

**The Influence of Home Delivery on maternal mortality in Tanzania. The case of the Longido district**

**Comment [U1]:** The title suggest a case report but context and the content do not support a case report

**The Influence of Home Delivery on maternal mortality in Longido District of Tanzania:**  
**A Mixed Method Study**

**ABSTRACT**

**Comment [U2]:** Better structured abstract for fuller understanding: Background, Aims/Objectives, Methods, Results, Conclusion/Recommendation , Key Words

The paper summarized the influence of home delivery on Maternal mortality in Longido district. Maternal mortality has been a World tragedy for decades and most Practitioners have set their eyes on medical perspectives only. The socio-cultural perspectives view maternal mortality on its totality including the individual thinking/behaviours, family, elders, peers, health seeking behaviours, decision making power, knowledge, practices, and attitudes. For instance, attending clinics, decisions on the place of childbirth, financial support, and inadequate diet may contribute to several complications leading to maternal deaths. According to this study, major causes of Maternal Mortality were associated with home delivery practices that are believed to cause haemorrhage and sepsis. The essence of this paper was to bridge the gap between medical and non-medical practitioners in reducing Maternal mortality in Longido and Arusha in general. A sample size of 395 was drawn using the Yamane formula where 380 out of 395 (96.2%) of respondents were involved. A total of 311 (81.8%) respondents were given questionnaires while 69 (18.2%) were interviewed. These included 33.8% men and 66.2% women who ranged between 15-49 years of reproductive age. The findings indicated that home deliveries had an influence on maternal mortality. Statistical findings also concluded the significant relationships between home delivery and maternal mortality where  $p < .001$ ;  $R^2 = .791$ ;  $p < .001$  therefore, rejecting the null

**Comment [U3]:** Not aligned and not necessary in this position placed. May be deleted. State this sentence with supportive statistical figures and cite it below See Comment U3 below

**Comment [U4]:** It means that this study is a mixed method study

**Comment [U5]:** State at least some of the significant findings quantitative and qualitative that supported this assertion

hypothesis. The study recommends bridging the gap between nonmedical and medical practitioners by addressing the barriers of home delivery leading to delays causing Maternal Mortality.

**Comment [U6]:** Recommendation should be specific based on the findings. What is the major barriers to be addressed

**Keywords:** *home delivery, Maternal mortality, Delays*

## 1.0 INTRODUCTION.

Traditional practices considers ways of doing things in traditional ways (Poikolainen, 2022). Most women especially in rural areas inherit traditional ways of thinking and doing things as they learn from elders and peers. According to this paper, home delivery is referred to as a traditional practice that was believed to contribute to maternal mortalities in Longido districts in Arusha region.

Maternal Mortality is not acceptable since most of its causes are preventable where the community is able to access emergency care, improved economic conditions, girls' education, improved practices, gender norms, and values (Sara et al., 2019). Most writers associate maternal mortality with medical causes like severe bleeding, infections, high blood pressure, complications during childbirth, and unsafe abortions while forgetting non-medical factors like poverty, distance from residence to health facilities, lack of information, poor quality of care, cultural beliefs, and traditional practices including home delivery.

A study in India identified low socio-economic status, awareness of the available schemes, distance to health facilities, lack of transport and cultural norms contributing to home delivery leading to complications and maternal mortality (Kiran, 2022). In that case, empowering women,

improving economic power and accessibility of reproductive services will address the problem of maternal mortality in developing countries.

Every country has their own ways of doing things depending on their income. High Income Countries (HIC) differs from those of Low- and Middle-Income Countries (LMIC) in terms of technological development, accessibility of quality services, provider's skills, and place of childbirths and care of pregnant women during labor and after delivery. Studies conducted in Low and Middle Income Countries (LMIC), show the contribution of social cultural practices on maternal mortality compared to High Income Countries (HIC) due to differences in environments, health systems and availability of public resources (Mengesha et al., 2021). According to them, LMIC indicated the contribution of cultural malpractices to maternal death by 5-15% that occurs during pregnancies and child birth (Melesse et al., 2021). Cultural malpractices documented from the study in Ethiopia were; abdominal massage, nutritional taboos and home deliveries (Melesse et al., 2021).

