

Determinants of preference for home childbirth over health facility childbirth among Women of Reproductive Age in Tanzania: An Analysis of Data from the 2015-16 Tanzania HIV and Malaria Indicators Survey

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Research article

Keywords: Place of Childbirth, determinants, Reproductive Age, Tanzania

Posted Date: March 27th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-18240/v1>

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Version of Record: A version of this preprint was published on September 24th, 2020. See the published version at <https://doi.org/10.1186/s12884-020-03266-3>.

Abstract

Background While evidence has shown an association between place of childbirth and birth outcomes, still factors contributing to the choice of home childbirth have not been adequately investigated. Childbirth assisted by unskilled birth attendants has been cited as a contributing factor for the high maternal and neonatal mortalities in low resources countries. This study aimed at determining determinants of preference for home childbirth assisted by unskilled attendants in Tanzania.

Method The study used the 2015-16 Tanzania Demographic and Health Survey and Malaria Indicator Survey (2015-16 TDHS-MIS) dataset. A total of 2286 women of reproductive age (15-49 years) who had childbirth within one year preceding the survey were included in the analysis. Both univariate and multivariable regression analysis was used to determine predictors for home-based childbirth.

Results A total of 805(35.2%) of women had home childbirth assisted by unskilled providers. After adjusting for confounders, the determinants of preference for home childbirth were the level of education (primary education, AOR=0.666; p=0.001; secondary and higher education, AOR=0.417; p<0.001); not owning mobile phone, AOR= 1.312; p=0.018; parity (parity 2-4, AOR=1.594; p=0.004; Parity 5 and above, AOR=2.158; p<0.001); inadequate antenatal visits, AOR=1.406; p=0.001; wealth index (poorest, AOR=9.395; p<0.001; poorer, AOR=7.701; p<0.001; middle, AOR=5.961; p<0.001; richer, AOR=2.557; p<0.001) and Zones (Southern Highlands, AOR=0.189; p<0.001; Southern, AOR=0.225; p<0.001; Zanzibar, AOR=2.55; p<0.001).

Conclusion There are large proportions of women who use home childbirth assisted by unskilled birth attendant's mainly traditional birth attendants (TBA). Predictors for home-based childbirth were being illiterate women, poor access to communication, inadequate antenatal visits, low socio-economic status and those from Zanzibar. Innovative strategies targeting these groups are highly needed to increase the use of health facilities for childbirth and hence reduce maternal and neonatal mortalities in Tanzania.

Background

Maternal mortality remains a public health problem worldwide. In 2015 maternal mortality was the second leading cause of mortalities among women of reproductive age worldwide [1]. The majority of these deaths 94%, occurred in developing countries out of which the African region alone had 65% of all deaths[1]. Tanzania is among the countries in Africa with the highest maternal mortality estimated to be 546 deaths per 100,000 live births[2]. Most of these deaths are due to preventable if and only if they receive appropriate care such as antenatal care by trained health care providers and assisted by skilled birth attendants during childbirth [3]. Direct causes of maternal mortality have been reported to contribute up to 80% of all maternal deaths, and these include severe bleeding usually after childbirth (hemorrhage), high blood pressure during pregnancy (preeclampsia and eclampsia), infection usually after childbirth and complication of abortion [1].

Likewise, global neonatal mortality is unacceptably high were 2.5 million neonates died in 2017 [3]. Sub-Saharan African region and south Asia contributed a big share in global neonatal mortalities worldwide and the list share was contributed by western Europe [3]. Tanzania is among the countries in sub-Saharan Africa with the highest neonatal mortality, the ration is estimated to 25 deaths per 1000 live births [2].

