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The Influence of Home Delivery on Maternal Mortality in Longido District in Tanzania: A Mixed Method Study

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: The paper summarized the influence of home delivery on maternal mortality in Longido district in Arusha, Tanzania. Maternal mortality has been a World tragedy for decades and most Practitioners have set their eyes on medical perspectives while leaving behind sociocultural perspectives that influence negative health-seeking behaviours. The Government of Tanzania is implementing a policy that allows free maternal health services while improving health sectors in ensuring accessibility of services, constant supplies, and skilled providers however, the community is still reluctant towards service utilizations.
Methods: The study adopted a method mix that employed both qualitative and quantitative methods of data collection. A sample size of 395 was drawn using the Yamane formula where 380 out of 395(96.2%) of respondents were involved. The quantitative data were drawn from 311 (Women of Reproductive Health) which was 81.8% of respondents while the qualitative data were obtained from seven Focus Group Discussions (FDGs) that comprised 48 respondents and 21 key

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informants who had in-depth interviews. The study included 66.2% female and 33.8% men who ranged between 15-49 years of reproductive age. The qualitative findings were thematically analysed and presented in themes, sub-themes, and quotes while descriptive statistics were used in analysing quantitative findings.

Results: The Quantitative findings indicated that both health complications (HC) and the management of Complications (MC) at home contributed to the Maternal Mortality Rate in Longido district. The correlation coefficient of determinations indicated a significant influence of independent variables on dependent variables. The regression analysis also indicated a significant increase in maternal mortality with the unit increase in maternal health complications and the failure to manage the complications. The qualitative findings indicated that the community understands most of the severe complications that occur during /post-home deliveries like severe bleeding, fits/seizures, high fever, and difficulty in breathing. The use of hot water, hot drinks, sheep oil, and traditional herb concoctions were the common practices found in managing birth complications at home.

Conclusion and Recommendations: addressing challenges of home delivery remains very important as a means of preventing maternal mortality in Longido district. The study recommends bridging the gap between nonmedical and medical practitioners by addressing the knowledge gaps and empowering the community to understand the effects of harmful malpractices leading to maternal mortality.

Recommendations for Further Studies: The same study may be conducted in non-Massai communities and in Urban settings. There is a need to study the causes of home deliveries, and the effects of traditional herb concoctions during pregnancy, delivery, and post-delivery. Future research may also explore the coordination role among traditional and health practitioners in reducing maternal mortality.

Keywords: Home delivery; maternal mortality; herbs concoctions; malpractices; maternal complications; management of complications; delays.

1. INTRODUCTION

Traditional practices consider traditional ways of doing things [1]. Most women 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 of giving births that were believed to contribute to maternal mortalities in Longido districts in Arusha region in Tanzania.

Maternal Mortality Rate has been a threat to many countries in the world for decades. There have been several strategies in achieving the Millenium Development Goals reducing the MMR by 75% by 1990/2015 and the Sustainable Development Goals (SDGs) where every country should not exceed the MMR of 70 deaths per 100,000 live births (Singh et al., 2018). The global trend of Maternal Mortality Ratio (MMR) declined by 34.3% from 2000 to 2020 however, worsened in most countries with the exception of Australia and New Zeland which had a reduction of 34.6%, and Central and Southern Asia 15,7% [34]. Tanzania has not indicated significant changes over decades where Maternal Mortality Ratio of 578 was reported in 2000/05, 454 in 2010, 432 in 2012, and 556 deaths over 100,000 live births in 2015/2016 [3].

Maternal Mortality Rate in Arusha was reported to increase from 565 in 2010 to 585 in 2012 (TDHS, 2010 [4]. Regional annual reports indicated an increase in maternal mortality ratio from 101 in 2012 to 127 deaths per 100,000 live births in 2017 whereas Longido and Ngorongoro were the leading districts with a high maternal mortality ratio of 184 and 266 respectively [35].

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 [5,6]. 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 home delivery that contributes to

delays leading to health complications and maternal death [5,7].

Like other countries, Tanzania has adopted universal access to reproductive health services that implement a free service policy for maternal health care services however, home delivery was 37% [3]. Studies indicate that, the availability of free services alone has not guaranteed the accessibility of health services to most countries following several barriers like waiting time, congestion, and inadequate capacities of health facilities [5].

