

Factors That Influence Maternal High-risk Births in Njombe District, Tanzania

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Abstract

Tanzania has recorded a decline in maternal deaths from 854 in 2000 to 524 in 2017. In spite of this achievement, much remains to be done to curb high maternal mortality rates and maternal high-risk births. This paper assesses factors that influence high-risk births of women in Njombe district. Specifically, it examines women's participation in maternal health care services; evaluates intervention measures of high-risk births in four villages within the district, and prescribes the way high-risk births may be reduced. The paper draws data from a cross-sectional designed study that involved 298 mothers; selected randomly in four villages within the district. It employs the triangulation of methods that include questionnaire-based semi-structured interviews, focused group discussions, observations, and key informant interviews to yield qualitative and quantitative data. The study population was found to be at high-risk of maternal births due to maternal age, parity, the lack of antenatal and postnatal services, lifestyles, and bias towards male maternal births attendants. Other intermediate factors were education, occupation, place of residence, and culture. Intervention measures recommended and adopted by the government, non-governmental and civil societies for reducing high-risk maternal births in the area included the construction of additional health facilities in villages, wards, districts, regions and at the national level to meet the needs of maternal health care services to minimize high-risk maternal births, as well as reduce high maternal mortality ratio.

Key Words: *high-risk-births, health facilities, maternal health care*

1. Introduction

The Sustainable Development Goal No. 3 calls for global collaborative efforts towards improving healthy lives and well-beings, in this regard maternal mortality being among the aspects of high priority. In developing countries, maternal mortality is an issue of concern that calls for increased efforts to curb it (Mpembeni, 2007). Tanzania, in particular, is working to address challenges related to maternal healthcare provision. According to the World Bank, maternal mortality rates in Tanzania declined from 854 in 2000 to 524 in 2019. Notwithstanding this achievement, however, more efforts are required to contain maternal mortality rates. This goes together with actions to address maternal high-risk births in urban and rural areas of the country.

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Reducing maternal mortality in Tanzania has been framed within the national population policy and other related policies such as the HIV/AIDS policy. These policies promote child and reproductive health, and safe sex which will minimize high-risk births like bearing children with HIV (Barnett & Blaikie, 1992; URT, 1996, 1999, 2001, 2007, 2007-08, 2015-16). According to Shija (2011), factors that cause maternal deaths in Tanzania include high-risk pregnancies and childbirths, and poor quality of health services, most of which can be managed. This study aims at generating knowledge on the factors that influence high-risks maternal births in Njombe region, in Tanzania.

2. Literature Review

Theoretical understanding of factors influencing maternal high-risk births were advanced by the American College of Obstetricians and Gynaecology (2018), and the Office of Women's Health (2019). These two identify an interplay of two important categories of factors that influencing maternal high-risk births: (i) independent variables (e.g., maternal age, parity, life styles, etc.); and (ii) intermediate variables (e.g., education, occupation, place of residence, etc.).

2.1 Independent Variables

The independent variables include maternal age, parity, life style choices, maternal antenatal and postnatal care services, and the availability of health facilities.

2.1.1 Maternal Age

Age at first birth is an important determinant of pregnancy outcomes, as well as the health and welfare of a mother (Ngalinda, 1998; Olsen, 2008; Scheffler et al., 2008; URT, 2015-2016; Gill, 2017). Scholars associate teenage pregnancy (pregnancy below the age of 20) with high-risk births due to their immaturity to handle pregnancy, and the risk of minimum expansion of the pelvic girdle during delivery, which in turn obstructs births. In this type of obstruction most girls are paralyzed after birth or bear children by caesarean methods. The safest childbearing age is age-group 20-34 years because at this age most women are mature physically and mentally strong to handle pregnancies and deliveries. Another dangerous age group is age 35 and above because the muscles of the stomach are worn out due to previous births, and the pelvic girdle has accumulated a lot of calcium that leads to less expansion during child delivery, that mostly lead to caesarean births.

2.1.2 Parity

According to the World Health Organization (WHO), parity is the number of children a woman bears in her reproductive time (WHO, 2019). The parity of a woman depends on the age she begins childbearing (Casterline & Trussel, 1980; Hilde, 2013). Wilson (1985) and the WHO (2019) note that early marriages are associated with high parity, especially in developing countries

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where family planning is less than 40%. As observed by the WHO and UNCEF (2017), high parity leads to high-risk maternal births because some of the children will be born in old age.

2.1.3 Lifestyle Choices

Lifestyles during pregnancy may influence high-risk maternal births. These include nutrition take during pregnancy (NICHD, 2013, 2016a). For instance, pregnancy women are advised to avoid caffeine that may affect foetal development; and avoid smoking or inhaling tobacco that may lead to reduced fertility, increased risk of pregnancy complications, and also to impaired infant and child development. Pregnant women are also encouraged to exercise regularly and maintain healthy weights to keep their physicality in good shape.

