



## Determinants of Multidimensional Poverty in Rural Tanzania

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### Abstract

*This study examines the determinants of multidimensional poverty in rural Tanzania. Poverty is still a challenge in Tanzania, particularly in rural areas, since its incidence rate of decrease is slower than in urban areas. The study used binary logistic regression to identify the key determinants of multidimensional poverty in rural Tanzania. Both the Alkire-Foster (2011) counting and binary logistic regression methods were applied to estimate the Multidimensional Poverty Index and determinants of multidimensional poverty respectively. The research utilized data that were already collected by the Tanzania Demographic and Health Survey in 2017. The Alkire and Foster estimates, showed that, the majority of the households living in rural Tanzania (74.43 percent) were poor. Additionally, the findings showed that, the dimension of living standard (56.6%) contributes more to the total MPI, followed by health (23.2) and education (20.2%). Binary logit regression model estimates showed that, the factors being studied were proven to be statistically significant determinants that have an impact on multidimensional poverty in rural Tanzania. Moreover, female-headed households were 1.22 times more likely to be multi-dimensionally poor compared to male-headed households at the 5% level of significance. The findings reveal that age, education levels and married decrease the probability of being poor. Similarly, the model revealed that, people who use family planning are less likely to be poor (odd ratio, 0.79). This study has important policy implications for reducing multidimensional poverty in rural Tanzania. The government should prioritize improving access to basic amenities, housing, and infrastructure, and promote education and family planning services. Gender-sensitive policies and programs are also needed to address gender inequalities in rural Tanzania. For example, the government should invest in rural infrastructure development programs, such as the Rural Water Supply and Sanitation Programme, which aims to provide safe water and sanitation facilities to rural communities.*

**Keywords:** Multidimensional Poverty Index, Multidimensional approach

### 1. Introduction

According to Alkire *et al.* (2020), Poverty is a critical issue for developing countries, including Tanzania since it has become a global priority, as evidenced by various international, regional, and

national initiatives that target fighting against poverty such as the Africa Agenda of 2063, the Sustainable Development Goals (SDGs) of 2030, and the Tanzania Development Vision of 2025. These initiatives aim to tackle poverty in a multidimensional manner,

taking into account not only income but also access to quality education, healthcare, and living conditions (World Bank, 2020). Mwaipopo (2020) pointed out that, many countries including Tanzania measure poverty using a monetary approach, which ultimately fails to address the multidimensional nature of poverty and leads to ineffective policy implementation. For instance, an organization may want to improve access to healthcare services in a particular area, but if the residents lack clean drinking water or proper sanitation facilities, their health will not improve significantly; a poverty reduction program may focus solely on increasing employment opportunities, but if the workers are not paid a living wage, they may still struggle to make ends meet and a community may receive funding for a new school, but if the children do not have access to adequate nutrition, they may not be able to learn effectively. Overall, these examples illustrate that poverty is a complex issue that cannot be fully addressed by a single measure or intervention. A multidimensional approach is needed to truly improve the well-being of those living in poverty.

Based on the 2017/18 Tanzania household and budget survey, poverty in Tanzania was measured using a monetary approach. Individuals who consumed less than TZS 49,320 per adult per month were considered to be living in extreme poverty. The proportion of people living below the poverty line decreased from 28.2% in 2011/12 to 26.4% in 2017/18. Although these figures indicate progress, they do not account for other aspects of poverty, such as education, health, and standard of living (NBS, 2019). The government's

efforts to improve living conditions have led to an increase in access to basic services and better human capital outcomes, ultimately leading to a reduction in poverty. Despite a decrease in poverty, the number of poor people has increased due to population growth. In 2018, about 14 million people lived below the national poverty line of TZS 49,320 per adult equivalent per month, while roughly 26 million people (around 49 percent of the population) lived below the international poverty line of \$1.90 per person per day. There is a high level of vulnerability to poverty, with three out of every four Tanzanians who move out of poverty falling back into it. Furthermore, non-poor people living just above the poverty line are not there permanently and any time are at risk of slipping below it.

According to Alkire *et al.* (2020), poverty extends beyond just a lack of financial resources. It is characterised by a lack of access to many other essential goods and services beyond the income dimension (World Bank, 2018). Therefore, poverty is not simply the lack of income or resources but also a deprivation of basic capabilities such as access to education, healthcare, a living standard and social services. The United Nations Development Programme (UNDP) was one of the first organisations to adopt a multidimensional approach to measuring poverty, which led to the creation of the Human Development Index (HDI) in 1990. The HDI combines factors such as life expectancy, education, and income to measure a country's progress. In 2010, Alkire and Foster constructed the global Multidimensional Poverty Index (MPI), which uses the dimensions of HDI

(health, education, and standard of living).