The trend of Maternal Mortality Rates (MMR) globally shows a decline by 44% from 1990 to 2015 (UNICEF, 2017). Most High Income Countries (HICs) have low maternal death rates ranging from 3-12 per 100,000 live birth in the past 25 years (Geller et al., 2018). Likewise, developing countries have generally lowered its MMR by 44% and Sub Saharan African by 45% while increasing in Tanzania by 28.7% within same periods (TDHS-HS, 2016)

Likewise, MMR was reported increasing in Arusha region from 565 in 2010 to 585 (TDHS, 2010; NBS, 2012). According to the annual regional data (facility based) in Arusha, Maternal Mortality rate also increased from 101 in 2012 to 127 deaths per 100,000 live births in 2017 where Longido and Ngorongoro were the leading districts with high maternal mortality ratio

increased from 74 to 184 and 139 to 266 respectively by 2016 (Regional Reproductive and Child Health Coordinator, Arusha; 2018).

Despite the existence of the National policies in addressing the problem of Maternal Mortality, the persistence could be due to continuous of cultural mal practices including home delivery. Therefore, this study addresses the gaps and provides recommendations that are expected to reduce Maternal Mortality Rates in Longido district.

### **1.1 Research hypothesis**

The study was governed by the hypothesis that there is no relationships between tradition home delivery practices and maternal mortality rate in Longido district.

## **2.0 LITERATURE REVIEW**

### **2.2 Home delivery**

The Government of Tanzania has prioritized health care services in ensuring its accessibility, availability, and affordability to its Citizens. For instance most of Hospitals and Health centres in Tanzania provides Comprehensive/Basic Emergency maternal Obstetric and Neonatal Care services (C/BEmONC) that ensures comprehensive and quality services however communities still relaying on home delivery practices (Care et al., 2022; Prasad et al., 2022)

The problem of home delivery exists in many Countries including Tanzania. Home delivery practices have negative consequences towards maternal and neonatal health in Africa and Tanzania in particular. A study conducted in Ethiopia identified relationships between home deliveries and maternal mortality whereas, most women whose deliver at home are more likely dying of complications five times compared to those who took birth in health facilities (Sara et

al., 2019;Article & Municipal, 2022;Ndiaye et al., 2022). Recently found that, 6% of maternal death in India were those delivered from home(Article & Municipal, 2022);Ndiaye et al., 2022).This is because home do not provide conducive environment for childbirth services due to lack of skilled personnel, hygiene and no equipment to support delivery procedures or delivery complications.

It is estimated that, one in four births (25 per cent) take place without the assistance of a skilled birth attendants Worldwide (UNICEF 2016 as cited by Malethola, 2016). This means, in 2015 alone, more than 40 million were unattended births in low- and middle-income countries, about 90 per cent of which were in South Asia and sub-Saharan Africa(Malethola, 2016). According to this report, regional average proportions of births without skilled birth attendant range from 50 per cent in sub-Saharan Africa to 2 per cent in Central and Eastern Europe and the Commonwealth of Independent States. This is the evidence as the trends in home delivery also relate to that of maternal mortality rates.

In Developing countries for instance, home deliveries contributes to most of puerperal sepsis that reported as cause of maternal mortality by 4.7% and 10.7% respectively (Chavan NN 2016; Bellizzi, Bassat, Ali, Sobel, & Temmerman, 2017). Puerperal sepsis refers to any infection of the genital tract after delivery. The most common direct causes of maternal mortality that account for 50% of all deaths worldwide include; sepsis, haemorrhage and hypertension(Article & Municipal, 2022). In that case, the integration between health facilities and community systems can play a very big role in improving maternal health that eventually reduces maternal death(Chi & Urdal, 2018;Webber et al., 2022;Getachew et al., 2022)

In Tanzania, still home delivery is 37% compared to facility deliveries that is 63% despite the influence of free health services supported by our policies (Tdhs, 2016). Likewise, Arusha reported home deliveries by 35% of the total deliveries (Belinda; 2018) while Longido had 38% home deliveries in 2018 (Mruve; 2019). Maternal death may be contributed by inadequate delivery practices, inadequate skills in conducting labour, inadequate commodities, and lack of community integration services.