2.1.4 Maternal Antenatal and Postnatal Care Services

The major role of antenatal and postnatal care services is to screen women during pregnancy and after delivery. This is important because it reveals very early pregnant women with latent high-risk births and hence render them medical treatments that will prevent/reduce the risks. Also, postnatal care is important as it follows the development of infants after birth for days, weeks and years until they reach age five. In terms of maternal care, the first minutes after birth are very vulnerable periods for both the mother and the infant. Hence, the care provided during this period ensures their survival for a longer period. Another important variable during this period is child spacing, which is recommended to be between 2–3 years (NICHD, 2016b).

2.1.5 Health Facilities for Delivery

The availability of health facilities is an important variable because it allows maternal health care participation by easing and thus increasing visitations to health facilities, hence reducing home deliveries that are common in Sub-Saharan Africa. The availability of health facilities is embedded in the health reforms of Tanzania of 2007, which require that each village should have a dispensary; every ward a health centre; every district a hospital; and every region a referral hospital: all these complemented with more specialized hospitals at the national level (URT, 2015-16).

2.2 Intermediate Variables

In most occasions, independent variables operate through intermediate variables that include women education, occupation, place of residence, and culture. It has been proven that more-educated women are aware of antenatal and postnatal services, the importance of delivery at a hospital, and the importance of breastfeeding; when compared to less-educated women who prefer home delivery. Again, working mothers are more aware of health services when compared to peasants; while urban dwellers deliver more at hospitals compared to rural residents (WHO, 2012, 2018).

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It is estimated that 75% of maternal deaths are linked to obstetric complications such as haemorrhage, sepsis hypertensive disorder, unsafe abortion, and obstructed labour (Fathalla, 2001). Other non-obstetric causes include anaemia, sickle cell, and cardiovascular diseases. Non-medical factors comprise of socio-economic factors such as illiteracy, poverty, ignorance, poor nutrition, and poor use of available maternal services. In addition, there are cultural factors such as religion; poor infrastructure; and biological factors that consist of age and parity differentials (Ebrahim, 1982; Rosenfield & Maine, 1985; Isah, 2009).

Another factor that contributes to maternal deaths is the lack of provision of emergency obstetric care. According to the WHO (2012), most maternal deaths are preventable as they occur in settings in which resources are scarce. Also, Bour and Bream (2004) concluded that for a fuller understanding of maternal morbidity and mortality, it is important to consider factors outside the hospital and formal medical practice. These include home delivery, late timing of antenatal care services, non-contraceptive use, and negative attitude towards male midwifery.

High rate of maternal deaths is a major public health concern in Tanzania, which had a high maternal mortality (MMR) rate of 432 deaths per 100,000 live births in 2015 (URT, 2015-16). This called for intervention measures, which the government undertook by adopting health reforms in 2007. Among other things, the reforms advanced for the constructions of a dispensary in almost every village, a health centre in every ward, a hospital in every district, a referral hospitals in every region, and specialized hospitals at the national level to help reduce high-risk births (Bongaarts, 1978; Mosley & Chen, 1984; URT, 2015-16), among others.

3. Context and Methods

3.1 Context

This study was carried out in Njombe District. The district is one of the four districts of Njombe region, in Tanzania. It is found between latitude 080 40' and 100 32' South, and longitude 330 47' and 350 45' East; with an area of 24,994 km² (Figure 1). Agriculture is the main economic activity in the district. The Njombe district was selected in the region because it is the second leading region with a high rate of maternal mortality of about 788 deaths per 100,000 live births in Tanzania (URT, 2015-16); and hence its association with high-risk maternal births.

3.2 Methods

The study used a descriptive-cross-sectional research design. Quantitative approaches informed research approaches since it needed quantification of factors influencing high-risks birth. Qualitative approaches were used to supplement information that needed further clarification.