According to the World Bank's (2020) report, 1.45 billion people from 103 countries are experiencing multidimensional poverty, with 72% of them residing in middle-income countries. In Africa, an estimated 481 million individuals were living in extreme poverty in 2019, and this figure increased to 490 million in 2021, which accounts for 36% of the entire population. and this raises a challenge to achieve Sustainable Development Goal 1 of eradicating poverty by 2030 (UNDP, 2019). Despite the rapid and widespread need to adopt a multidimensional approach, many sub-Saharan African countries, including Tanzania, still rely on traditional approaches of using income or financial resources alone to estimate poverty. However, this approach fails to capture the various dimensions of poverty beyond income, which can result in the misidentification of individuals as poor or non-poor (UNDP, 2019).

UNDP (2019) points out that the majority of poor households in rural Tanzania are experiencing poverty in various dimensions beyond income, such as education, health, and living standards. Although the country has set ambitious targets to eradicate poverty by 2025, its success requires continued collective efforts and investment in various sectors. There is a gap in empirical evidence on the determinants of multidimensional poverty in rural Tanzania, as previous studies have predominantly relied on a unidimensional approach, which is limited to income. This deficiency hampers the ability of policymakers to develop effective poverty reduction

strategies (Mwaipopo, 2020). As a result, this study aimed to address this issue by investigating the determinants of multidimensional poverty among households in rural Tanzania. The Alkire and Foster methodology was used to create a multidimensional poverty index, which was employed as the dependent variable in a logistic regression model.

The study focused on measuring poverty using the multidimensional approach, because it provides a more accurate picture of poverty in rural Tanzania and offers policymakers a better understanding of poverty drivers, which can inform the design of policies aimed at reducing poverty. It focused on exploring the deprivation level of multidimensional poverty among households by focusing on the following three research questions:

- i. What is the level of deprivation of multidimensional poverty among households in rural Tanzania?
- ii. What is the contribution of each poverty dimension to multidimensional poverty among households in rural Tanzania?
- iii. What are the determinants of multidimensional poverty among households in rural Tanzania?

## 2. Methodology

### 2.1. Study Area

The study primarily focused on the rural region of the United Republic of Tanzania, a country situated in Eastern Africa between longitudes 29° and 42° East and Latitudes 1° and 12° South. The decision to concentrate on this area was informed by the Tanzania Demographic

and Health Survey 2017 report, which surveyed 64,880 households, of which 48,104 were from rural areas and 16,776 were from urban areas. As a result, the study population was predominantly rural. Additionally, the study centered on rural Tanzania due to the high levels of poverty indicated in the TDHS report, as well as the HBS 2019 report, which revealed that poverty incidence in rural areas was 31.3%, compared to 15.8% in urban areas.

## **2.2. Research Design**

The study employed a cross-sectional research design to examine the determinants of multidimensional poverty in rural Tanzania. The study used secondary data from the Tanzania Demographic and Health Survey (TDHS) 2015/16, collected by the National Bureau of Statistics in 2017.

## **2.3. Data Analysis**

### **2.3.1. Chi-square Test**

A chi-square test at a 5% level of significance was used to examine the association between the Multidimensional poverty index (dependent variable) and each independent variable.

### **2.3.2. Alkire and Foster (AF) Approach to examine**

### **2.3.3. Multidimensional Poverty Index**

The study employed the Alkire and Foster (AF) approach to examine the dependent variable (multidimensional poverty index (MPI)) of the binary logit regression model. The approach began with identifying the poor and non-poor using a dual cut-off threshold. Next, the multidimensional poverty index for each household was determined by aggregating the multiple deprivation scores (derived from ten non-monetary indicators across three poverty dimensions: education, health, and standard of living)

### **2.3.4. Dimension, Indicators and Deprived Condition**

The study used three dimensions (Table 1) that related to the following SDGs: No Poverty (SDG 1), Zero Hunger (SDG 2), Health and Well-being (SDG 3), Quality Education (SDG 4), Clean Water and Sanitation (SDG 6), Affordable and Clean Energy (SDG 7), and Sustainable Cities and Communities (SDG 11) that used to construct the Global MPI (Alkire, 2021).