The risk of dying due to maternal cause in low-income countries is high as 1 woman dies in every 41 live births compared to developed countries where 1 woman dies in every 3300 live births [1]. The existing discrepancy needs a collective effort to reduce the gap which exists between the global north and the global south. Learning from the global

north is a cornerstone strategy towards decreasing the risk of maternal and neonatal mortalities in the global south. One of the strategies used by the global north is the use of skilled attendants to assist women during labor and childbirth. Almost all births in these regions are assisted by skilled birth attendants regardless of the place of childbirth[1]. Almost all birth which occurs outside health facility in low resources countries including Tanzania is assisted by unskilled birth attendants being traditional birth attendants (TBAs) or relative[6]. These birth attendants lack the necessary skills to identify signs of complications and most of the cases are referred to when little can be done to save their lives [6].

Skilled birth assistance is defined as the process by which a delivering woman is provided with satisfactory care during labor, delivery and the early postpartum period by a trained health care provider who can provide both basic and comprehensive maternal care [7]. Although the use of skilled birth assistance has shown to be an effective strategy towards the reduction of maternal and neonatal mortalities, still some women end up with home childbirth assisted by unskilled attendants (TBAs or a relative) in Tanzania. World Health Organization has reported several factors that may hinder pregnant women from accessing skilled antenatal check-up and skilled childbirth assistance to be poverty, distance to a nearby health facility, lack of information, inadequate services and cultural practices [1].

Previous studies done in rural Tanzania have also reported socio-cultural factors being one of the factors which influence the preference of home childbirth over health facility childbirth [8]. For example, a socio-cultural tradition in some of the tribal cultures in Tanzania requires that when a married woman becomes pregnant for the first time has to go back to her parent's home and the decision of were to deliver rest on her mother[8].

Home delivery is a risk factor for the health of both a mother and a newborn [9]. Most of the complications that arise when the woman is giving birth may lead to maternal and neonatal deaths [10]. In the effort of promoting hospital delivery, the government of Tanzania has established a program of building one health facility per each village to address the challenge of walking distance to a nearby health facility [11]. Besides, the government of Tanzania has removed the financial barrier to access maternal services by removing out of pocket cost-sharing for delivering services [12]. On top of that, there is some community-based sensitization done by both government and non-governmental organizations to encourage health facility childbirth [13].

Despite all this effort, there is a large proportion of women who prefer home childbirth over health facility childbirth in the country. The study was conceptualized to explain the determinants of home childbirth assisted by unskilled attendants over health childbirth assisted by skilled birth attendants.

Methods

Study design

It was a national-based cross-sectional study utilizing the 2015-16 Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) dataset. The study population was all women of reproductive age (aged 15-49 years). We used Individual file recode (TZIR7BFL) with a total of 13266 women who responded to the survey (97% response rate). To ensure we work with recent information, we then excluded all women who did not have recent birth (birth within a past year) which resulted in 2286 women.

Setting

The study was done among women who had given birth in a period of one year preceding the survey in Tanzania from August 22, 2015, through February 14, 2016. United Republic of Tanzania being the largest country in East Africa, cover 940,000 square kilometers, 60,000 of which are inland water. Tanzania lies south of the equator and shares borders

with eight countries: Kenya and Uganda to the North; Rwanda, Burundi, the Democratic Republic of Congo, and Zambia to the West; and Malawi and Mozambique to the South.

Study population

Women of reproductive age who gave birth one year preceding the survey. In order to enhance recall and minimize recall bias women who had given birth one year prior the survey were included instead of those who had given birth five years prior

Sampling Technique

Two stages were used to obtain a sample for urban and rural areas in Tanzania Mainland and Zanzibar. In the first stage of sample selection, a total of 608 clusters were selected and in the second stage, a systematic selection of households was involved. A total of 22 households were then systematically selected from each cluster, yielding a representative probability sample of 13,376 households for the 2015-16 TDHS-MIS. To enhance representativeness Tanzania was divided into nine geographic zones. Grouping the regions into zones was done to reduce sampling error by increasing the number of people in the denominator. Zone were western zone (Tabora and Kigoma regions), Northern zone (Kilimanjaro, Tanga, and Arusha), Central zone (Dodoma, Singida and Manyara), Southern Highland zone (Iringa, Njombe, and Iringa), Southern zone (Lindi and Mtwara), South West Highland zone (Mbeya Rukwa and Katavi), Lake zone (Kagera, Mwanza, Geita, Mara, Simiyu, and Shinyanga), Eastern zone (Dar es Salaam, Pwani, and Morogoro) and Zanzibar (Kaskazini Unguja, Kusini Unguja, Mjini Magharibi, Kaskazini Pemba and Kusini Pemba).

