stillbirths. There was an association between type of insurance and delivery outcome (p*=0.029).

The study findings revealed that the majority of 227/364 (62.4%) of the respondents who liked the reception they received at the health facility had livebirths. There was no significant statistical association between liking the reception one got at the health facility and delivery outcome (p=0.058). The results showed that more than half 12/23 (52.2%) of the respondents who reported that they were not offered health information had stillbirths. There was a statistical association between being given health information and delivery outcome (p=0.004). One Nurse in a key informant interview reported;

> *"…We try to offer our clients with information through regular health talks and one on one interactions with pregnant women. However, most of the clients don't like these talks because they think it's a waste of time. Normally we have days which are scheduled for health talks in different departments of the MCH. We cannot force them to attend but we try to tell them the importance of not only attending but also participating such talks …"*

Regarding whether the respondents felt that the culture hindered seeking got health services, the results revealed that majority 14/23 (60.9%) of the respondents who felt that culture was a hindrance to health-seeking had stillbirths. There was a significant statistical association between culture hindering health-seeking and delivery outcomes (p*=0.031). The results were as presented in Table 2 below:

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Table 2: Association between Health System Factors and Outcome of Delivery among Respondents

Independent Variable	Respondent response	Dependent variable (Outcome of delivery)		Statistical significance
		Live birth	Stillbirth	
Distance to health facility (Kilometers)	< 5	42(13.9%)	1(4.3%)	X^2 =11.862 df=3 p*=0.002
	6-10	61(16.8%)	4(17.4%)	
	11-15	179(49.2%)	14(60.9%)	
	≥ 16	82(22.5%)	4(17.4%)	
Cost of transport to health facility (KShs)	< 100	92(25.3%)	2(8.7%)	X^2 =12.298 df=2 p*=0.036
	100-200	179(49.2%)	15(65.2%)	
	> 200	93(25.5%)	6(26.1%)	
Affordability of health services	Yes	262(72.0%)	17(73.9%)	X^2 =1.344 df=1 p=0.339
	No	102(28.0%)	6(26.1%)	
Medical insurance	Yes	302(83.0%)	21(91.3%)	X^2 =1.089 df=1 p*=0.395
	No	62(17.0%)	2(8.7%)	
Type of medical insurance	NHIF	60(19.9%)	5(23.8%)	X^2 =5.797 df=2 p*=0.029
	Linda Mama	200(66.2%)	15(71.4%)	
	Private cover	42(13.9%)	1(4.8%)	
Liked reception at facility	Yes	227(62.4%)	9(39.1%)	X^2 =2.711 df=1 p=0.058
	No	137(37.6%)	14(60.9%)	
Given health information	Yes	187(51.4%)	11(47.8%)	X^2 =0.427 df=1 p=0.004
	No	177(48.6%)	12(52.2%))	
Culture hinders seeking health services	Yes	137(37.6%)	14(60.9%)	X^2 =2.623 df=2 p*=0.031
	No	186(51.1%)	7(30.4%)	
	I cannot tell	41(11.3%)	2(8.7%)	

Key: P*=Fisher's Exact Test

Discussion

The distance a client travels to seek health care services influences their need to seek the services. The results from this study found out that most of the respondents reported that the distance to the nearest health facility was approximately between 11and15 kilometers. This is because in the region, health facilities are further apart and patients have to travel long distances before they reach their nearest health facility. There was a significant statistical association between the distance to health facility and delivery outcome. This is because distance hinders access to health facility thus prevented women from accessing healthcare services. This causes led to delays to access significant services thus resulting in poor delivery outcomes.

These study results were consistent with a study done by Kothiyal *et al.* (2017) in a tertiary teaching hospital who found out that the distance to the health facility affected time taken to reach a nearby hospital and this was associated with adverse delivery outcomes among pregnant women. The results of the current study were also in agreement with another study

conducted in Kenya which physical access to health facilities through distance and/or lack of transport means as barriers to delivering in health facilities. This means they deliver at home or on their ways to hospitals which may be coupled with poor management of complications hence increased risk of stillbirth occurrence (Kitui *et al*., 2013).

Accessibility of the health facility can be physical access or financial access. Regarding the cost of transport to health facilities, the findings showed that majority of respondents paid between Kshs100-200 for their transport to the nearest facility. Considering their low economic status this might be a huge sum of money to pay as only transport to the health facility. From this study, there is statistically significant contribution to the cost of transportation and outcome of delivery among respondents. This may be due to the fact that lack of transportation costs would hinder women from seeking health services to enhance management of their pregnancy thus resulting in a possibility of negative delivery outcomes.

The results were in agreement with a study which was conducted in rural Ghana which revealed that the cost of transport to health facilities and accessing services barred women from delivering at hospital facilities and with the help of skilled birth attendants predisposing them to stillbirths and maternal deaths (Cofie *et al.*, 2015). These findings were also consistent with another study which was done in India which revealed that the economic status of an individual negatively influenced use and access to maternal and reproductive health care. This was because they lacked enough means of paying for their transportation costs to the nearest health facility to seek healthcare services (Sanneving *et al*., 2015).