**Table 1. Dimensions, Indicators, Deprivation Cutoffs, STGs area and Weights(W)**

Dimension	Indicators	STGs	Deprived conditions= Members of the household are considered deprived,	W
Education	Years of schooling	SDG 4	if no household member has completed five years of schooling	$\frac{1}{6}$
	School attendance	SDG 4	-if any school-aged child is not attending school up to class 8	$\frac{1}{6}$
Health	Nutrition	SDG 2	- if any adult or child for whom there is nutritional information is malnourished in the household	$\frac{1}{6}$
	Child mortality	SDG 3	if any under-five child has died in the family	$\frac{1}{6}$
Living standard	Cooking fuel	SDG 7	- if the household cooks with solid fuels: wood, charcoal, crop residues or dung	$\frac{1}{8}$
	Sanitation	SDG 6	-if the household's sanitation facility is not improved or it is improved but shared with another household	$\frac{1}{8}$
	Safe drinking water	SDG 6	-if the household does not have access to safe or safe drinking water is more than a 30-minute walk from home roundtrip	$\frac{1}{8}$
	Electricity	SDG 7	-if the household has no electricity	$\frac{1}{8}$
	Flooring	SDG 11	-Members of the household are considered deprived if the household has a dirt, sand or dung floor	$\frac{1}{8}$
	Assets	SDG 1	- if the household does not own more than one of: radio, tv, telephone, bike, motorbike or refrigerator and does not own a car or truck	$\frac{1}{8}$

**Source: Adapted from Alkire and Foster (2011) and Alkire (2021)**

The household was considered multidimensionally poor if the weighted sum of its deprivations exceeded a defined poverty cut-off. The study used the multidimensional poverty cut-off of  $k=0.33$ , adopted from the Global MPI (Alkire and Foster (2011)). The household is considered to be multi-

dimensionally poor with deprivation score  $C_i$  greater than 0.33 and multidimensionally non-poor with deprivation score  $C_i$  less than 0.33. The deprivation score of each household ( $C_i$ ) is mathematically expressed by:-

$$C_i = w_1I_1 + w_2I_2 + w_3I_3 + \dots + w_dI_d \dots\dots\dots (1)$$

where,  $I_i = 1$  if the household is deprived in indicator  $i$  and 0 otherwise, and  $w_i$  is the

$$\text{weight attached to indicator } i \text{ with } \sum_{i=1}^d w_i = 1 \dots\dots\dots (2)$$

The headcount ratio (MPI) was mathematically expressed as the product of Multidimensional poverty incidence (H) and Multidimensional poverty intensity (A)

$$MPI = H * A = \frac{q}{n} \times \frac{\sum_{i=1}^q C_i(k)}{q} = \frac{\sum_{i=1}^q C_i(k)}{n} \dots\dots\dots(3)$$

$$A = \frac{\sum_{i=1}^q C_i(k)}{q} \dots\dots\dots(4)$$

$$\text{and } H = \frac{q}{n} \dots\dots\dots(5)$$

Where, H=head count ratio /percentage of poor households/ incidence of multidimensional poverty,

A= multidimensionally poverty intensity  
 ,q=number of multidimensional poor people  
 n=Total population.

$C_i$  =is the deprivation score of each poor person.

$$\text{Contribution of sub-group } (n_i) \text{ to MPI} = \left[ \frac{\frac{n_i}{N} MPI n_i}{MPI_{Country}} \right] \dots\dots\dots(6)$$

**2.3.5. Logistic Regression Model**

The model was applied because we analysed cross-sectional data. Also, since the dependent variable (Multidimensional poverty) of the study was designed with two categorical outcomes “0 = multidimensionally poor /1 = multidimensionally not poor” then the study used the binary logistic regression model to estimate the predictors of multidimensional poverty in rural Tanzania (Islam, 2022).