Other studies 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 [8]. High-income countries (HIC) have achieved in reducing MMR compared to the Low- and Middle-Income Countries (LMIC) in terms of technological development, accessibility of quality services, provider's skills, and place of childbirth and care of pregnant women during labour and after delivery [9,2]. According to them, LMIC indicated the contribution of cultural malpractices to maternal death by 5-15% that occurs during pregnancies and childbirth [10]. Cultural malpractices documented by several studies include abdominal massage, the use of traditional herbs concoctions, nutritional taboos, and home deliveries [5,7,11].

Despite the existence of National policies addressing the problem of Maternal Mortality, the persistence could be due to continuous cultural malpractices during home delivery. Therefore, this is a deductive study to prove the contribution of home delivery on maternal deaths in Longido district and provides recommendations that are expected to reduce Maternal Mortality Rates.

1.1 Study Objectives

The main objective of this study was to investigate the influence of home delivery on maternal mortality rate in Longido district. Specifically, the study was designed to assess maternal health complications that are associated with home delivery that may be a health risk and to investigate the efficacy of the traditional management used in Longido district.

1.2 Research Hypothesis

The study was guided by two hypotheses.

H_1: The health complications after home delivery increase risk of maternal mortality in Longido district.
H_2: The traditional treatment methods are not efficient to address the complications associated with home delivery in Longido district.

This hypothesis resulted into a conceptual framework (Fig. 1).

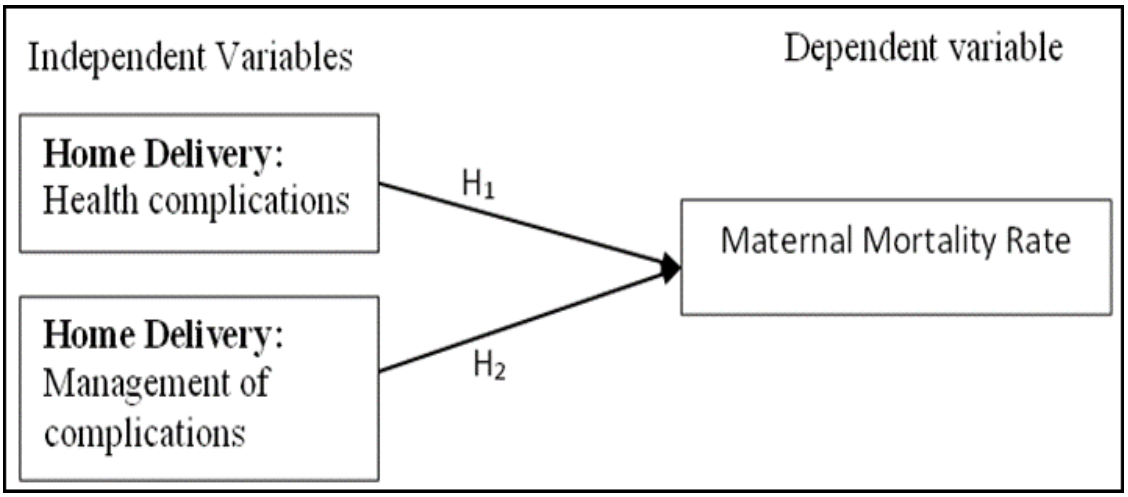

Fig. 1. Conceptual framework

2. LITERATURE REVIEW

2.1 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 [12,13]

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 who deliver at home are more likely dying of complications five timely compared to those who took birth in health facilities [6,14,15]. It was also found that, 6% of maternal death in India were those delivered from home [14,16]. 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. A recent study in Manyara provided experiences on home delivery where the use or local herbs and human urine were applied to tear after delivery to stop bleeding [7].

It is estimated that, one in four births (25 per cent) take place without the assistance of a skilled birth attendants Worldwide [36]. 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 [17]. 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), [18]. 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 [14].