Data Collection tool

The 2015-16 TDHS-MIS used household questionnaires and individual questionnaires. These questionnaires based on the Measure DHS standard AIDS Indicator Survey and Malaria Indicator Survey questionnaires standards. They were adapted and modified to reflect the Tanzanian population. They were translated into Kiswahili, Tanzania's national language. The data presented in this study are from the individual questionnaire.

Study variables

Through a literature review, the conceptual framework was developed to guide the conceptualization. The conceptual framework had primary independent variables (socio-demographic and obstetric characteristics of a woman), the intermediate variable which was the antenatal services utilization and the outcome variable which was home-based delivery. The outcome variable was a dummy variable coded as 1 if women delivered at home and 0 otherwise. Independent variables included demographic and antenatal care practice variables among women.

Data Analysis

Data were analyzed using IBM SPSS version 20. We started by grouping women who had given birth within one year prior the survey was extracted from individuals file (TZIR7BFL) in DHS data. Women who had childbirth at home were coded as one and they were the reference population and those who had childbirth in health facility coded as 0. The reason for choosing this group was to minimize recall bias, it is the group we expected to find minimal missed data. Data analysis started by describing all study variables using frequencies and percentages, we then assessed the association between a dependent variable and independent variables using chi-square, and finally, we performed binary logistic regression analysis (univariate and multivariable) to determine significant predictors of the choice of place of delivery. All analyses were based at a 5% level of significance.

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Results

Socio-demographic characteristics

A total of 13,360 households were selected for the survey, of which 12,767 were occupied. Of the occupied households, 12,563 were successfully interviewed, yielding a response rate of 97%. From the individual file TZIR7BFL women who gave birth within one year prior the survey was used. The study included 2286 women of reproductive age. The majority of women 1549 (67.8%) were aged between 20-34 years, reside in rural Tanzania 1767 (77.3), had primary level of education 1357 (59.4%), had inadequate antenatal visits 1262 (55.2), were married 2003 (87.6%) (Table 1).

Place of childbirth

Majority of study respondents 1,481(64.8) had health facility childbirth while a total of 805(35.2%) of women had home childbirth assisted by unskilled providers

Relationship between socio-demographic characteristics and choice of place of childbirth

Socio-demographic characteristics which showed a significant relationship with the place of childbirth were the place of residence, $p<0.001$; age group, $p=0.005$; education level $p<0.001$; parity $p<0.001$; number of antenatal visits, $p<0.001$; current marital status, $p=0.001$; Zones $p<0.001$; working status, $p=0.033$, wealth index $p<0.001$ and own mobile phones, $p<0.001$ (Table 2)

Determinants of preference for home childbirth

After adjusting for confounders, the determinants of home childbirth were the level of education (primary education, AOR=0.666 at 95% CI=0.523-0.85, $p= 0.001$; secondary and higher education, AOR=0.417 at 95% CI=0.284-0.614, $p<0.001$); not owning mobile phone, AOR= 1.312 at 95% CI=1.048-1.643, $p=0.018$; parity (para 2-4, AOR=1.594 at 95% CI= 1.158-2.193, $p=0.004$; para 5 and above, AOR=2.158 at 95%CI=1.47-3.168, $p<0.001$); inadequate antenatal visits, AOR=1.406 at 95% CI=1.146-1.724, $p=0.001$; wealth index (poorest, AOR=9.395 at 95% CI=5.435 -16.24, $p<0.001$; poorer, AOR=7.701 at 95% CI=4.48-13.24, $p<0.001$; middle, AOR=5.961 at 95% CI=3.5-10.15, $p<0.001$; richer, AOR=2.557at 95% CI=1.555-4.206, $p<0.001$) and Zones (Southern Highlands, AOR=0.189 at 95% CI=0.093-0.384, $p<0.001$; Southern, AOR=0.225 at 95% CI=0.103-0.493, $p<0.001$; Zanzibar, AOR=2.55 at 95% CI=1.601-4.061 $p<0.001$) (Table 3).