**2.3.6. Mathematical concept of logistic regression model**

In logistic regression analysis, the odds ratio is converted to the natural logarithm (ln) of the odds. The "ln" is used to reverse (antilog) the ln value by taking the exponential of the log value. When the odds are transformed into ln odds, it is referred to as the logit transformation. In logistic regression, the ln odds of the outcome variable are plotted on the Y-axis (Islam, 2022). This can be expressed mathematically as follows: -

$$\text{Logit}(Y_i) = \ln \frac{p}{1-p} = \beta_0 + \sum_{i=1}^{i=n} \beta_j X_j + \mu_i \dots\dots\dots(7)$$

Where,  $Y_i$  = Multidimensional Poverty Index (MPI)

Then it becomes

$$\ln \left( \frac{p}{1-p} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \dots\dots\dots(8)$$

$$\ln \left( \frac{p}{1-p} \right) = \beta_0 + \sum_{i=1}^{i=n} \beta_i X_i + \mu_i \dots\dots\dots(9)$$

$$\frac{p}{1-p} = e^{\beta_0 + \sum_{i=1}^{i=n} \beta_i X_i + \mu_i} \dots\dots\dots(10)$$

$$p = \frac{\text{Exp}(\beta_0 + \sum_{i=1}^{i=n} \beta_i X_i + \mu_i)}{1 + \text{Exp}(\beta_0 + \sum_{i=1}^{i=n} \beta_i X_i + \mu_i)} \dots\dots\dots(11)$$

Or

$$p = \frac{1}{1 + \text{Exp}[-(\beta_0 + \sum_{i=1}^{i=n} \beta_i X_i + \mu_i)]} \dots\dots\dots(12)$$



Where,  $P$  denotes the probability of the outcome (probability of success) that the household is multidimensionally poor denoted by 0, and  $1 - p$  is the probability of failure that the household is multidimensionally non-poor denoted by 0

$\beta_0$  denoted the intercept (constant) of the model and

$\beta_i$  denoted the regression coefficient of the  $i$ th variable ( $i = 1, 2, \dots, n$ ), and

$X_i$  denoted the values of the predictor variables in the model,  $X_i = \{X_1, X_2, X_3 \dots \dots X_n\}$

The regression coefficients ( $\beta$ ) that we get in logistic regression analysis are the ln odds and the exponential of the regression coefficients are the odds ratios (ORs) for the Logistic Regression.

### 2.3.7. Diagnostics for the Logistic Regression

The study used two tests namely the Link test and the Hosmer-Lemeshow goodness-of-fit test to examine the accuracy of the binary logit regression model.

## 3.0. Findings and Discussions

### 3.1. Descriptive Statistics

The finding in Table 2 shows that, 48,104 households were included in the sample, which had varying characteristics. Among the heads of households who responded, the majority were male (79%) while the rest were female (21%). The findings indicated that most of the heads of households who responded did not use family planning (74%). Furthermore, about 90% of the respondents had low levels of education, with primary education (49%) being the most common and 41% having no education at all, while a small proportion had attained higher education.

Regarding marital status, the majority of the respondents were married (61%), followed by those who had never been married (26%), divorced (7%), and widowed (6%).

According to the results, this implied that, the sample size was sufficiently large with 48,104 households, and the characteristics of the sample were diverse. The majority of the household heads who responded were male, indicating a gender imbalance in the sample. Additionally, the study revealed a high rate of non-use of family planning methods among the respondents, highlighting the need for effective family planning education and services. The study also found that a large proportion of the respondents had low levels of education, indicating a need for interventions that address the education gap. The majority of the respondents were married, highlighting the importance of targeting married couples in interventions aimed at reducing poverty.

**Table 2. Characteristics of the Respondents THDS, 2017 participants included in the study**

<b>Variable</b>	<b>Response</b>	<b>Total</b>	<b>Percent</b>
Household Head Age	Scale	48,104	100
Head of household sex	Male	38,454	79
	Female	9,650	21
Awareness of Family planning	No	35,983	74
	Yes	12,121	26
Head of Household Education attainment	No education	19,786	41
	Primary educ.	23,620	49
	Secondary educ.	4,552	9
	Higher educ.	128	0.7
	Don't know	15	0.3
Head of the household Marital status	Never married	6,457	26
	Widow	1,622	6
	Divorced	1,708	7
	Married	15,260	61

**Source: Developed by researcher from literature review**

### **3.2. Association between Multidimensional Poverty Index (MPI) and other Variables**

According to the results presented in Table 3, there was a significant statistical association between the MPI and each of the independent variables examined in the study. This was evidenced by the fact

that the p-values for the Pearson chi-square test statistics for all variables were less than 5 percent, indicating that the explanatory variables were major contributing factors to multidimensional poverty among rural households in Tanzania in 2017 at a significant level of 5 percent.