### **2.3 Maternal Mortality**

Maternal mortality is preventable following the standards of care from the time a women gets pregnancy, during and after delivery (Trihandini, & Prawitasari, 2022;Kinteh et al., 2022;Kolleh, Bestman, Bajinka, & Jy, 2022;McCallum & Sarnak, 2022;Patrick, Sami, Afzal, & Mahsud, 2022)and most of cases were misdiagnosed from the ANC thus, improving ANC care are very important in reducing maternal mortality. The most leading causes of MMR is eclampsia (fits that occur during pregnancy, labour or after) followed by haemorrhage and sepsis (Yeates et al., 2021;Webber et al., 2022;Luvanda& Mbogoro, 2021;Leitao et al., 2021;Jaca et al., 2022;Arif et al., 2022;Berhan & Berhan, 2022). Women should attend to ANC for proper monitoring and diagnosis of pregnancy complications such as anaemia and high blood pressure that can be fatal to a pregnant woman. The signs of circulatory disorders like high blood pressure can lead to eclampsia so early identification and management prevents maternal mortality.

Maternal Mortality rate in Arusha has increased from 101 in 2012 to 127 deaths per 100,000 live births in 2017 where Longido and Ngorongoro were the leading districts (Regional Reproductive and Child Health Coordinator; Arusha; 2018). Maternal Mortality in Longido increased from 74 to 184 and Ngorongoro from 139 to 266 by 2016 (Table 1).

**Table 1; Maternal Mortality Ratio in Arusha Region; 1990-2015/2016**

Districts	2012	2013	2014	2015	2016
Arusha DC	14	36	58	92	56
Arusha City	172	171	115	83	143
Karatu	129	52	92	81	78
Longido	74	122	221	244	184
Meru	15	103	73	24	51
Monduli	196	55	161	100	116
Ngorongoro	139	86	188	148	266
Arusha Region	101	104	106	92	127

(Source; Arusha Region reports; 2018)

The table shows the districts comparison where most of them had decreased trend with exception of Ngorongoro and Longido. Therefore, the study explored reasons for the high MMR in Longido as compared to other districts in Arusha. One of the major indicators of MMR in Longido was said to be home delivery that was also high compared to other districts (Table 2).

**Table 2: Home deliveries in Longido district 2014/2018**

	2014	2015	2016	2017	2018
Arusha City Council	69	85	80	87	248
Arusha District Council	620	479	564	415	397
Karatu District Council	424	261	124	167	221
<b>Longido District Council</b>	<b>1059</b>	<b>1093</b>	<b>1006</b>	<b>1089</b>	<b>1080</b>
Meru District Council	265	113	79	90	107
Monduli District Council	1036	723	817	645	638
Ngorongoro District Council	1057	740	502	352	337
Total deliveries in Arusha region	4530	3494	3172	2845	3028
<b>% of home deliveries contributed by Longido</b>	<b>23</b>	<b>31</b>	<b>32</b>	<b>38</b>	<b>36</b>

Source: Longido district reports and Arusha Region reports 2016/2020

### 3.0 MATERIALS AND METHODS

### 3.1 Study Areas

The study was conducted in Longido district -Arusha region. The district had a population of 141,244 where 67,042 were male and female 72,202 (Tanzania\_Total\_Population\_by\_District-Regions-2016\_2017). The district had 4 divisions, 18 Wards and 49 villages that comprised 31 health facilities (DHIS; 2022) where data were collected from 14 (78%) wards.

### 3.2 Sampling

Purposively sampling was used in selecting Longido out of seven district councils of Arusha due to its geographical nature, the district had the lowest population, highest Maternal Mortality Rate (MMR), highest number of women delivering outside health facilities and lowest coverage of Health facilities compared to other districts (TDHS-HS, 2016, Longido District reports, 2016/2018; Regional reports; 2016;2018). The researcher purposively selected 14 out of 18 wards in Longido that had public health facilities. At least one health facility was selected from each ward and respondents were purposively selected from 14 health facilities in 14 wards.

**Comment [U7]:** So participants were hospital attendees not house to house sampling?

### 3.3 Sample size

A sample size of 395 was calculated using Yamen formula (Uzoma & Ifeanyi, 2019)

where 311 respondents were given questionnaires, 69 were interviewed making a respondent rate of 96.2% (380).

$$n = \frac{N}{1 + Ne^2}$$

Where,

n = required sample size

N = Total population of Women of Reproductive Age (WRAs) in Longido District Council

e = Marginal error that is 0.05 taking in mind that significance level of confidence is 95%.

According to the TDHS 2016/2017, Population size in Longido was 141,244 (67,042 male and 72,202 female) and Women of Reproductive Age (WRAs) were 37,540 (Tanzania\_Total\_Population\_by\_District-Regions-2016\_2017).