Discussion

This study found that the level of education influenced the preference for place of childbirth. The likelihood of a pregnant woman to prefer home childbirth over health facility childbirth decreased as a woman advance in education. Pregnant women with primary education were 33% and those with secondary and higher were 58% less likely to prefer

home childbirth over health facility childbirth when compared with women with no formal education. Some studies based on population-based surveys in Ethiopia reported similar findings that illiterate women were more likely to prefer home childbirth over health facility birth [14,15]. The majority of illiterate women are living in rural Tanzania. Although the analysis did not show a significant increase in preference to home childbirth in the rural community over the urban community, still innovative strategies to increase rural community awareness on risks associated with home childbirth is highly recommended. A similar study done in Sierra Leone, Niger and Mali reported a significant relationship between rural residence and preference for home childbirth[16]

The study also found that pregnant women who had higher parity were more likely to prefer home childbirth over health facility birth. Pregnant women who had two to four children were 1.5 and those who had five and above were 2.2 more likely to have home childbirth if compared to those who were pregnant for their first time. Similar findings have been reported by a similar study done in Ethiopia[14]. The possible reason history of uneventful childbirth assisted with unskilled attendants which lower their risk perception towards childbirth[9].

Also, pregnant women who had access to mobile phones were more likely to use health facilities for childbirth than those without mobile phones. The possible explanation for this could be many women with access to mobile phones are from a better-off family if compared with pregnant women who have no access to phones. The study showed that there is a significant relationship between incomes and choice of place of delivery. Better off women economically were also more likely to use health facilities for childbirth. Even though the government of Tanzania has removed out of pocket payment for childbirth services, there other hidden costs associated with health facility childbirth. For example, transport costs for delivering women and relatives who accompany pregnant women to a health facility for childbirth may be a challenge and make pregnant women opt for home childbirth. There are also costs needed to prepare birth items requested by health care providers. If pregnant women in the course of pregnancy failed to gather the items needed for childbirth, they may decide to opt for home childbirth to avoid embarrassment in the health facility. The income factor has been reported by similar studies done elsewhere in low resources countries[17,18].

The study also revealed that adequate antenatal visits predicted the use of skilled birth attendants. Pregnant women who had inadequate antenatal visits were 1.4 more likely to opt for home childbirth assisted by unskilled attendants than those who had adequate antenatal visits. Despite the fact the majority of pregnant women in the survey had at least one antenatal visit, only 44.7% had the recommended four or more antenatal visits in Tanzania. Similar findings have been reported by a similar study done in Ethiopia[14] and Kenya[17]. The possible explanation of the significant association between antenatal visits and the use of skilled birth attendants could be that a pregnant woman who has adequate antenatal visits has more opportunity to be aware of obstetric danger signs which may increase her perception towards risks associated with childbirth.

The study also found that zones predicted the place of childbirth. Pregnant women from Southern, Southern highlands and Eastern zones were less likely to prefer home childbirth over health facility childbirth if compared with pregnant women from Western zone. But pregnant women from Zanzibar were more likely to prefer home childbirth over health facility childbirth if compared to pregnant women from Western zone. The study recommends innovative strategies to address the challenge of home childbirth assisted by unskilled birth attendants. More effort is recommended to be directed to Zanzibar which showed a significant increase in preference for home-childbirth.

The limitations in this study could be the use of only a quantitative method of data collection and lacks the narration component of the findings. Also, the study lacks the causal effect relationship but this was minimized by use of population survey data and use of regression analysis which controlled for the confounders.