In Tanzania, still home delivery is 37% compared to facility deliveries that is 63% despite the influence of free health services supported by the National policies [3]. According to Arusha Regional Reproductive Health Coordinator (RRCHCO) and the District Reproductive Health Coordinator (DRCHCO), the proportion of home delivery to total delivery in Arusha region was 35% while Longido district reported 38%. Maternal death may be contributed by health complications and poor management after home after delivery. Most rural communities worldwide were reported using herbs concoctions as uterotonics (to speed labour process), to support safe childbirth and improve the welfare of babies however, some herbs reported having side effects like, uterine rupture, placenta abruption, post-partum haemorrhage (PPH), foetal distress and infertilities as major complications [19]. In that case, the integration between health facilities and community systems can play a very big role in improving maternal health eventually reduces maternal death [20,21,22,23]

2.2 Maternal Mortality

Maternal mortality is preventable following the standards of care from the time a woman is pregnancy, during and after delivery [24,15,25,26,27], and most cases were misdiagnosed from the ANC thus, improving ANC care are very important in reducing maternal mortality. The leading causes of MMR are eclampsia (fits that occur during pregnancy, labour or after) followed by haemorrhage and sepsis (Arif et al. 2022), [28,29,30,31,23,32]. Women should attend 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.

The Arusha Regional Health and Child Coordinator (RRCHCO) noted the increase of Maternal Mortality Rate in Arusha from 101 in 2012 to 127 deaths per 100,000 live births in 2017 where Longido and Ngorongoro were the leading districts. 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: Source: Longido district reports and Arusha Region reports 2016/2020

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
Longido District Council	1059	1093	1006	1089	1080
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
% of home deliveries contributed by Longido	**23**	**31**	**32**	**38**	**36**

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

The table shows the districts comparison where most of them had decreased trend with exception of Ngorongoro and Longido. Therefore, the study justifies the relationships between the high MMR and home deliveries 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).

3. 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 [3], (TDHS, 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, lowest population of Women of Reproductive Age (WRA), highest number of women delivering at home and lowest coverage of Health facilities [3]. According to the RRCHCO, Longido had the highest Maternal Mortality Rate (MMR) compared to other districts except for Ngorongoro districts. The study purposively selected 14 out of 18 wards in Longido that had public health facilities where one health facility was selected from each ward and respondents were purposively selected**.**

3.3 Sample Size

A sample size of 395 was calculated using Yamane formula [33].

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 [3], (TDHS,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 and Data Collection

The study applied cross-sectional research that considered mixed methods and deductive approach. The main research tool that was employed in survey was a structured questionnaire that captured data from expectant mothers, women who came for the Post Natal Care (PNC) and their male Partners. Interview guide was used to capture data of focus groups from Traditional Birth Attendants (TBAs) and community leaders, and key informants who were medical professionals and government leaders. This triangulation method of data collection was used to explore different views on the research topic.

The questionnaire that was employed to capture quantitative data was structured using 5-point Likert Scale questions that 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.

3.5Methods Data Analysis

The analysis of data was done through descriptive statistics and presented in mean scores and standard deviations where 1.0-1.49=Strongly disagree, 1.5-2.49= Disagree, 2.50-4.49 =Neutral, 3.50-4.49 Agreed and 4.50-5.00= Strongly Agree.

Multi-Linear Regression (MLR) analysis was run to detect the relationships between home delivery practices and Maternal Mortality. The MLR model was in the form of

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

Where:
Y is the dependent variable; Maternal Mortality Rate (MMR).
X_1 and X_2 are independent variables: Health complications and management of complications respectively.
β_0 is constant term.
β_1 and β_2 are coefficients of the independent variables.

Quantitative analysis was done using IBM-SPSS Statistic. Qualitative data were recorded and presented in form of themes, sub theme and quotes from Key Informants.

4. RESULTS AND DISCUSSION

4.1 Record Reviews

Data were reviewed from the district from 2016 to 2020 to justify the rate of Maternal Mortality in Longido (Table 3).

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.

Table 3. Maternal health indicator trends 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 centre 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 ,Annual data from Longido district

4.2 Descriptive Statistic

The analysis of the independent variables indicated evidence of maternal mortality in Longido district. Respondents agreed that maternal mortality has not been a case to their families or neighbourhood however, they agreed on its existence in their villages and agreed to have witnessed maternal deaths for the past five years (Table 4).

The dependent variable was also analysed by sub-variables of maternal complications after attending home deliveries and its management and the results were depicted (Table 5). Respondents agreed to all question that were asking about the common complications that usually occur at home before or after deliveries like severe bleeding, difficulty in breathing, high fever, and fits/seizures. The results indicated that most of maternal complications occurs at home however, the community do not take effective measures in preventing maternal mortality in Longido district. According to these findings, respondents agreed to manage severe bleeding and use herbs concoctions in treating other complications during pregnancy, labour and post-delivery.