Therefore, N= 37,540 for Longido

$$n = \frac{37,540}{1+37,540(0.05^2)}$$

Therefore, n= 395 that was a required sample size

### 3.4 Research design

The study applied cross-sectional research that considered both descriptive and analytical designs.

**Comment [U8]:** Which aspect is analytical

### 3.5 Methods of data collection

The triangulation methods of data collection were used to explore different views on the research topic. Quantitative data were collected using questionnaire that was structured using Likert Scale question and was given to 311 respondents while 21 clients were interviewed and 48 were involved in Focus Group Discussion (FDGs). Secondary data sources included regional/district reports, DHIS2 data base and extensive literature reviews.

**Comment [U9]:** Where did you present the quantitative data results apart from the regression and correlation results tables 4 and 5? We need to have a table of the data collected in a Likert scale as stated

### 3.6. Methods data analysis

The analysis of data was done through descriptive and inferential statistics. Linear regression was run to detect the relationships between home delivery practices and Maternal Mortality. Qualitative data were recorded and presented in form of quotes from Key Informants.

## 4.0 RESULTS AND DISCUSSIONS

### 4.1 Record reviews

Data were reviewed from the district from 2016/2020 to justify the rate of Maternal Mortality in Longido from 2018 to 2020 (table 1).

#### **Table 3: Maternal Mortality Rate trend 2016-2020; Longido District**

INDICATOR	2016	2017	2018	2019	2020
ANC new attendance rate (%)	100	85	103	119	124
Family planning new acceptance rate (%)	27	32	42	47	59
Birth attended at health facilities (%)	23	27	38	49	49
Community /Home deliveries (%)	77	43	40	39	40
Health center that provides BeMONC (%)	7	18	22	22	23
Annual Maternal deaths over 100,000 live births	159	107	255	65	170

Data source; (DHIS-2) and District reports 2016/2020

Longido had a fluctuating trend of maternal Mortality Rates that were reviewed from 2016/2020 as indicated in Table 3. The trend indicates a good performance of other indicators like higher rate of women who received contraceptives (59%), percentage of women attended to ANC (124%), percentage of women who gave birth to health facilities (49%) and 23% of health facilities were providing the Basic Emergency, Maternal and Neonatal Care (BEmONCO services however, the rate of Maternal Mortality was 170 deaths over 100,000 live births (Table1). Maternal Mortality Rate is continued been high despite the achievements on maternal health indicators. Therefore, collective efforts are required to empower the community towards accessibility and utilization of health care services, educate community on the importance of health facility delivery and reduce the gap between medical and traditional practitioners.

#### 4.3 Key Informants

Findings under Key Informants justified the contribution of home delivery practices on Maternal Mortality in Longido. According to the Regional and Reproductive Health Coordinator (RRCHCO), Maternal deaths are preventable tragedy if there is collective efforts between the community and the Government.

*“Most of women delay in accessing the Reproductive services during pregnant, labour and delivery that risks their lives. Women should be encouraged to access health services rather than depending on Traditional Birth Attendants” (KI; RHMT ;52)*

Comment [U10]: Where is the report of the FGD

Home delivery associated deaths ~~were~~ reported were contributed by sepsis/infections, severe bleeding and high blood pressure leading to fits/eclampsia.

*“We normally receive women at critical conditions who comes with fever, fits, severe bleeding, sepsis, and anaemia. These are conditions that could have been averted if women attended to clinics during pregnancy and during labour” (Service provider; 42 Longido)*

The focus group discussion in Longido reported severe anaemia and retained placenta been among the leading causes of maternal mortality.

*“Some women get severe vaginal tear during delivery, but they are treated with hot water and left to heal naturally. Sometimes, their wounds present severe bleeding and foul smell that forced them to seek medical attention. Other complications like cord hanging, prolonged labour and retained placenta occurs commonly at home” (FDG female TBA of 60 years from Longido Ward).*

Traditional home delivery has been practiced for many years however, the Researcher expected changes following the current socio-economic development, availability of health facilities and skilled providers. The current health policy in Tanzania provides free maternal health services,

According to these studies, Traditional Birth Attendants believed to be more expert in supporting childbirth process than medical practitioners.