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population survey data and use of regression analysis which controlled for the confounders.

Conclusion

There are large proportions of women who use home childbirth assisted by unskilled birth attendant's mainly traditional birth attendants (TBA). Predictors for home-based childbirth were being illiterate women, poor access to communication, inadequate antenatal visits, low socio-economic status and those from Zanzibar. Innovative strategies targeting these groups are highly needed to increase the use of health facilities for childbirth and hence reduce maternal and neonatal mortalities in Tanzania.

Abbreviations

| | |
|----------|---|
| DHS | Demographic Health Survey |
| HIV | Human Immunodeficiency Virus |
| MoHCDEC | Ministry of Health, Community Development, Gender, Elderly and Children |
| NBS | National Bureau of Statistics |
| TBS | Traditional Birth Attendants |
| TDHS-MIS | Tanzania Demographic and Health Survey and Malaria Indicator Survey |
| ZAMREC | Zanzibar Medical Research and Ethics Committee |
| USAID | United States Agency for International Development |
| WHO | World Health Organization |

Declarations

Ethics approval and consent to participate

Data collection and the survey content and protocol were approved by Tanzania's National Institute for Medical Research (NIMR), the Zanzibar Medical Ethics and Research Committee (ZAMREC), the Institutional Review Board of ICF International, and the Centers for Disease Control and Prevention in Atlanta, USA. Participants provided verbal consents and the household interviews took place at the private condition. Participants who were under 18years old written consent were requested from their parents or guardians.

Consent for publication

Not applicable

Availability of data and material

The data that support this analysis are available from the 2015-16 Tanzania HIV and Malaria Indicators Survey (THMIS). This survey was conducted by the National Bureau of Statistics (NBS) in collaboration with the Tanzania Commission for AIDS (TACAIDS) and the Zanzibar AIDS Commission (ZAC), the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDEC) (Tanzania) and the USAID-Funded Measure DHS project. Data is available from the authors upon reasonable request and with permission from MEASURE DHS

Competing interests

Authors declare there is no competing interest

Funding

The study was not funded

Acknowledgments

The authors are grateful to MEASURE DHS for providing them with the data set.

Authors' contributions

FVM did data analysis and drafted the manuscript and led the process of critical revision of the manuscript. CHM developed the design section of the manuscript, data extraction and critical review of the manuscript. All authors read and consent for the manuscript to be submitted for peer review.

Availability of data and materials

Data set is available and can be shared on request

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Tables

Table 1: Socio-demographic characteristics of study respondents

| Variable | Frequency | Percentage |
|--|-----------|------------|
| Age groups(years) | | |
| 15-19 | 324 | 14.2 |
| 20-34 | 1549 | 67.8 |
| 35-49 | 413 | 18.1 |
| Place of residence | | |
| Urban | 519 | 22.7 |
| Rural | 1767 | 77.3 |
| Level of education | | |
| No formal education | 454 | 19.9 |
| Primary education | 1357 | 59.4 |
| Secondary+ | 475 | 20.8 |
| Wealth index | | |
| Poorest | 555 | 24.3 |
| Poorer | 476 | 20.8 |
| Middle | 405 | 17.7 |
| Richer | 477 | 20.9 |
| Richest | 373 | 16.3 |
| Number of antenatal visits during pregnancy | | |
| 0-3 | 1262 | 55.2 |
| 4+ | 1021 | 44.7 |
| Parity | | |
| Para One | 589 | 25.8 |
| Para 2-4 | 1015 | 44.4 |
| Para 5+ | 682 | 29.8 |
| Owns a mobile telephone | | |
| No | 1265 | 55.3 |
| Yes | 1021 | 44.7 |
| Marital Status | | |
| Never Married | 186 | 8.1 |
| Married | 2003 | 87.6 |
| Separated | 97 | 4.2 |
| Respondent currently working | | |
| Not working | 612 | 26.8 |
| Working | 1674 | 73.2 |
| Zones | | |
| Western | 212 | 9.3 |
| Northern | 186 | 8.1 |

| | | |
|----------------------|-----|------|
| Central | 233 | 10.2 |
| Southern Highlands | 145 | 6.3 |
| Southern | 69 | 3 |
| South West Highlands | 271 | 11.9 |
| Lake | 665 | 29.1 |
| Eastern | 180 | 7.9 |
| Zanzibar | 325 | 14.2 |