**Table 3: Associations between Multidimensional Poverty Index and independent factors**

Covariates	Response	Non-Poor	Poor	Total	p	Cramer's (V)	$\chi^2$
Head of Household Age				48,104			
Sex	Male	11,544	26,910	38,454	0.000	0.031	47.029
	Female	2,554	7,096	9,650			
	TOTAL	14,098	34,006				
Awareness of Head of household on Family planning	No	10,149	25,834	35,983	0.000	0.562	83.758
	Yes	3,949	8,172	12,121			
	Total	14,098	34,006	48104			
Head of Household Education attainment	No education	4,130	15,656	19,786	0.000	0.2419	2.8e+03
	Primary educ.	7,160	16,460	23,620			
	Secondary educ.	2,706	1,846	4,552			
	Higher educ.	96	32	128			
	Don't know	4	9	13			
	TOTAL	14,096	34,003				
Head of household Marital status	Never married	2,411	4,046	6,457	0.000	0.0622	96.949
	Widow	463	1,159	1,622			
	Divorced	478	1,230	1,708			
	Married	4,871	10,389	15,260			
	<b>TOTAL</b>	<b>8,223</b>	<b>16,824</b>				

**Source:** Calculation from STATA package based on data from TDHS 2015/2016

### 3.3. Findings from Alkire and Foster model

Results in Table 4 indicate that, rural Tanzania's multidimensional poverty incidence (H) and multidimensional

poverty intensity (A) for the year 2015/16 at poverty cut-off of  $k=33.3\%$  was 74.43% and 52.15% respectively whose product gives a national Multidimensional Poverty Index 0.388.

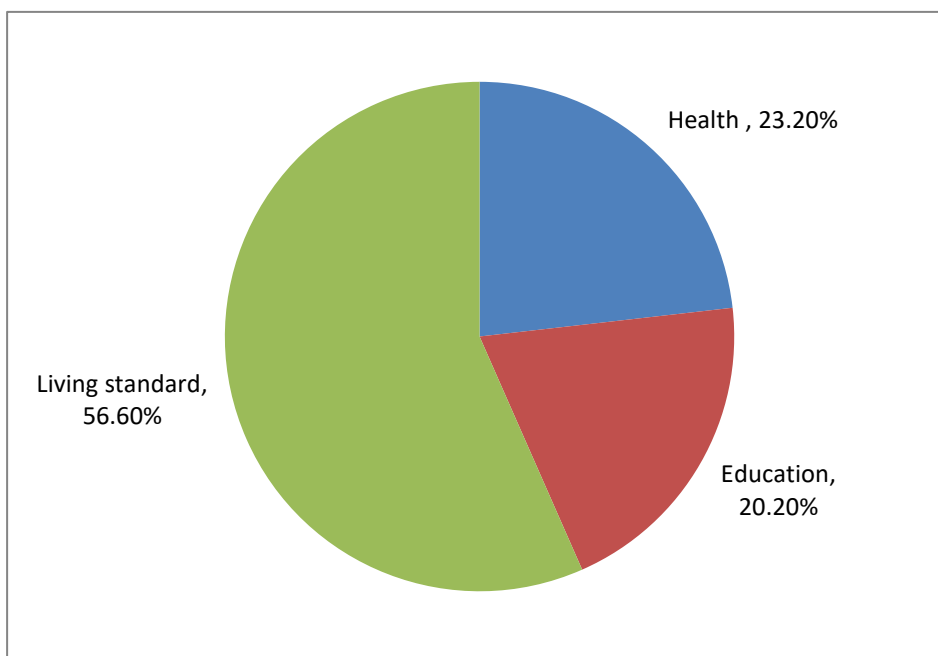
**Table 4: Alkire and Foster estimates**

Cut- off point (%) K=33.3	Multidimensional Poverty Indices estimates		
	Incidence poverty(H)	Intensity poverty (A)	Multidimensional Poverty Index (MPI)
	74.43%	52.15%	0.388%
	Contribution of each dimension to the National MPI in %		
	Education	Health	Living standard
	20.2%	23.2%	56.6%

**Source: Calculation from STATA package based on data from TDHS 2015/1**

Additionally, the findings in Table 4 show that the dimension of living standard (56.6%) contributes more to

the total MPI followed by health (23.2) than education (20.2%) as shown in Figure 1.



