

Enduring Economic Hardship: How Poverty Shapes Fertility in Tanzania

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Abstract

This study investigates the impact of poverty on fertility among women in the Ubungo district of Dar es Salaam, Tanzania. Utilizing a cross-sectional design, the research focuses on women of reproductive age (15-49 years). Data were collected via questionnaires from 96 respondents selected through stratified and simple random sampling. The analysis encompassed both descriptive statistics—mean, standard deviation, frequencies, and percentages—and econometric analysis using probit regression and Zero Inflated Poisson (ZIP) models. The first objective examined the determinants of poverty through the probit model, revealing significant influences from factors such as age, household size, employment status, access to nutritious food, and healthcare services. The second objective assessed the effect of poverty on fertility using the ZIP model, highlighting significant correlations with age, education level, marital status, employment status, and access to family planning services. These findings underscore the intricate relationship between poverty and fertility, offering critical insights for policy interventions aimed at improving the socioeconomic conditions of women in Tanzania.

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1. Introduction

Poverty and high fertility remain to be one of the major issues and problems that face Tanzania (Theodory & Kitole, 2024). This study is sought to analyze poverty condition and its influence on fertility. Fertility is a measure for social and economic dynamics. Understanding is not only an academic pursuit but holds significant implications for policy making and economic planning. The relationship between poverty and fertility has attracted various explanations from different studies. As a result, poverty has high chance of increasing maternal mortality and limiting access to health services. Poverty remains a severe concern, with a large proportion of population living below poverty line (Kitole & Sesabo, 2024; NBS, 2020). This raises questions regarding how poverty affects fertility. Tanzania is among the countries with highest fertility rates with an average of more than 5 births per woman (Andrew, 2019; Fumbwe et al., 2021). Despite several government measures targeted at reducing poverty and improving health services, fertility still remains high (Andre, 2024; World Bank, 2019). There has been improvement of health where there is a strategic plan to address various socio-environmental and economic conditions help to improve the health conditions for the poor in the vulnerable areas (UNFPA, 2010).

Life expectancy tends to increase from 51 years in 2002 to 58 years in 2010 where as life expectancy increase is 57 years for men and 59 years for women and the trend shows there is also decrease in child and infancy mortality (URT, 2011; Kitole et al. 2022). But still the country is finding a better solution to address the problem. Specifically, in Ubungo district the relationship between poverty and fertility have less been explored, despite the fact that poverty is known to influence fertility. Poverty can lead to high fertility as families have more children used as labor for household activities and support parents in their old ages (Becker, 1960).

Some previous studies including the study by Adebawale et al (2020) have studied on the dynamics of poverty-related dissimilarities in fertility, whereas the study examined the relation between fertility and household wealth which focused on women from both the poor and rich households. Moreover, from the other previous empirical reviews on poverty and fertility (Arpino, 2023; Bora et al. 2023; Kitole et al. 2023; Odusola, 2018), the relation between poverty and fertility has not been addressed in Tanzania. Thus, this study seeks to address the gap by analyzing the impact of poverty on fertility in Ubungo district, Tanzania.

2. Empirical literature underpinnings

2.1 Determinants of poverty

Numerous studies have explored the determinants of poverty across various regions and contexts, employing different methodologies and datasets. Collectively, these studies highlight the multifaceted nature of poverty determinants, emphasizing the critical roles of education, employment, household characteristics, and socio-demographic factors. These insights are invaluable for policymakers aiming to design targeted interventions to reduce poverty.

Ambros and Saxena (2018) utilized a logistic regression approach to examine acute poverty determinants at the household level in Tanzania. Using secondary data from the National Bureau of Statistics' national panel survey, they analyzed variables such as age, sex, marital status, education level, employment status, source of income,

household size, and place of residence. Their findings indicated that marital status, education, and employment status of the household head were significant predictors of poverty. Similarly, Biyase and Zwane (2018) conducted an empirical analysis in South Africa, employing a probit model with data from the National Income Dynamics Study (NIDS). They found that education levels, race, dependency ratio, gender, employment status, and marital status significantly influenced poverty and household welfare. Higher education levels were associated with reduced poverty, underscoring the importance of educational investment.