Table 2: The relationship between maternal services utilization during pregnancy and choice of place of childbirth

| Variables | Health Facility n (%) | Home n (%) | X ² | p-value |
|--|--------------------------|---------------|----------------|---------|
| Place of residence | | | | |
| Urban | 448(86.3) | 71(13.7) | | |
| Rural | 1033(58.5) | 734(41.5) | 136.479 | <0.001 |
| Age group | | | | |
| 15-19 | 227(70.1) | 97(29.9) | | |
| 20-34 | 1011(65.3) | 538(34.7) | | |
| 35-49 | 243(58.8) | 170(41.2) | 10.516 | 0.005 |
| Educational level | | | | |
| No education | 201(44.3) | 253(55.7) | | |
| Primary education | 882(65) | 475(35) | | |
| Secondary+ | 398(83.8) | 77(16.2) | 158.952 | <0.001 |
| Parity | | | | |
| Para one | 455(77.2) | 134(22.8) | | |
| Para 2-4 | 679(66.9) | 336(33.1) | | |
| Para 5+ | 347(50.9) | 335(49.1) | 99.897 | <0.001 |
| Owns a mobile telephone | | | | |
| No | 696(55) | 569(45) | | |
| Yes | 785(76.9) | 236(23.1) | 118.404 | <0.001 |
| Wealth index | | | | |
| Poorest | 256(46.1) | 299(53.9) | | |
| Poorer | 250(52.5) | 226(47.5) | | |
| Middle | 246(61) | 158(39) | | |
| Richer | 380(79.7) | 97(20.3) | | |
| Richest | 348(93.3) | 25(6.7) | 297.847 | <0.001 |
| Number of antenatal visits during pregnancy | | | | |
| 0-3 | 729(57.8) | 533(42.2) | | |
| 4+ | 749(73.4) | 271(26.6) | 59.441 | <0.001 |
| Marital Status | | | | |
| Never Married | 146(78.5) | 40(21.5) | | |
| Married | 1272(63.5) | 731(36.5) | | |
| Separated | 63(64.9) | 34(35.1) | 16.764 | <0.001 |
| Respondent currently working | | | | |
| Not working | 418(68.3) | 194(31.7) | | |
| Working | 1063(63.5) | 611(36.5) | 4.526 | 0.033 |
| Zones | | | | |
| Western | 119(56.1) | 93(43.9) | | |
| Northern | 134(72) | 52(28) | | |
| Central | 147(63.1) | 86(36.9) | | |
| Southern Highlands | 134(92.4) | 11(7.6) | | |
| Southern | 60(87) | 9(13) | | |
| South West Highlands | 168(62) | 103(38) | | |
| Lake | 352(52.9) | 313(47.1) | | |
| Eastern | 154(85.6) | 26(14.4) | | |
| Zanzibar | 213(65.5) | 112(34.5) | 150.926 | <0.001 |