**Figure1: Contribution of poverty dimensions to the multidimensional poverty index**

**3.4. Logistic Regression Model Findings**

The findings of Table 5 revealed that, each of the explanatory variables of the study (age, sex, marital status, education attainment and hearing about family planning methods) was statistically

significantly associated with the multidimensional poverty of people living in rural Tanzania since each one had a p-value less than 0.05. This means that each of these variables has a significant impact on poverty levels in rural Tanzania, and should therefore be

taken into consideration in any poverty reduction interventions.

The binary logit regression model results in Table 5 showed that, if other variables were kept constant, households headed by women in rural Tanzania were 1.22 times more likely to experience multidimensional poverty compared to households headed by men at a 5% level of significance. The results indicated that, women were more vulnerable to multidimensional poverty than men in rural Tanzania, and that gender-based interventions may be necessary to address this issue. This finding highlights the need for policies that promote gender equality and address the underlying causes of gender-based poverty in rural Tanzania.

In terms of education level, the findings in Table 5, showed that, households where the head had primary education were 0.46 times less likely to experience multidimensional poverty than those without education. Similarly, households where the head had secondary education were 0.13 times less likely to experience multidimensional poverty than those without education. Furthermore, households where the head had higher education were 0.06 times less likely to experience multidimensional poverty than those without education, with a significance level of 5%. The finding suggests that households where the head

of household has higher levels of education are less likely to experience multidimensional poverty than those with lower levels of education or no education. The odds ratios of 0.46 for primary education, 0.13 for secondary education, and 0.06 for higher education indicate that the odds of experiencing multidimensional poverty decrease as education level increases, after controlling for other factors such as age, gender, marital status, and awareness of family planning methods. At the same time, the findings from Table 5 indicated that, one unit change in household age decreased the likelihood of being multidimensionally poor by 0.99 times at the 5% level of significance.

Moreover, the odds ratio of the head of household from Table 5, at the 5% level of significance showed that, a widow was 0.61 times less likely to be multidimensional poor compared to a never married while the married was 0.82 times less likely to be multidimensionally poor compared to a never married. Similarly, for the case of family planning use, the odds ratio from Table 5 was 0.79 indicating that heads of household who use family planning methods were 0.79 times less likely to be multidimensionally poor compared to people who did not use family planning at the 5% level of significance.

**Table 5: Estimation for Binary Logistic Regression Model**

Variable	Response	OR	p-Value	OR 95% CI	
				Lower	Upper
Age		0.9938	0.000	0.9919	0.9957
Sex	Male (Reference)				
	Female	1.2248	0.000	1.133	1.3239
Education level	No education (Reference)				
	Primary	0.4624	0.000	0.4270	0.5007
	Secondary	0.1253	0.000	0.1135	0.1383
	Higher	0.0640	0.000	0.0426	0.0962
Marital status	Don't know	1			
	Never married (Reference)	0.4502	0.187	0.1377	1.4721
	Widow	0.6141	0.000	0.5370	0.7023
	Divorced	0.8829	0.053	0.7781	1.0018
family planning use	Married	0.8186	0.000	0.7634	0.8778
	No (Reference)				
Constant	Yes	0.7874	0.000	0.7401	0.8378
		8.1343	0.000	7.0264	9.4169
Number of obs = 25,044		LR chi square = 22.7284			
Prob > Chi square = 0.000		Pseudo R <sup>2</sup> = 0.717			
Log likelihood = -14714.958					

**Source: Calculation from STATA package based on data from TDHS 2015/16**

### 3.5. Diagnostics for the Logistic Regression

#### 3.5.1. Goodness of Fit Test of Binary Logit Regression Model

According to findings in Table 6, the goodness of fit test results, shows that the p-value = 0.0000 is less than  $\alpha=0.05$ , which implies that, the model fits well. Therefore, the overall model was significant and hence its covariates had a direct significant impact on Multidimensional poverty (LR chi2 = 22.7284 and the p-value is 0.0000 less than  $\alpha=0.05$ ).

#### 3.5.2. Model Specification Error Test results

The adequacy of the binary multiple logistic regression model was tested for

specification error and assessed using a link test. Table 6 displays the outcomes of the link test, which revealed that there were no misspecification errors in the model, as the linear predicted value squared (hatsq) was found to be insignificant at a 5% level (p-value = 0.893), while the predicted value (\_hat) was extremely significant at a 5% level (p-value=0.000). As a result, the model specification was deemed correct, indicating that the researcher had included the appropriate variables in the model and that they had been entered in the correct functional form, to the best of their knowledge.