Okurut and Odwee (2020) focused on regional poverty determinants in Uganda using a logit regression model and data from the integrated household survey. They identified education level, household size, and migration status as significant factors affecting poverty. In Pakistan, Ali and Ali (2018) used the Ordinary Least Squares (OLS) method to analyze variables such as exchange rate, inflation rate, government expenditure, budget deficit, and unemployment rate. They found that government expenditure, inflation rate, exchange rate, and budget deficit were negatively related to poverty, while unemployment rate had a positive relationship with poverty.

Garza-Rodriguez et al. (2021) investigated poverty determinants in Mexico using a probit model and quintile regression on data from the Mexican National Household Income and Expenditure Survey of 2018. Their study revealed that households headed by females or indigenous speakers, and those with lower education levels, had a higher likelihood of being poor. They recommended educational provision to improve income levels among the poor. Cho and Kim (2017) examined poverty determinants in Rwanda using an ordered probit model and suggested various poverty reduction strategies, including financial support to poor households, reducing fertility rates through family planning, and providing proper training.

Islam et al. (2017) studied poverty and inequality determinants in Bangladesh using a probit model with data from the 2010 Household Income and Expenditure Survey. They identified age, education, marital status, and rural-urban distribution as significant poverty determinants. Similarly, Peng et al. (2019) examined poverty determinants across the poverty spectrum in Hong Kong using quintile regression, finding that older individuals were more affected in the extremely and deeply poor categories.

Mdluli and Dunga (2022) investigated poverty determinants in South Africa using a logit regression model with data from the 2018 General Household Survey. They found that income, household size, gender, marital status, age, and population group significantly influenced poverty. They suggested that educating young women could help address poverty issues. Buba et al. (2018) analyzed socio-demographic poverty determinants and gender differentials in Nigeria using a probit regression model. They found that male-headed households were more socioeconomically advantaged compared to female-headed households and recommended measures to mitigate poverty.

2.2 Effect of poverty on fertility

Lee (2023) studied the impact of economic well-being on fertility among females, using a sample of 3,734 women of different races. The study employed linear and logit

regression models, revealing that poverty was directly associated with having a larger number of children and a higher rate of stillbirths. It suggested further understanding of ethnic differences in economic well-being and fertility.

Odusola (2018) examined poverty and fertility dynamics in Nigeria, using univariate and bivariate methods on a sample of 2,425 respondents. The study found significant regional differences, with southern respondents preferring fewer children than those in the north. Factors such as education, early marriages, male dominance, religion, spousal communication, contraceptive usage, and spousal age difference were significant. The study recommended enhancing female education and promoting family planning to reduce fertility rates.

Wietzke (2020) investigated the relationship between poverty, inequality, and fertility using time series data from 140 countries. The study highlighted that countries with significant fertility rate disparities in early transitions experienced higher poverty impacts. It suggested incorporating demographic factors into poverty distribution analysis to reduce poverty. Moreover, Libois and Somville (2018) analyzed fertility, household size, and poverty in Nepal using national representative household data. They found that younger mothers had a positive relationship between the number of childbirths and household size, which became negative as mothers aged. The study indicated that per capita consumption might affect fertility depending on household structure evolution over time.

Odwe (2015) examined the relationship between fertility and household poverty in Kenya using secondary data from the Kenya Demographic and Health Survey. Employing a multivariate Poisson regression model, the study found that education significantly influenced fertility and household poverty. It suggested improving education and health services to reduce poverty rates among households.

Davalos and Morales (2017) studied the impact of economic crises on fertility decline in Latin America from 1998 to 2013 using panel data regression. They found that fertility in poor states had a negative relationship with the number of children per woman, while wealthy states exhibited a positive relationship. Economic recessions were associated with reduced fertility in poor areas and increased fertility in wealthy areas, indicating varied responses to economic decline.