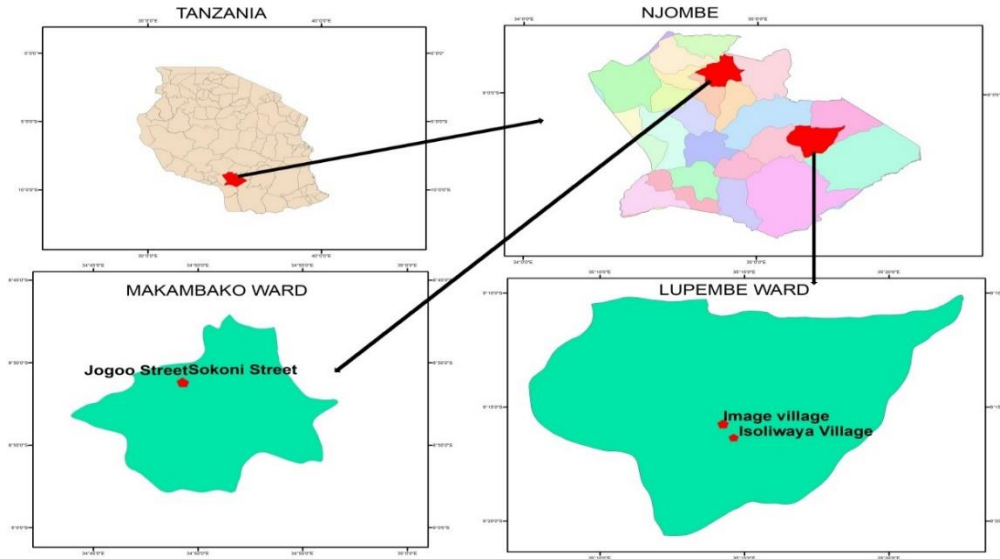


Figure 1: Study Villages in Njombe District

Source: Field Survey (2018)

The target population for this study were mothers in Njombe District. An individual mother with who had at least one child regardless of age was considered as the unit of analysis, and thus informed the sampling frame. Makambako and Lupembe—2 wards out of a total of 25 in the district—were randomly selected to represent urban and rural wards, respectively. In Makambako two streets were randomly selected (Jogoo and Sokoni); while in Lupembe ward two villages were randomly selected (Image and Isoliwaya). The study obtained a sample size for the study by using a probability formula for population proportion as indicated by Kothari (2004).

$$n = \frac{Z^2 pq}{e^2}$$

Whereby n = the number of sample size, and Z is the standard value that corresponds to a 95% level of significance, which is equal to 1.96.

Therefore:

$$\frac{(1.96)^2 \times 0.5 \times 0.5}{(0.06)^2} = 298 \text{ respondents}$$

Based on the formula, the study obtained 298 respondents from both the urban (Makambako ward) and the rural area (Lupembe ward) involving 166 and 132 respondents, respectively.

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Data collection methods were semi-structured interviews that used an administration of a questionnaire with both open- and closed-ended questions. Key-informant interviews were carried out with informants with relevant information on the subject matter. Quantitative data were entered on a Solway pre-coded template in IBM SPSS v. 20 software. Further preparations of data presentation graphics were processed in MS excel. Qualitative analysis followed content analysis. Desired data from qualitative sources were sought to supplement the quantitative data. The study applied two statistical methods to test the association and correlation of the independent, intermediate, and dependent variables. These were chi-square tests and binary logistic regression. A chi-square test is a statistical method that assesses the goodness of fit between a set of observed and those expected theoretically, whose formula is:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \quad (1)$$

Where: χ^2 = Chi-square value; Σ means to sum up; O = Each Observed (Actual) value; and E = Each Expected Value.

A binary logistic regression model was employed to understand the extent to which prior selected explanatory factors influence high risks births (Kothari, 2004). The variables considered were those with significant association after the chi-square test. The model is:

$$Y_i = \beta_1 X_1 + \beta_2 X_2 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 \quad (2)$$

Where, Y_i is the outcome of high or low maternal risk birth. The odds of an event are the ratio of a probability of an event occurring to the probability of the event not occurring. It gives the relative amount by which the odds of the outcome increase (odds ratio is greater than one) or decreases (the odds ratio is less than 1) when the value of the predictor is increased by a unit. While $\beta_0 + \beta_1 + X_1 + \dots + \beta_8 X_8$ are regressions coefficients, X_1, X_2, \dots, β_8 are predictor variables.

Table 1: Description of Explanatory Variables and Expected Signs

Variable Description	Expected Sign	Reason
X_1 = Maternal Age	-	The more the age less risk of maternal birth
X_2 = Parity	+	The higher the parity the higher the risk of maternal birth
X_3 = Antenatal and Postnatal Care	-	The less Antenatal and postnatal care the higher the maternal risk birth
X_4 = Life Styles	-	Harmful lifestyles the higher the maternal risk births
X_5 = Health Facilities	-	The more available the health facilities the less the health facilities
X_6 = Education	-	The higher the level of mother's education the lower the maternal risk birth
X_7 = Occupation	-	Maternal high risks birth differ with occupation
X_8 = Place of Residence	-	Rural residence associated with higher risk of maternal births

4. Results

4.1 General Characteristics of Respondents

Table 2 presents descriptive results of the general characteristics of respondents. Age-wise, teenage mothers were only 2.3%; while the majority were aged 20-34 years (77.9%), followed by those aged 35 and above years (19.8%). This indicates there that there is a reasonable proportion of women in a high-risk maternal birth category.