4.3 Focus Group Discussions

The study employed Focus Group Discussions (FDGs) to seven groups that were conducted in four villages in Longido district. The data were categorized into themes and subthemes that related research objectives. The thematic analysis was conducted to obtain peoples' opinions, values, knowledge and experiences towards home delivery and maternal mortality.

Maternal Health complications that usually occur in the community were, severe bleeding, fits/seizures, high fever, and difficulty in breathing (Table 6). Controlling severe bleeding at home was said to be very difficult comparing to hospital settings. The most common causes of bleeding are related to tear (vaginal or cervical) and the retentions of products of membranes that lead to post-partum haemorrhage (PPH) leading to maternal mortality.

Table 4. Community maternal mortality

SN	Awareness on maternal mortality	Mean	Std. Deviation	Interpretations
1	There has not been a maternal mortality case in my family	4.39	.873	Agree
2	There has not been a maternal mortality case in my neighborhood	3.94	1.092	Agree
3	There has been a maternal mortality case in my village	3.79	1.223	Agree
4	I have witnessed a maternal mortality for the past five years	4.07	1.089	Agree

Table 5. Maternal complications and its management

Variables	Sub-Variables	Mean	Std. Deviation	Interpretations
Maternal complications	Severe bleeding	4.41	1.086	Agree
	Fits/Seizures	4.20	1.212	Agree
	High Fever	4.30	1.204	Agree
	Difficulty in breathing	4.42	1.167	Agree
Management of complications	Stop Bleeding	3.18	1.303	Agree
	Drinking concoctions	4.34	1.207	Agree

Table 6. Main themes and sub-themes

Main themes	Sub-themes
Maternal health complications	Severe bleeding
	Fits/seizures
	High fevers
	Difficulty in breathing
Management of complications	Mechanisms of stopping bleeding
	the use of herbs concoctions

Women reported to present fits/seizures before or post-delivery that is a major sign of pre-eclampsia or eclampsia that is also among the major causes of maternal deaths. It is therefore very important to educate communities on the importance of attending to clinics where some of the risk factors like high blood pressure will be diagnosed and managed.

The high fever reported after delivery may associate with infections that is difficult to manage at home. The home setting, the place of childbirth and mechanisms/process of child births contribute to several complications leading to infections. Responses from the seven FGD indicated harmful malpractices of conducting labour at home. Processes of childbirth were conducted on top of animal skins, the use of poor intruments and they do not use gloves hence, easily to cause infections that is among the major causes of maternal mortality. It was also noted that, some Traditional Birth Attendants were aware of the fatal complications however, they make decisions at critical stages where it's difficult to intervein.

"*Some women get severe vaginal tear but we wash them with hot water and leave them to heal naturally. Sometimes, they tear presents severe bleeding and infections that force us to rush for medical attention. We also refer women with cord prolapse, prolonged labour and retained placentas to health facilities" (FDG female TBA of 60 years from Longido Ward).*

Women were also reported having difficulty in breathing after home delivery that may be due to anaemia, pulmonary embolisms, or infections. On the other hand, mechanisms of managing complications after delivery had full of myths and misconceptions that accelerated delays in seeking health services leading to deaths. Severe bleeding was usually managed using black tea, animal fats and herbs concortions.

"There are several types of herbs in Longido however, some of them have turned to be poisonous because women have become weaker compared to our Ancestors. Common drugs used during pregnancy and during labour include orukumutan, alaisai and orepesi/org'oswa however, we have witnessed maternal deaths and abortions after the use of alaisai drugs. The orkumutan is the most dangerous drug now days since it produces forms that is believed to kill however, it is still consumed under the low dosage" (FDG female 35).

The quote indicated the availability of dangerous and harmful herbs to expectant mothers and after delivery however, still consumed based on their experiences, myths, and beliefs.

4.4 Key Informants

Findings from the 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 are 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)

Home delivery associated deaths 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)

Local herbs were reported to cause health effects to both babies and women after delivery.

"Sometimes we see women delivering macerated foetus or premature babies after they have used local herbs. It is difficult to recognize because there is so much hidden information on the types of herbs taken during pregnancies and during labour" (Key Inf. female Nurse 45; Longido Health Centre)

The current health policy in Tanzania provides free maternal health services however, its accessibility is not sufficient. According to these studies, Traditional Birth Attendants are believed to be more expert in supporting the childbirth process compared to medical practitioners. They lack trust in professionals' skills and mostly their

behaviors and attitudes toward handling women during labour and delivery.