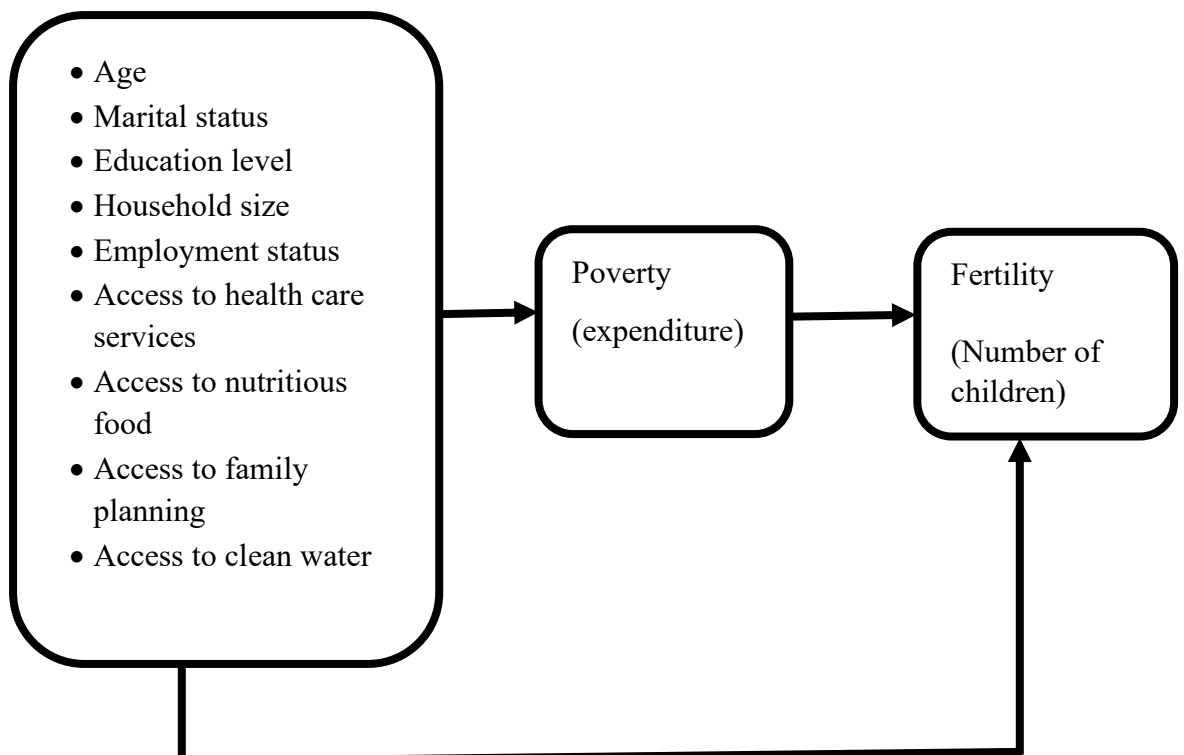
Hyder and Ullah (2022) assessed the relationship between child mortality, fertility, and poverty in Pakistan using data from the Pakistan Demographic Health Survey. The study suggested that lower education levels, early marriages, early pregnancies, and short birth intervals increased child mortality and poverty. It recommended improving education and increasing birth intervals to reduce poverty. Also, Bora et al. (2023) examined the causes of fertility decline in Bangladesh, focusing on female education and family planning programs. Using secondary data from the Bangladesh Demographic Health Survey, the study employed multilevel regression and found an inverse relationship between fertility and female education at both individual and national levels. It suggested enhancing female education to contribute to fertility decline.

Arpino (2023) investigated the effect of fertility on economic well-being in rural Vietnam using multilevel propensity score matching techniques. The study revealed a negative relationship between fertility and economic well-being, suggesting that fertility measured at the societal level does not significantly impact household economic welfare. Additionally, Sheikh et al. (2020) studied household poverty, women’s fertility, and child nutritional status in Pakistan. Using survey data and employing Ordinary Least Squares regression, the study found that poverty was directly associated with women’s fertility and inversely related to child nutritional status. It recommended addressing poverty through improved education and nutritional interventions.

3. Conceptual framework

Figure 4.1 gives the conceptual framework that helps to create a logical sense on the relation between dependent and independent variables. The framework was informed by demographic transition theory and empirical literature. The main dependent variable in the framework was fertility as defined in this chapter in Section 2.2. Fertility in the framework was directly related to age of woman, marital status, education level, employment status, household size, access to health care services, access to family planning, access to nutritious food and access to clean water. The conceptual framework links to theoretical framework and empirical reviews of this study in modeling fertility because it informs several variables including age of woman, marital status, education level, household size, employment status, access to health care services, access to family planning, access to nutritious food and access to clean water.