Table 2: General Characteristics of Respondents

Age group	Respondents Percentage (n=298)	
15-19	7	2.3
20-24	67	22.5
25-29	97	32.6
30-34	68	22.8
35-39	23	7.7
40-44	16	5.4
45.49	20	6.7
Marital Status		
Single	35	17.7
Married	228	76.5
Separated	19	6.4
Widowed	16	5.4
Education		
Non-education	20	6.7
Primary	118	39.6
Incomplete Secondary	88	29.5
Secondary	43	14.4
College/university	29	9.7
Occupation		
Farmer	113	38.0
Official	30	10.0
Business	86	39.0
Others	69	23.0
Residence		
Rural	132	44.3
Urban	166	55.7

Table 2 shows that a majority of the respondents (76.5%) were married, 17.7% were single, 6.4% were separated, and 5.4% were widowed. Moreover, the high composition of more married women meant the more likelihood of participating in sexual activities, which may lead to high-risk births. Since sex is not prohibited for single women, some give births as well as separated and widows who are already exposed to births and other related problems. The study

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revealed that more than three-quarters of the respondents (75.8%) had low level of education, compared to 14.4% who had attained secondary school education level, and 9.7% who had attained college/university education.

The findings showed that 38% were peasant farmers, the majority of whom deliver at home; 29% were business-women; and the rest were housewives (who were less informed about maternal healthcare services), coupled with those with no occupation and a few workers. Women with no occupation were those who left school because of pregnancies, which means they were involved in early marriage or teenage pregnancies with high-risk maternal births. In terms of place of residence, 132 respondents (44%) were residing in rural areas; while 196 were from urban areas (55.7%). It was important to study maternal high-risk births differentials between rural and urban areas because most demographic and health surveys, HIV/AIDS and malaria indicator surveys, and reproductive and child health surveys in Tanzania from 1996 to 2015-16 have clearly indicated that rural areas have high maternal high-risk births, as well as high maternal mortality rates (URT, 1996, 1999, 2007-08, 2011-12, 2015-16).

4.2 Factors Associated with High-Risks Maternal Births

A multinomial regression analysis was performed on factors hypothesized to influence high-risks maternal births in the study area, and the results are as summarized in Table 3.

Table 3: Multinomial Regression Analysis of Independent and Intermediate Variables

<i>Independent Variables</i>	B	S.E	Wald	df	Sig.	Exp (B)
Maternal age	-450	.505	754	1	.302	3.100
Parity	-291	.464	-180	1	.515	1.800
Antenatal and postnatal care	-781	.441	4.978	1	.068	14.700
Lifestyles	-694	.315	4.898	1	.732	1.297
Health facilities	-681	.341	3.979	1	.512	1.900
<i>Intermediate Variable</i>						
Education	-1.672	.604	6.99	1	.069	14.200
Occupation	-304	.799	5.55	1	.501	1.990
Residence	-863	.531	2.77	1	.899	1.057

Source: Field Survey 2018

In terms of independent variables, the most predominant variable is antenatal and postnatal services, which had an odds ratio of 14.7; followed by maternal age, which had an odds ratio of 3.1. The other variables that had odds ratios of more than 1 were parity (1.8), lifestyles (1.3), and health facilities with an odds ratio of 1.9. On the other hand, the most predominant intermediate variable was education with a ratio of 14.2; followed by far with occupation with a ratio of 2.0, and culture with an odds ratio of 1.2. The last intermediate variable was

place of residence with an odds ratio of 1.1. Generally, these results indicate that both independent and intermediate variables had an important role in reducing high-risk maternal births, and so they should be integrated in the intervention measures of high-risk maternal birth health programmes.

4.2.1 Analysis of Intermediate Variables

(i) Maternal Age and Pregnancy Outcomes

Almost 46% of the interviewed mothers had first birth before the age of 20, and 35% had their first birth while aged 35 years and above. Thus, 83% of the respondents had experienced high-risk births compared to 19.8% who had first birth between age 20-34 years. The findings imply that most women in the study area had maternal high-risk births due to early and old age child-bearing. Incidences of early pregnancies were more common to mothers in urban areas than to those in rural areas.

Regarding place of residence, the findings show that old women aged 35 above years had high-risk births in both rural (47.7% and urban areas (48.5%), followed by teenage mothers who had 32.6% in rural areas and 33,5% in urban areas. However, the risks of birth in both rural and urban areas are lower in the middle ages of 20-34 years. Almost the same scenario appears in other intermediate variables, which are occupation and level of education. A chi-square test showed all these variables were significantly associated at $p = .0000$ (see Table 4).