The government of Kenya has in the recent past introduced free maternal services in government health facilities. In addition, all pregnant mothers are encouraged to have a medical insurance cover when pregnant. These insurance covers range from NHIF, Linda mama, and other private insurance covers. Regarding medical insurance cover, the results showed that most of the respondents had insurance to enable them access maternal and reproductive healthcare services. Among the respondents who reported to have medical insurance, most of them had Linda mama medical cover. This is a government cover meant to cover women during their prenatal and postnatal period up to the period of 18 months. The type of medical insurance had a statistically significant contribution to delivery outcome. In fact most of the respondents with medical insurance reported having the Linda Mama type of insurance which is provided free of charge by the government.

The results concurred with a study that was conducted in Murang'a County Referral Hospital in Kenya which showed that medical insurance increased utilization of healthcare services and delivery under the care of a skilled birth attendant. This further reduced cases of home deliveries thus improved delivery outcomes (Gikera, 2018). In another study done in Upper West region of Ghana, it was revealed that insurance guaranteed financial protection and enhanced utilization of healthcare services especially among the poor living in deprived rural areas (Dongoo, 2013).

Concerning the type of reception respondents received while seeking healthcare services in respective facilities, majority of respondents revealed that they liked the reception they received from the staff in the respective facilities. However, there was no significant statistical association between reception and outcome of delivery. The type of reception and how one is treated determines subsequent visits among respondents. The results were inconsistent with a study done in Nyamira County, Kenya which revealed that the type of reception given to patient significantly influences seeking health services from hospitals (Matoke, 2018). These results

were also contrary to another study done in Ireland among pregnant women seeking vaccinations for pertussis, it was revealed that good reception increased chances of subsequent visits by 2.3 times than who was poorly received (Hallissey *et al.,* 2018). Unfriendly health providers with negative attitude discourage patients from seeking health services (Chimaraoke, 2010).

We checked if the respondents received health information before receiving their routine services, the results revealed that most of them reported having been given information concerning the service they had sought for. There was a significant statistical association between access to information and delivery outcome. This is because possession of prior knowledge by clients shows the importance of adhering to the services provided and regimens prescribed. This ensures chances of better treatment outcomes thus reduced occurrence of negative delivery outcomes. The results concurred with a study done in North-West Ethiopia urban pregnant women which revealed that majority of respondents were provided with health information as well as discussed their health status with care providers prior to service delivery (Belaynehet *al*., 2014). This further boosted their adherence to services and witnessed positive delivery outcomes. Provision of health information creates a rapport between the healthcare provider and the patient increasing chances of subsequent visits (Matoke, 2018).

The results also revealed that most of the respondents report that culture was not ahindrance to seeking healthcare services. There was a significant statistical association between culture and occurrence of stillbirths. This may be attributed to some cultures which are against the utilization of health services as well as other cultures such as female genital mutilation (FGM) put women in risky health situations. This may result in the occurrence of maternal complications during pregnancy and eventual delivery thus increased cases of stillbirth occurrence. These results were consistent with a study done by Murray (2006) which revealed that pregnancy outcome was influenced by social, cultural norms and traditional customs which affect the ability of women to seek for healthcare services.

In another study conducted in Pakistan, it was revealed that due to cultural beliefs over two-thirds of deliveries occurred at home by untrained birth attendants increasing the chances of maternal complications. The belief that stillbirths may be caused by cosmological forces such as black magic (Hamid *et al.,* 2014). In Bangladesh, the culture of child marriage which is commonly practised negatively affects pregnancy outcomes as a result of under-developed reproductive organs (Kamal *et al.,* 2015). In another study done in Sokoto State, Nigeria, it was revealed that cultural gender norms and roles made women do tough domestic work during pregnancy resulting to poor pregnancy outcomes (Shamakiet *al*., 2017).

Conclusions

The study analyzed all the significant results and came up with the following conclusions.

1. The health system factors that were of importance in predicting occurrence of delivery outcomes was accessibility which included; long distance to the health facility, high cost of transport, not having medical insurance cover, and inadequate provision of health information.
2. The health system factors that were important in policy making for the policy makers and health care providers to improve the occurrence of delivery outcomes.

Recommendations

i. The ministry of health, national and county government should come up with mobile clinics to improve access to health facilities among the far to reach areas. This will ensure the use of reproductive health services during pregnancy and eventual delivery.

ii. The ministry of health, county government, NGOs and relevant stakeholders should ensure the creation of sensitization predisposing factors to stillbirth delivery outcome.

iii. The study recommends a further research on accessibility of maternal health services in public hospitals in Marsabit County, Kenya.

iv. The study recommends a further study to identify cultural practices that hinders the utilizations of health care facilities in Marsbity County, Kenya

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