Table 3: Determinants of preference for home childbirth

| Variable | OR | 95%CI | | p-value | AOR | 95%CI | | p-value |
|--------------------------------|--------|--------|--------|---------|-------|-------|-------|---------|
| | | Lower | Upper | | | Lower | Upper | |
| Place of residence | | | | | | | | |
| Rural(ref) | 1 | | | | 1 | | | |
| Urban | 0.223 | 0.171 | 0.291 | <0.001 | 0.774 | 0.55 | 1.09 | 0.142 |
| Age group | | | | | | | | |
| 15-19(ref) | 1 | | | | 1 | | | |
| 20-34 | 1.245 | 0.96 | 1.615 | 0.098 | 1.134 | 0.795 | 1.617 | 0.488 |
| 35-49 | 1.637 | 1.203 | 2.228 | 0.002 | 0.886 | 0.555 | 1.414 | 0.611 |
| Level of educational | | | | | | | | |
| No education(ref) | 1 | | | | 1 | | | |
| Primary education | 0.428 | 0.345 | 0.531 | <0.001 | 0.666 | 0.523 | 0.85 | 0.001 |
| Secondary+ | 0.154 | 0.113 | 0.209 | <0.001 | 0.417 | 0.284 | 0.614 | <0.001 |
| Parity | | | | | | | | |
| Para one | 1 | | | | 1 | | | |
| Para 2-4 | 1.68 | 1.331 | 2.121 | <0.001 | 1.594 | 1.158 | 2.193 | 0.004 |
| Para 5+ | 3.278 | 2.568 | 4.185 | <0.001 | 2.158 | 1.47 | 3.168 | <0.001 |
| Owns a mobile telephone | | | | | | | | |
| No | 2.719 | 2.265 | 3.265 | <0.001 | 1.312 | 1.048 | 1.643 | 0.018 |
| Yes | 1 | | | | 1 | | | |
| Antenatal visits | | | | | | | | |
| 4+ | 1 | | | | 1 | | | |
| 0-3 | 2.013 | 1.685 | 2.406 | <0.001 | 1.406 | 1.146 | 1.724 | 0.001 |
| Wealth index | | | | | | | | |
| Poorest | 16.258 | 10.483 | 25.214 | <0.001 | 9.395 | 5.435 | 16.24 | <0.001 |
| Poorer | 12.584 | 8.073 | 19.615 | <0.001 | 7.701 | 4.48 | 13.24 | <0.001 |
| Middle | 8.904 | 5.665 | 13.997 | <0.001 | 5.961 | 3.5 | 10.15 | <0.001 |
| Richer | 3.553 | 2.236 | 5.646 | <0.001 | 2.557 | 1.555 | 4.206 | <0.001 |
| Richest | 1 | | | | 1 | | | |
| Working status | | | | | | | | |
| Not working (ref) | 0.807 | 0.663 | 0.983 | 0.034 | 0.979 | 0.767 | 1.248 | 0.861 |
| Working | 1 | | | | 1 | | | |
| Marital Status | | | | | | | | |
| Never Married | 1 | | | | 1 | | | |
| Married | 2.098 | 1.461 | 3.011 | <0.001 | 0.696 | 0.351 | 1.379 | 0.299 |
| Separated | 1.97 | 1.143 | 3.395 | 0.015 | 0.721 | 0.387 | 1.344 | 0.303 |
| Zone | | | | | | | | |
| Western | 1 | | | | 1 | | | |
| Northern | 0.497 | 0.326 | 0.755 | 0.001 | 1.062 | 0.657 | 1.718 | 0.805 |
| Central | 0.749 | 0.512 | 1.095 | 0.135 | 1.001 | 0.656 | 1.529 | 0.994 |
| Southern Highlands | 0.105 | 0.054 | 0.206 | <0.001 | 0.189 | 0.093 | 0.384 | <0.001 |
| Southern | 0.192 | 0.091 | 0.407 | <0.001 | 0.225 | 0.103 | 0.493 | <0.001 |
| South West Highlands | 0.784 | 0.544 | 1.131 | 0.193 | 0.842 | 0.564 | 1.259 | 0.403 |
| Lake | 1.138 | 0.834 | 1.553 | 0.416 | 1.4 | 0.993 | 1.973 | 0.055 |
| Eastern | 0.216 | 0.132 | 0.355 | <0.01 | 0.573 | 0.328 | 1.002 | 0.051 |
| Zanzibar | 0.673 | 0.472 | 0.959 | 0.029 | 2.55 | 1.601 | 4.061 | <0.001 |

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