Table 4: Maternal Age and Experience of High-risk Birth

Maternal Age	10-19	20-34	35 +
Percentage (n=298)	45.6	19.8	34.6
X ² =58.052 P= 0.000			
Residence			
Rural (n=132)	32.6	19.7	47.7
Urban (n=166)	33.7	20.5	45.8
X ² =26.155 P= 0.000			
Occupation			
Farmers (n=114)	31.6	18.4	50.0
Workers (n=29)	37.9	17.2	44.8
Business (n=86)	39.5	15.1	45.3
Others (n=69)	40.6	14.5	44.9
X ² =58.052 P= 0.000			
Education			
Primary (n=226)	38.9	11.1	50.0
Secondary (n=43)	46.5	18.6	34.9
Tertiary (n=29)	41.4	13.8	44.8
X ² =26.419 P= 0.000			

Source: Field Survey 2018

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(ii) Parity, Desired Number of Children and Birth Risks

Regarding parity and birth risks, the findings showed a significant relationship between age at the first birth, the number of children ever-born, and the desired number of children ($p = 0.000$). The results revealed that old women aged 35 and above with 50.2% and 51.7% in parity 0-3 and 4-10+ children, respectively; compared with middle-aged and teenage mothers. Almost the same scenario emerged when it comes to the desired parity whereby old women desired high parity compared to middle and teenage mothers, which may be due to the influence of ‘modern’ lifestyles to young women. These results are similar to those of Ghebrehiwot (2004), and Grande and Borobio (2012), who observed that early marriage and childbearing are associated with high parity, and therefore may result into high-risks births (see Table 5).

Table 5: Age at the First Birth and Children Ever-Born

Number of Children	Age at First Birth and Parity		
	10-20 years	20-34 years	35+ years
0-3 (n=213)	20.2	29.6	50.2
4-10+ (n=85)	20.0	28.3	51.7
$X^2 = 22.650$ $P = 0.001$			
Desired number of children			
0-3 (n=81)	24.7	34.6	40.7
4-10+ (n=217)	30.0	30.0	40.0
$X^2 = 32.872$ $P = 0.000$			

Source: Filed Survey 2018

The findings show that 20.2% of the women had less than four children ever-born, compared to 50.2% who had more than four children, implying that most women had high parity in the study area. Moreover, when parity was examined by place of residence, rural women had high parity compared to urban women. These findings are similar with those of Harrison (1997) who found out that there was an association between high parity and maternal death-risks in Tanzania.

The number of children ever-born was found to be statistically associated to place of residence, whereby most women in urban areas (75.3%) desired 0-3 children; while a majority of those in rural areas (51.6%) desired 4 and above children. Seventy-one percent of the respondents desired to have four or above children, while 29% desired less than four. The desired high parity is associated with high births, which raise the risk of death to pregnant women. Findings also revealed a significant relationship between the desired number of children with a woman’s social background in terms of education and place of residence: 52% of women who preferred high parity were rural-based, compared to 48% of their urban-based counterparts.

On the other hand, the level of education of respondents indicated significant differences in terms of preferences to the number of children by suggesting decrease in the number of children desired with an increase of respondents' level of education. Eighty-one percent of those who desired a high number of children had primary education, compared to those with secondary (87.1%) and tertiary (93.5%) education who desired 0-3 children. The findings imply that rural and uneducated women tend to have large families compared to urban and relatively high-educated women. These results are similar to what Kawiche (2017) observed in Tabora region: that the desire for more children was substantial in all socio-economic groups especially in the rural area and among the least educated. Furthermore, a study by Oxaal and Baden (1996) showed that in developing countries there is still a strong pressure on women to bear many children despite the risks of maternal deaths. It is worth noting the risk-births are the first births and those after more than four children. The respondent's opinion concerning the high number of children indicated that a majority 109 (36.6%) saw that it is a blessing from God, 92(30.9%) said that children will help them at older ages, 37 (12.4%) said that children are a burden, and 60 (20%) responded by saying that the number of children depends on the ability of parents in term of money to raise them.

(iii) Awareness on Risk of Births and Ages of Giving Birth

When asked if they were aware of risky ages and orders of giving birth in the entire reproductive period, most of the respondents (179 (60.1%)) were generally not aware this; while another majority of 194 (65%) were not aware of the risky-birth orders, which are the first birth and bearing more than four births. These results are similar to what Mbaruku (2005) observed: that the second to the fourth births are the safest, while the risk of encountering complications is at the first birth and increases following subsequent pregnancies after three children. The lack of knowledge concerning maternal risk ages and birth orders may result into maternal high-risk births. This was found to be similar with study findings by Mwandiko (1994) and Amu-Dorentes and Kimel (2005), who found that education is negatively correlated with children-ever born: thus women with higher education have low parity, and vice versa.