"*Nurses and Doctors lack customer care services, they disrespect maasai and do not provide feedback of patient's conditions*. *Most deliveries 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.

4.5 Statistical Analysis

Multi Linear Regression Model in the form of

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2$

Was employed to assess the significancy of independent variables.

Where:
Y is the dependent variable; Maternal Mortality Rate (MMR).
X_1 and X_2 are independent variables: Health Complications (HC) and management of complications (MC) respectively.
β_0 is constant term.
β_1 and β_2 are coefficients of the independent variables.

Correlation analysis was done on Maternal Mortality Rate (MMR), Health Complications (HC), and management of complications (MC). The results are depicted in Table 7 and Table 8.

The collective correlation coefficient of determination, R^2, is 0.557 and the influence of the independent variables on dependent variable is statistically significant ($p < .001$). This indicates that if other factors remain constant, Health Complications and Management of Complications alone contribute about 55.7% of Maternal Mortality Rate.

The correlation between the dependent and each independent variable was also moderately high (Table 8). The Pearson Correlation coefficient between Maternal Mortality Rate and Health Complications was 0.552 whereas that between Maternal Mortality Rate and Management of Complications was 0.711. In all cases, the correlations were statistically significant ($p < .001$).

The regression analysis of Maternal Mortality Rate (MMR) on Health Complications (HC) and Management of Complications (MC) is shown in Table 9.

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.748[a]	.559	.557	.37079	.559	195.519	2	308	.000

a. Predictors: (Constant), Management of Complications, Health Complications

Table 8. Correlations

		Mortality	Health Complications	Management of Complications
Mortality	Pearson Correlation	1	.552**	.711**
	Sig. (2-tailed)		.000	.000
	N	311	311	311
Health Complications	Pearson Correlation	.552**	1	.492**
	Sig. (2-tailed)	.000		.000
	N	311	311	311
Management of Complications	Pearson Correlation	.711**	.492**	1
	Sig. (2-tailed)	.000	.000	
	N	311	311	311

***. Correlation is significant at the 0.01 level (2-tailed)*

Table 9. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.783	.120		14.897	.000					
	HC	.192	.031	.267	6.148	.000	.552	.331	.233	.757	1.320
	MC	.375	.028	.579	13.330	.000	.711	.605	.504	.757	1.320

a. Dependent Variable: Mortality

Based on the MLR model, $Y= \beta_0+\beta_1X_1+ \beta_2X_2$, the regression equation is given by:

$MMR= 1.783+0.267HC+ 0.579MC$

This indicated that if other factors remain unchanged, one unit increase in Health Complications increases the Maternal Mortality Rate by 0.267 units, and the increase is statistically significant ($p < .001$). Likewise, if other factors remain unchanged, one unit increase in Management of Complications (MC) by local means increases the Maternal Mortality Rate by 0.579 units, and the increase is statistically significant ($p < .001$).

5. CONCLUSION AND RECOMMENDATIONS

Based on the results maternal mortality was significantly correlated to health complications after home delivery. So the hypothesis that states that "The health complications after home delivery increase risk of maternal mortality in Longido district" is accepted.

The maternal mortality was significantly correlated to the traditional treatment methods of birth complications. So, the hypothesis which states that "the traditional treatment methods are not efficient to address the complications associated with home delivery in Longido district" is accepted.

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. The study recommends addressing the knowledge gap among the community in identifications of maternal health complications and linkages between traditional and medical expertise to strengthen management of complications of labour that reduces maternal mortality.

5.1 Recommendations for Further Research

There is need to conduct similar studies to different geographical locations to explain rural situations in Tanzania and a study on the outcome of home assisted births by medical professions as compared to those assisted by Traditional Birth Attendants.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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ANNEXES

Table 10. Age of respondents

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

Source: Researcher's analysis; SPSS 2022

Table 11. Gender

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

Source: Researcher's analysis; SPSS 2022

Table 12. Education

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

Source: Researcher's analysis; SPSS 2022

Table 13. Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	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 14. Economic activities of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	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 Labour	18	5.8	5.8	87.8
	Employed	38	12.2	12.2	100.0
	Total	311	100.0	100.0	

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