Figure 1: Conceptual framework



4. Methodology

The study applied cross-sectional study design in which data was collected at a single point in time in the study area, so the data collected revealed the impact of poverty on fertility at that point in time. This cross-sectional study compares many different variables at the same time and it is cost effective. The study employed the Stratified Sampling technique. In this technique, the population is divided into several sub-populations called strata that are homogeneous (Kothari, 2004; Kitole & Genda, 2024). The population of district level was divided into sub-populations which are two wards namely Saranga and Mbezi. This sampling technique was used because it is reliable and has the detailed information on the study population.

Furthermore, a simple random sampling technique was used to select respondents for the study. This study used simple random sampling because, every respondent in each ward had equal chance of being selected. Also, this technique was used because it is unbiased and inexpensive.

The sample size of this study was 96 respondents estimated using Kothari (2004) formula:

$$n = \frac{Z^2PqN}{e^2(N - 1) + Z^2Pq}$$

Whereby n = sample size, N = population in both wards (152,955), e = margin of error considered (10%), P = 0.5 which is probability that each woman of reproductive age (15-49) years has equal chance of being selected, q = 1- p , Z = normal reduced variable at 0.05 level of significance (1.96), therefore the sample size 96.

4.1 Econometric model analysis

4.1.1 Probit model

This model was used to regress objective one of examining determinants of poverty, where probit model was used since the dependent variable is binary, whereas dependent variable was 1 poor (expenditure less or equal to 3000 Tshs per day) or 0 otherwise and it follows normal distribution. Probit model was used because of it could statistically fit the data, while making sure that the error term is symmetrically distributed around zero (Dimoso & Andrew, 2021). The probit model is estimated using Maximum Likelihood Estimation (MLE). The assumptions of the model include the error term is normally distributed. Probit model follows the standardized cumulative normal distribution to model the relationship. Normal distribution assumes rationality in decision making. Hence, the probability that $Y=1$ can only occur after an individual considers the utility derived from making such a decision. The model was selected because of its suitability for analyzing binary outcomes. Probit model was selected over logit model since cumulative normal distribution is thought to be more realistic and also probit is more accurate and efficient in estimations compared to logit.

There are some previous studies which used probit model including the study by Biyase & Zwane (2018) investigated on empirical analysis of the determinants of poverty and household welfare in South Africa. Where, the study employed probit model and the results showed that levels of education, race, dependency ratio, gender, employment status and marital status of the household head were statistically

significant. Also, the study by Islam et al (2017) studied on determinants of poverty and inequality in Bangladesh used probit regression model and found that age, marital status and education were significant.

Mathematically this model was given by

$Y_i = \{1 \text{ if } Y_i = (\text{poor } \{\text{expenditure less or equal to 3000 Tshs per day}\}), 0 \text{ non poor } \{\text{expenditure is greater than 3000 Tshs per day}\})$. The probability was estimated by:

$$P(Y_i = 1/X) = \frac{1}{2\pi} \int_{-\infty}^{Y_i} e^{-x^2/2} dx$$

The probit regression model was

$$Y_i = \beta_0 + \beta_1 AGEW + \beta_2 MAR + \beta_3 EDU + \beta_4 EMPL + \beta_5 HSIZE + \beta_6 ANF + \beta_7 AHCS + \beta_8 AFP + \beta_8 ACW + \mu_i$$

Whereby β_0 = Constant term, μ = An error term (other factors which are not included in the model), $AGEW$ = Age of woman, MAR = Marital status, EDU = Education level, $HSIZE$ = Household size, $EMPL$ = Employment status, $AHCS$ = Access to health care services, AFP = Access of family planning, ANF = Access of nutritious food, and ACW = Access of clean water

4.1.2 Zero Inflated Poisson regression model (ZIP)

This model was used to regress objective two of examining effect of poverty on fertility, where zero inflated poisson model was used since the dependent variable is count, where the dependent variable was fertility measured by number of children ever born to a woman. The zero inflated poisson regression model is used to model counts with the excess zeros. This model is estimated using Maximum Likelihood Estimation (MLE). This model assumes that there are excess zeros, whereas there are two parts which is poisson part which models' number of children ever born to a woman and there is zero- inflation part which models the probability of having zero children. Zero inflated poisson model was selected over poisson model because it has ability to capture the excess zeros and interpret the data into two different parts compared to poisson model. But also, it is more realistic compared to the poisson model. Therefore, Zero inflated model follows poisson distribution where probability of fertility (F_i) takes the value of n (Namubiru, 2014)

$$P_r[F_i = n/b_i] = \frac{e^{-wi} wi^n}{n!}$$

Whereas n is the number of children (0,1,2,3, 4...), w is the mean parameter, and since the poisson distribution does not take into account zero observations, then logit model gives probability of zero counts.