(iv) Birth Intervals as Source of High Risks Birth

Rutstein (2000) recommends that the adoption of birth interval of 2 to 3 years among mothers reduces the risk of maternal deaths. Regarding this, 72% of the interviewed mothers were aware of the recommended birth intervals, although a majority did not practice it. Only 33% had spaced their births as recommended, while 37% had shorter than the recommended intervals. Urassa (1997) made similar observations: that repeated pregnancies, especially with short birth intervals, result into a maternal depletion syndrome in which the mother does not have sufficient time to recover both physically and nutritionally from the birth of each child, risking the health of a mother.

4.3 Maternal Health Care Participation

Maternal health care participation reduces risks of complication, ensures the health of the mother and unborn child, and therefore reduces mortality rates (Zohra et al., 2014). This importance was echoed by an FGD participant in Jogoo Street in Makambako:

“In the health centre they give you vitamins. They check you to see if the baby is well, and how it is coming along. For this reason, I go to the health centre to see how I and the baby are faring.” (FGD participant/29 years-old mother/, Jogoo Street in Makambako/March, 2018)

The FGD participants further argued that for a healthy and safe delivery, the quality of healthcare that women receive during pregnancy and birth period—especially receiving vitamins, vaccinations, and examinations during pregnancy—reduces birth-risks. Some appeared to understand the likely consequences should one fail to deliver at health facilities.

“When a mother dies it is because she did not attend her prenatal visits at a health centre.” (In-depth interview with 24-year-old mother/Isoliwaya village in Lupembe/ March, 2018)

This implies that early antenatal care (ANC) visits and regular check-ups provided by skilled medical providers are very important in evaluating the physical status of a woman during pregnancy. This assessment allows interventions in time when problems are detected.

4.3.1 Access of Health Facilities for Delivery

Of all the respondents, 85% had their first delivery at health facilities, and 15% delivered at home. About 76% of those who delivered at health facilities had first birth at government hospitals, compared 24% who accessed private hospitals. Also, 82% of those who gave first birth at health facilities had normal deliveries, compared to 18% who had caesarean deliveries. This indicated that few women were categorized as being in maternal high-risk births due to less and short recovery period after delivery. As observed by Hilde (2013), delivery by caesarean generally decreases damages to the pelvic floor muscles but damages abdominal muscles; and can cause intestinal obstruction, chronic pelvic girdle pain, infertility, and difficulties due to repeated surgeries. Most of caesarean sections of the women in the study area were due to breech position (43%), and failure to progress in labour 42%. Other reasons included multiple births (4%), and repeated caesarean (11%). These results are the same as those of Becher and Stokke (2013), who found that caesarean section is usually performed when a normal delivery would put a baby or mother’s life or health at risk. Furthermore, the Kitui Report (2014) had similar findings indicating that Tanzania is a predominantly rural, low-income country in Eastern Africa where few women living in rural areas reported delivering their first child in a health facility. The reasons behind this

were multiple barriers in accessing healthcare services for themselves or their families, the need to get permission from husbands, the lack money for treatment, and living a long distance from a health facility.

4.3.2 Visits for Antenatal and Postnatal Care Services

Antenatal care can be the most effective way in preventing negative pregnancy outcomes when it is sought early during pregnancy and at delivery time (Kawiche, 2017). ANC is essential in minimizing high-risk births. ANC visits and timing during pregnancy is very important for couples to avoid adverse pregnancy outcomes. In the study area, 58% of the interviewed mothers correctly identified the first trimester as the appropriate time to start ANC visits, while 36% and 6% identified the second and third trimesters, respectively.

Tabled 6: Knowledge and Timing of First ANC Visit

Variable	Period	Respondents	Percentage
When to start ANC visits	First Trimester	173	58.0
	Second Trimester	107	36.0
	Third Trimester	18	6.0

Source: Field Survey 2018

However, in practice, 45% started ANC visits in the second, and 15.6% in the third trimesters, compared to 39.6% who started early in the first three months of pregnancy. Kawiche (2017) had similar findings: that most women attend ANC services late because of shortage of time. These findings are also consistent with those of Becker (1993) and Alvarez (2009) who found mother's education to play an important role in health-seeking behaviour for a healthier pregnancy.

4.3.3 Spouse Attendance to Healthcare Centres

The findings revealed minimal spouse attendance to healthcare centres. About 59% of the women had no help from their husbands in domestic activities after delivery, compared to 29% women who received help from husbands. Reasons behind poor spouse attendance include: customs do not allow (4%), husbands are afraid of being ridiculed (3%), childbearing is a woman's job (25%), husbands had other responsibilities (48%), and women were not staying with their husbands (20%). Most of the women advanced that their husbands had to attend other responsibilities, since these were the source of income without which a family cannot survive.