*“We are told to refer pregnant women to high level facilities due to several reasons however we sometimes do not trust medical personals. We normally take those women back home and manage deliveries in a smooth way. Sometimes, we rush them if complications occurs but most of cases are successful attended at home” (TBA female 63; Longido Ward)*

The community understand the importance of getting services from a health facility during pregnancy, delivery and after delivery. However, they meet some obstacles that delay them from accessing services. Therefore, it is important to empower both providers and the communities with basic knowledge on reproductive health services to reduce maternal mortality.

#### 4.4 Statistical analysis

Linear regression was used to explain the relationships between a dependent and independent variable in Tables 4 and 5. Table 4 shows that a unit increase on home delivery causing .891-unit increase in Mortality and the relationship is statistically significant ( $p < .001$ ).

Table 5 indicates that the correlation between Mortality on home delivery is positive and statistically significant ( $p < .001$ ), and the correlation coefficient of determination ( $R^2$ ) is .791. This shows that home delivery affects maternal mortality by 79.1% if other factors remain constant. Linear regression model shows below (Table 5).

$$Y = \alpha + \beta_1 X_1 + \varepsilon$$

The regression model is Mortality(Y) = 2.954 + 0.791 (home delivery),  $p < 0.001$

$R^2 = .971$ ,  $P < .001$  that is statistically significant.

**Table 4: Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.954	.032		91.232	.000
home delivery practices at home contributing to MMR	.280	.008	.890	34.254	.000

a. Dependent Variable: Mortality

**Table 5: Model summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate	R <sup>2</sup> Change	Change Statistics F	df1	df2	Sig. F Change
1	.890 <sup>a</sup>	.792	.791	.18237	.792	1173.321	1	309	.000

a. Predictors: (Constant), home delivery practices at home contributing to MMR

## 5.0 CONCLUSION AND RECOMMENDATIONS

The findings concluded that home delivery contributes to maternal mortality in Longido district due to its nature, mechanisms of labour, the place where the birth takes place, failure to manage delivery complications, inadequate skills among Traditional Birth Attendants and delays in referrals. In that case, the null hypothesis was rejected since there is a strong relationship among the two variables.

**Comment [U11]:** You didn't summarize the statistics of these findings anywhere in this manuscript

The study recommends addressing the knowledge gap in home childbearing practices, community empowerment and linking efforts between traditional and medical expertise to support home delivery to areas that are hard to reach. Building maternity homes to rural areas might be a solution to delays in referrals that contribute to maternal death.

**Comment [U12]:** Be specific based on your findings

### 5.1 Recommendations for Further Research

Findings from this study indicated the contribution of home delivery on maternal mortality. ~~The Researcher would wish to~~ There is need to conduct similar studies to different geographical locations to explain rural situations in Tanzania to establish comprehensive database of the influence of home delivery on maternal mortality in district and by extension the entire districts all over the country. It's good to take intensive record reviews looking at the successful home deliveries to strengthen the current practices in Longido district in Arusha region. There is a need for a study looking at the effects of home assisted births by the medical professions as compared to those assisted by Traditional Birth Attendants.

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## 6.0 ANNEXES

**Table6: Age of respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
	Below 15	7	2.3	2.3
	15 to 25	117	37.6	39.9
Valid	26 to 45	169	54.3	94.2
	46 and above	18	5.8	100.0
	Total	311	100.0	100.0

Source: Researcher's analysis; SPSS 2022

**Table 7; Gender**

	Frequency	Percent	Valid Percent	Cumulative Percent
	Male	105	33.8	33.8
Valid	Female	206	66.2	100.0
	Total	311	100.0	100.0

Source: Researcher's analysis; SPSS 2022

**Table 8; Education**

	Frequency	Percent	Valid Percent	Cumulative Percent
	Non-Formal Education	206	66.2	66.2
Valid	Formal	105	33.8	100.0
	Total	311	100.0	100.0

Source: Researcher's analysis; SPSS 2022

**Table 9: Marital status**

	Frequency	Percent	Valid Percent	Cumulative Percent
Single	28	9.0	9.0	9.0
Married	272	87.5	87.5	96.5
Divorced	7	2.3	2.3	98.7
Separated	3	1.0	1.0	99.7
Widow	1	.3	.3	100.0
Total	311	100.0	100.0	

**Table 10: Economic activities of respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
Crop Farming	115	37.0	37.0	37.0
Livestock Keeping	104	33.4	33.4	70.4
Casual Business	36	11.6	11.6	82.0
Casual Labor	18	5.8	5.8	87.8
Employed	38	12.2	12.2	100.0
Total	311	100.0	100.0	