5. Results

Table 1 provides a summary of the descriptive statistics for the continuous variables in the study, including fertility, age of women, age of women squared, and household size. These statistics offer insights into the central tendencies and variability within the sample. The fertility which is measured by the number of children, shows that the average number of children per woman in the sample is 5.365, with a standard deviation of 5.116. This high standard deviation indicates significant variability in the number of children among the women studied. The range of fertility spans from a minimum of 0 children to a maximum of 17 children, highlighting the broad spectrum of family sizes within the population.

Table 1 Summary of descriptive statistics for continuous variables

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Fertility	96	5.365	5.116	0	17
Age of woman	96	29.198	7.724	15	45
Age of woman squared	96	911.552	472.186	225	2025
Household	96	9.063	3.836	2	19

The age of the women in the sample has an average of 29.198 years, with a standard deviation of 7.724 years. This suggests a moderately wide age distribution among the respondents. The minimum age recorded is 15 years, and the maximum is 45 years, indicating that the study included a diverse age range of women within the reproductive age bracket.

The age of women squared has a mean value of 911.552 and a standard deviation of 472.186. This transformation is typically used in regression models to capture non-linear effects of age on dependent variables. The minimum value is 225, corresponding to the youngest woman (15 years old), and the maximum value is 2025, corresponding to the oldest woman (45 years old). The wide range of this variable highlights the importance of considering non-linear age effects in the analysis. Also, household size, measured by the number of household members, has an average size of 9.063 members, with a standard deviation of 3.836. This indicates a substantial variation in household sizes among the respondents. The smallest household comprises 2 members, while the largest has 19 members, reflecting the diverse living arrangements and family structures within the sample.

Furthermore, the descriptive statistics reveal considerable variability in fertility rates, age, and household sizes among the women in the sample. This variability underscores the need for tailored policy interventions that address the unique needs of different demographic groups. The data highlights the complexity of factors influencing fertility and household dynamics, which are crucial for understanding and addressing poverty and fertility issues in the population.

Table 2 Summary of descriptive statistics

Variable	Categories	Frequency	Percentage
Poverty	Poor	54	56
	Non poor	42	44
Marital status	Married	70	73

	Unmarried	26	27
Employment status	Employed	47	49
	Unemployed	49	51
	No formal	25	26
Education level	Primary	42	44
	Secondary	17	18
	Tertiary	12	12
Access to health services	Access	50	52
	No access	46	48
Access to nutritious food	Access	38	40
	No access	58	60
Access to family planning	Access	33	34
	No access	63	66
Access to clean water	Access	69	72
	No access	27	28

5.1 Econometric results for the determinants of poverty

The results from Table 3 present a detailed analysis of the determinants of poverty using a probit regression model. Each variable's coefficient, standard error, p-value, and marginal effects are meticulously outlined, highlighting the significant factors influencing poverty. The analysis reveals that the age of a woman has a positive coefficient of 0.443, which is statistically significant at the 5% level (p-value = 0.043). The marginal effect of 0.171 indicates that as the age of a woman increases, the likelihood of experiencing poverty increases. However, the squared term for the age of a woman has a negative coefficient of -0.008, also significant at the 5% level (p-value = 0.028) with a marginal effect of -0.003. This suggests a non-linear relationship where the effect of age on poverty decreases at an increasing rate, indicating that at older ages, the likelihood of poverty may start to decline.