4.3.4 Health-seeking Behaviour

Health-seeking behaviour was also analysed in relation to postnatal check-up needed for the mother and the child to detect any early complications after delivery, as well as to provide the mother with important information on how to care of herself and her child (Adekunle et al., 1990; Bellizi et al., 2017; Aggerwell, 2007). Postnatal health care aims to observe the physical status of

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the mother and the child, advise on breast-feeding and family planning, and provide health education on weaning and food preparation. Most women (68%) in the study area did not receive a postnatal check-up within one month after delivery. This finding is affirmed by the TDHS (2015-16), which revealed that one-third (34%) of women received a postnatal check-up within two days of delivery, while 63% did not receive postnatal check-up within 41 days of delivery. This implies high maternal risks for women not availing this service.

Another postnatal care for a child is complementary feeding of solid or semisolid foods to infants in addition to breast milk. According to Subramanian et al. (2018) this is recommended to be 6 months after delivery when breast milk alone is no longer sufficient to maintain a child’s optimal growth. The study results indicated that 197 (66%) of the women provided complementary food to their child before six months, compared to 101 (34 %) who provided it at the recommended time. This implies inappropriate complementary feeding of children that can lead to malnutrition and frequent illnesses. According to the URT and UNICEF (2010), it is normal in Tanzania for women to bear the responsibility of caring for young children, while at the same time being heavily occupied with domestic and agricultural tasks. In turn, this gives lactating mothers little time to breastfeed their children, which forces them into complementary feeding of their children, in most cases with inappropriate diets.

4.3.5 Family Planning Methods

Related to access to health facilities is mothers’ awareness on the use of family planning (FP) methods. Having knowledge about fertility control is an important step towards gaining access to, and then using suitable contraceptive methods in a timely and effective manner, which in turn reduces birth risks (URT 2010-11). In response to the use of FP methods, nearly all 298 (100%) reported to be aware of the use of condoms as the one among the FP methods, as it is also used as one of the preventive measures of HIV/AIDS. Correspondingly, 258 (86.6%), 253 (85%), 210 (70.8%), 209 (70.1%), 111 (37.2%) and 108 (36.2%) of the women were aware of pills, traditional methods, injection, implants, female or male sterilization, and IUD, respectively, as methods of FP (see Table 7).

Table 7: Multi-responses on Awareness and Uses of Family Planning Methods

Family Planning Methods	Awareness on FP Methods				Users of the FP Methods			
	N	Yes in %	N	No in %	N	Yes in %	N	No in %
Pills	258	86.6	40	13.4	109	36.6	189	63.4
Condomization	298	100	0	0	98	32.9	200	67.1
IUD	107	36.2	191	63.8	9	3	289	97
Injection	211	70.8	87	29.2	97	32.6	201	67.4
Implants	209	70.1	89	29.9	93	31.2	205	68.8
Traditional methods	253	85	45	15	90	30.3	208	69.7
F/M sterilization	111	37.2	187	62.8	6	2.1	292	97.9

Source: Field Survey 2018

Nonetheless, the results further indicated that being aware of family planning methods was not the basis for women to use those methods as 109 (36.6%) of the respondents used pills, while 98 (32.9%), 9 (3%), 97 (32.6%), 93 (31.2%), 90 (30.3%) and 6 (2.1%) used condoms, IUD, injections, implants, traditional methods, and female sterilization, respectively. Generally, less use of family planning methods implied high maternal risks due to close birth intervals. This corroborates the findings by Mbago and Sichona (2004), that the use of contraceptives by couples may reduce the risk of high parity pregnancies that lead to maternal mortality.

4.3.6 Life Style Choices

As observed by the Health Engine (2019), there are several lifestyles that need to be avoided or encouraged during pregnancy. These include the consumption of alcohol during pregnancy because it enters directly into the bloodstream of the foetus. The results of the study indicate that most of respondents had high levels of alcohol consumption (65.1%) (see Table 8), although it was very difficult to prove the level of alcohol content simply because most were consuming local brews such as bamboo wine, locally known as *ulanzi* and *usabe*, liquors made of millet and maize flour. In terms of smoking, locally the level of smoking is very low among women (70.5%). Almost the same applies to physical exercises, whereby most women expressed that the exercises they do in farming and other household activities is sufficient to cover independent physical exercises.