**Table 6: Link test results**

	Z-statistics	p-value
HAT	6.73	0.000
HATSQR	-0.9	0.893

#### 4. Discussion of key findings

According to the results in Table 4, the living standards dimension was found to contribute the most to the total multidimensional poverty in rural Tanzania (56.6%), followed by health (23.2%) and education (20.2%). Interestingly, these findings are consistent with the results of previous studies conducted in Tanzania and Ethiopia. Specifically, Mwaipopo (2020) found that the living standards dimension contributed the most about 52% to the MPI in Tanzania, which is similar to the findings in this study. Similarly, Tigre (2018) reported that the living standards dimension contributed more than 85% to the MPI in Ethiopia, which also highlights the significance of living standards in poverty reduction efforts. These findings suggest that improving living standards, such as access to basic amenities, housing, and infrastructure, could be an effective way to reduce multidimensional poverty in rural Tanzania and other low-income settings. However, it is also important to address other dimensions of poverty, including health and education, to ensure sustainable poverty reduction and improve overall well-being.

Also, the findings in Table 5, indicated that the factors, age, gender, marital status, education level, and awareness of family planning methods were significantly associated with multidimensional poverty in rural Tanzania. Similar findings have been

reported in previous studies conducted in Oyo State Nigeria by Sulaimon (2022) and in Taiwan by Chen (2019). These results have important implications for policymakers in Tanzania and other countries with similar demographics to design and implement poverty reduction policies that target these significant factors. For example, policies aimed at educating rural communities on family planning methods and promoting education could effectively reduce poverty in rural areas. Female-headed households are found to be more vulnerable to multidimensional poverty than men-headed households, and policies targeting female-headed households specifically could address gender-based poverty, as reported by Mohammed and Ab-Rahim (2021). The government of Tanzania has implemented policies related to family planning, but more efforts are needed to promote family planning and reduce multidimensional poverty. Additionally, the findings suggest that higher levels of education are associated with a decreased likelihood of experiencing multidimensional poverty, as reported by Mohammed and Ab-Rahim (2021) and Eyasu (2020). Older households are less likely to be multidimensional poor than younger households, indicating the need to provide targeted support to younger households who are at a higher risk of experiencing multidimensional poverty, as reported by Chen *et al.* (2019). Lastly, the study found that widows are less likely to be multidimensional poor than those who

have never been married, while married individuals are also less likely to be multidimensional poor than those who have never been married, similar to findings reported by Bersisa. and Heshmat. (2021). This highlights the importance of considering marital status in poverty reduction interventions in rural Tanzania and the need to provide targeted support to those who have never been married to reduce their risk of experiencing multidimensional poverty.

## 5. Conclusion and Recommendations

The findings suggest that addressing living standards is crucial to reducing multidimensional poverty in the region. This could be achieved through policies aimed at improving access to basic amenities, housing, and infrastructure. Policymakers in Tanzania and other similar countries could use these findings to design and implement effective poverty reduction policies that target these significant factors. The study also identifies significant demographic factors associated with multidimensional poverty, including age, gender, marital status, education level, and awareness of family planning methods. Policymakers could use these findings to develop targeted poverty reduction policies that address the specific needs of these vulnerable groups. For example, policies aimed at educating rural communities on family planning methods and promoting education could effectively reduce poverty in rural areas. The study highlights the need to address gender-based poverty and provide targeted support to female-headed households. The findings also suggest that widows and married individuals are less likely to

experience multidimensional poverty than those who have never been married, indicating the importance of considering marital status in poverty reduction interventions in rural Tanzania.

Based on these findings, this study recommends that poverty reduction interventions in rural Tanzania should prioritize gender-based interventions that promote gender equality and address the underlying causes of gender-based poverty. Additionally, the study recommends the following:

- i) Provide targeted financial support, access to education and skills training, and promote gender equality in the workforce to reduce poverty among female-headed households.
- ii) Increase awareness and access to family planning methods through community-based education and outreach programs to reduce multidimensional poverty among households that do not use family planning.
- iii) Provide targeted support to younger households who are at higher risk of experiencing multidimensional poverty, taking into account their unique needs and challenges.
- iv) Encourage young people to pursue education, particularly girls, as higher education levels are associated with a decreased likelihood of experiencing multidimensional poverty.

These recommendations could contribute to the design and implementation of effective poverty reduction policies that address the multidimensional nature of poverty in rural Tanzania and similar contexts.

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