Table 3 Regression analysis for probit regression model on determinants of poverty

Poverty	Coefficient	Standard error	P-value	Marginal effects
Age of woman	0.443	0.219	0.043**	0.171
Age of woman squared	-0.008	0.004	0.028**	-0.003
Tertiary education	0.086	0.439	0.844	0.033
Primary education	-0.704	0.439	0.109	-0.270
Secondary education	-0.469	0.594	0.430	-0.185
Marital status- married	0.213	0.462	0.645	0.083
Access to family planning- access	0.370	0.389	0.341	0.140
Access to health care services- access	-1.738	0.466	0.000***	-0.596
Employment status-employed	-1.975	0.495	0.000***	-0.664
Household size	0.126	0.055	0.022**	0.049
Access to nutritious food- access	-0.731	0.394	0.064*	-0.278
Access to clean water- access	0.467	0.496	0.346	0.181
No. of observations	96			
LR chi2(12)	59.20			
Prob > chi2	0.0000			
Pseudo R2	0.4499			

***, **, * represents significance level at 1%, 5%, 10% respectively.

On other hand, education levels show mixed results, as tertiary education has a positive coefficient of 0.086 but is not statistically significant (p-value = 0.844), implying no strong effect on poverty. Primary and secondary education levels have negative coefficients (-0.704 and -0.469, respectively) but are also not statistically significant (p-values = 0.109 and 0.430). These findings suggest that while higher education levels might intuitively seem to reduce poverty, the data does not show significant evidence to support this hypothesis within this sample. Moreover, Marital status, specifically being married, shows a positive coefficient of 0.213 with a p-value of 0.645, indicating it is not a significant determinant of poverty in this context. Similarly, access to family planning and clean water are not statistically significant, with p-values of 0.341 and 0.346, respectively, suggesting these factors do not have a substantial impact on poverty in this sample.

In contrast, access to health care services and employment status are highly significant determinants of poverty. Access to health care services has a large negative coefficient of -1.738, significant at the 1% level (p-value = 0.000), with a marginal effect of -0.596. This indicates that having access to health care services significantly reduces the likelihood of experiencing poverty. Employment status shows an even larger negative coefficient of -1.975, also significant at the 1% level (p-value = 0.000) with a marginal effect of -0.664, emphasizing that being employed substantially decreases the probability of being in poverty.

Household size is another significant factor, with a positive coefficient of 0.126 and a p-value of 0.022, significant at the 5% level. The marginal effect of 0.049 suggests that larger household sizes increase the likelihood of poverty. Additionally, access to nutritious food has a negative coefficient of -0.731 and is significant at the 10% level (p-value = 0.064), with a marginal effect of -0.278. This implies that better access to nutritious food reduces the probability of poverty.

On the other hand, the number of observations for this analysis is 96, and the model shows a pseudo-R-squared value of 0.4499, indicating that approximately 45% of the variability in poverty can be explained by the included variables. The LR chi-squared value of 59.20 with a p-value of 0.0000 further confirms the overall significance of the model. Thus, the findings indicate that while factors such as marital status, access to family planning, and clean water do not significantly impact poverty, other factors like age, access to health care services, employment status, household size, and access to nutritious food play crucial roles. Policymakers should focus on enhancing health care services, employment opportunities, and nutritional support to effectively reduce poverty.

5.2 Econometric results for the effect of poverty on fertility

The results from Table 4 show that the age of a woman is negatively and statistically significant at the five percent level. This implies that as women's age increases, fertility decreases by a factor of 0.097, holding other factors constant. However, there is a turning point at which this trend changes. Specifically, as a woman's age increases, fertility initially increases by a factor of 0.002 up to the age of 24 years. Beyond 24 years, as a woman's age continues to increase, fertility decreases again by a factor of

0.002. These findings are consistent with the study by Namubiru (2014), which found a positive relationship between a woman's age and fertility, and with Kitole et al. (2024), who also observed that while age positively relates to fertility, the squared age term has a negative relation.

Table 4 Regression analysis for Zero Inflated Poisson (ZIP) regression model on the effect of poverty on fertility

Fertility	Coefficient	Standard error	P-value
Age of woman	-0.097	0.043	0.026**
Age of woman squared	0.002	0.000	0.023**
Tertiary education	-0.709	0.129	0.000***
Primary education	0.104	0.101	0.302
Secondary education	-0.344	0.212	0.105
Marital status- married	0.621	0.136	0.000***
Access to family planning- access	-0.537	0.121	0.000***
Access to health care services- access	0.169	0.106	0.109
Employment status- employed	-0.329	0.103	0.001***
Household size	-0.006	0.015	0.704
Access to nutritious food- access	0.051	0.109	0.638
Access to clean water- access	0.114	0.120	0.345
Inflate (probability of zero births)			
Tertiary education	0.315	0.788	0.689
Primary education	-1.439	0.788	0.068*
No formal education	-0.151	0.975	0.877
Marital status- married	-1.497	0.829	0.071*
Household size	-0.152	0.098	0.119
Access to clean water- access	-0.984	0.766	0.199
Access to health care services- access	-0.449	0.726	0.536
Number of observations		96	
Non-zero observations		79	
Zero observations		17	
LR chi2(17)		121.29	
Prob > chi2		0.0000	
Log likelihood		-251.88	
***, **, * represents significance level at 1%, 5%, 10% respectively.			