Table 8: Descriptive Results on Respondents Life Style and Socio- Economic Background

Lifestyle	Alcohol	Smoking	Physical	Nutrition
			Exercise	
Low	17.2	70.5	92.0	50.0
Moderate	19.7	6.5	5.0	25.0
High	65.1	23.0	3.0	25.0
Place of Residence				
Rural (n=132)	80.7	9.0	2.0	8.3
Urban (n=166)	76.3	3.0	5.2	15.5
Occupation				
Famers (n=114)	92.0	2.0	2.0	2.0
Workers (n=29)	56.0	25.0	10.0	9.0
Business (n=86)	70.0	10.0	5.0	5.0
Others (n=69)	88.0	7.0	2.0	3.0
Education				
Primary(n=226)	94.0	2.0	2.0	2.0
Secondary (n=43)	64.0	16.0	10.0	10.0
Tertiary (n=29)	56.0	28.0	10.0	6.0

Source: Field Survey 2018

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In term of nutrition most women continued with their normal traditional foods. In terms of intermediate variables, it appears alcohol consumption was high in both rural and urban areas, and most women were not aware of the repercussions of high alcohol consumption.

5. Conclusion

This study sought to assess factors influencing maternal high-risk births in Njombe District, in Tanzania. The findings show that there are several factors that influence high-risk births, and these include maternal age, parity, lifestyle, maternal antenatal and postnatal services, and access to health facilities. These independent variables further influence high-risk births through intermediate variables, which are education, occupation, place of residence, and culture. In terms of maternal age, the results showed that high-risk maternal births were found among teenage mothers and those aged 35 years and above. Furthermore, the findings show a strong association between the parity of a mother and high-risk births. Mothers with high parity experienced high-risk births. Moreover, there was a strong association between mothers' awareness of the right period of child spacing and high-risk births.

Regarding antenatal services, even though a majority of the respondents were aware of the time when to start ANC visits, most started visits on the second trimester. Moreover, as regards postnatal care, the results showed that most of the respondents stopped breastfeeding before the recommended time, which increases the risk of child maturity and survival. Also, the majority provided complementary food before six months which is not recommended.

An examination of health facilities showed that the majority delivered at health facilities, and hence minimized high-risk maternal births. Besides this, most of the mothers were also aware of modern and traditional methods of family planning such as pills and abstention. Concerning health facilities used during first birth, most mothers used government health facilities since private health facilities are a bit expensive and thus unaffordable to the majority in rural areas. Also, the findings showed that most of the respondents had normal deliveries, with less than 20% having caesarean births. There are several reasons for caesarean births, which include prolonged labour, breech position, foetal distress, repeated caesareans, chronic health, birth defects, chronic health conditions, placenta rapture, multiple births, and cord prolapsed. Regarding spouse attendance to clinic and participation in domestic activities after delivery, the results showed that few spouses attend clinics or help in domestic activities after delivery. One of the reasons given for this low participation is that husbands are said to be occupied by other activities that are essential for the sustenance of families.

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Moreover, we observed from the study that most of the respondents (75%) had low level of education, and the majority were farmers. Also 77.8% were aged between 20-34 years, and more than three-quarters were married. In terms of maternal high-risk births, 61.1% had first births below 20 years, compared to 38.9% who had first births at 20 years and above. There were some respondents who had early marriages, which increased sexual exposures that led to early conceptions. Also, the respondents desired big family sizes, something that later affected the health of mothers and children. Shorter birth intervals, home delivery, and less-use of family planning methods are among the factors that increased the prevalence of high-risk births in the study area.

As concerns maternal healthcare, late timing of ANC visits was common among the respondent women. However, most women delivered at health centres, compared to those who delivered at home. Also, most of the women used government health facilities in the district as they could not afford private facilities. Similarly, most respondents stopped breast-feeding in less than two years, and started early provision of complementary foods to their children. With regards of men's helping wives with domestic activities, more than a half of women reported that their husbands do not help them after delivery since they had other equally demanding responsibilities.

The lifestyle of a pregnant woman plays an important role in the outcome of a pregnancy. Excessive alcohol consumption has a damaging effect in the development of a foetus. Smoking also disrupts pregnancy, while deficiency in nutrition stunts the growth of the foetus, in addition to weakening the health of a pregnant woman. Although physical exercises are equally essential in strengthening the physique of a pregnant mother, only a few engaged in this. The results of the study indicated that alcohol consumption was high, but most of the respondents drink traditional beer. On a positive note, though, only a few mothers smoke.

In terms of intervention measures to reduce high-risk births, and hence high maternal mortality, since 2015 the government of Tanzania has implemented numerous health reforms like building a dispensary in every village, a health centre in every ward, a hospital in every district, referral hospital in every region and more specialized hospitals and the national level. This has been complemented with maternal and child (MCH) education to mothers to attend health facilities for prenatal and postnatal healthcare services.

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