Marital status is another significant factor, as shown in Table 4. The results indicate that marital status is positively and statistically significant at the one percent level, implying that married women are likely to have a higher number of children by a factor of 0.621 compared to unmarried women, holding other factors constant. This finding aligns with the study by Namubiru (2014), which also found that married women have more children than their unmarried counterparts. Similarly, Kitole et al. (2022) confirmed that married women are more likely to have more children.

Employment status also shows a significant impact on fertility, as presented in Table 4. The results indicate that employment status is negatively and statistically significant at the one percent level. Employed women are likely to have fewer children by a factor of 0.329 compared to unemployed women, holding other factors constant. This result is supported by the study of Namutebi (2023), which found that employed women tend to have fewer children. Kitole et al. (2023) also found that employment reduces fertility among women.

Education level, particularly tertiary education, plays a crucial role in determining fertility rates. Table 4 shows that tertiary education is negatively and statistically significant at the one percent level. Women with tertiary education are likely to have fewer children by a factor of 0.709 compared to women with no formal education, holding other factors constant. These findings are in line with Cochrane (1986), who revealed that higher education levels lead to decreased fertility. Aldieri and Vinci (2012) also found an inverse relationship between education level and the number of children.

Access to family planning is another important determinant, as shown in Table 4. The results indicate that access to family planning is negatively and statistically significant at the one percent level. Women with access to family planning are likely to have fewer children by a factor of 0.537 compared to those without access, holding other factors constant. This result is consistent with the study by Birdsall and Griffin (1988), which found that family planning access contributes to lower fertility rates. On the other hand, primary education also shows a significant impact on fertility, albeit at a different level. Table 4 indicates that primary education is negatively and statistically significant at the ten percent level. Women with primary education are likely to have zero children by a factor of 1.439 compared to women with no formal education, holding other factors constant. This finding is consistent with the study by Sunday et al. (2024), which found that primary education reduces the probability of having zero births.

Finally, the results from Table 4 show that marital status also has a negative and statistically significant impact at the ten percent level in relation to having zero children. Married women are less likely to have zero children by a factor of 1.497 compared to unmarried women, holding other factors constant. This finding is in line with the study by Lihawa (2016), which found that married women have a lower likelihood of having zero births.

Therefore, the analysis from Table 4 highlights several significant factors affecting fertility rates, including age, marital status, employment status, education levels, and access to family planning. These findings provide valuable insights into the determinants of fertility and can inform policies aimed at managing population growth and promoting reproductive health.

7. Conclusion and policy recommendation

This study has shown that socio-economic factors such as household size, marital status, education levels, employment status, access to health care services, and access to family planning play critical roles in shaping both poverty and fertility rates. The analysis underscores the interconnected nature of these variables and their combined impact on economic well-being and family dynamics.

Given these insights, several policy implications and recommendations emerge. To mitigate poverty, the government should enhance access to free education for young girls and women, ensuring they gain the knowledge and skills necessary for better economic opportunities. Investing in higher learning institutions will further support this goal. Promoting public awareness and education on family planning methods can help reduce fertility rates, providing women with greater control over their reproductive health.

Additionally, creating employment opportunities for women through infrastructure and development projects can improve their welfare and reduce fertility rates. Strengthening social safety nets, like TASAF, can support poor households by offering economic opportunities and reducing poverty.

Improving access to health care services is crucial. The government should increase the number of health centers, equip them adequately, and provide health insurance to women to ensure they receive necessary health services, particularly maternal care during pregnancy. Lastly, providing subsidies to farmers can lower the cost of food production, making nutritious food more affordable for low-income families. Educational programs on proper nutrition should also be promoted to encourage healthy dietary practices among women. Implementing these recommendations can lead to substantial improvements in the socio-economic well-being of women and their households, addressing both poverty and fertility challenges effectively.

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