

Determinants of household poverty in Arsi Nagelle town, West Arsi Zone, Ethiopia.

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ABSTRACT

The struggle to achieve above the poverty line at the household level in the urban areas of Ethiopia dates back an extended period. In this regard, this study was conducted to identify and analyze the determinants of urban household poverty in the case of Arsi Nagele town. The study employed both primary and secondary data. Preliminary data was collected from 337 randomly selected households in two sub-cities by questionnaire. Both descriptive and Logit regression model was used for data analysis. From the three schools of thought, the basic needs approach is employed to identify households as poor and non-poor. Sixteen (14) explanatory variables, four continuous and ten discrete, were included in the logit regression model. Out of these variables, the sex of the household head, age of the household head, marital status of the household head, family size of household head, education level of household head, household head house tenure, household head access to electricity, household head access to the market center, household head access to credit, household head access to clear and sufficient water, the existence of solid institution was among the significant variables affecting the level of household's poverty. The research found that the area's food poverty line and the total poverty line were 13,788 Birr and 14,436 Birr per adult per year, respectively. Accordingly, the incidence of poverty, poverty gap, and severity was found to be 40 percent, 26.5 percent, and 7 percent, respectively. The research found that the area's food poverty line and the total poverty line are 13,788 Birr and 14,436 Birr per adult per year, respectively.

Keywords: poverty, Logit, Poverty line, poverty gap, and severity

1. INTRODUCTION

1.1 Background of the Study.

Poverty is generally considered a situation in which the underprivileged do not have adequate food and shelter, do not have access to education and health services, are exposed to violence, and find themselves in a state of unemployment, vulnerability, and powerlessness. Therefore, Poverty is multi-dimensional and has to be looked at through a variety of indicators, such as levels of income and consumption, social indicators, and socio-political access and participation (UNICEF, 2018)

According to the UN, Ethiopia is the second most populous country of the African continent next to Nigeria and the 12 most populous country in the world, with a population estimated at 112,078,730, of which about 23,376,340 people are estimated to live in urban areas. It is one of the least urbanized countries in the world. Ethiopia stands out as a rapidly urbanizing country and is particularly poor enough to need help from others. The share of the population living in cities has increased from an estimated 16% in 2008 (Geda and Gurara)

In cities across the globe, hundreds of millions of people exist in desperate Poverty without access to adequate shelter, clean water, and basic sanitation; crime and violence are concentrated in city slums, most slum dwellers depend upon unstable employment in the informal sector, characterized by low pay and poor working conditions can lead to social problems. Urban populations in Africa are overgrowing, and inequality is increasing. The major urban problems are Poverty, which receives relatively little attention from national policymakers. The effects of natural population growth and growing rural-urban migration have been felt in terms of poor urban management, lack of infrastructure, and inadequate service delivery, were contributed to the high population influx into the cities and towns, which in turn contributed to the deterioration of infrastructure and service, Slow economic growth and the low level of investments in urban centers combined with high population growth, have resulted

in high rates of unemployment and the inaccessibility and inadequacy of existing services for low-income groups, which further increase urban absolute Poverty.

The research findings regarding rural and urban Poverty may differ due to several differences in the studies, such as, time differences, definitional differences, and methodological differences of the respective study areas. Even when the definitions of Poverty have been similar, different results can still be obtained if different methodologies have been used. In addition, there is a cultural and socioeconomic difference associated with work habits between urban and rural study areas; this means that the problem and determinants of Poverty in urban and rural settings differ. Because of the above-listed factors, the need for this study increases specifically on the determinants of household poverty in Nageelle Arsi town. The issue of Poverty may differ from town to city and even from one city to another city.

Therefore, this research is focused on solving the above-listed problem in Negelle Arsi town using descriptive statistics techniques alone and an econometric model by specifying the logit model. Having this in mind, this research is designed to identify and analyze the extent, nature, and determinants of urban household poverty in one of the urban areas of Ethiopia; Negelle Arsi town has several residents employed in civil service, small-scale industries (woodwork and metal work) and petty business, preparing and selling the traditional popular drink-Tella, arekie and taiji and urban agriculture (Financial Office, 2019). The above problem directly or indirectly implies urban Poverty in the town. So, performing some study in this town was mandatory.

2. METHODOLOGY

2. 1 Types and Sources of Data

In the present study, data were collected mainly from a primary source of urban household heads in two Villages of Nagelle Arsi town during March 2020. In selecting the sample, a two-stage random sampling procedure was used. In the first stage, 2 Villages were chosen randomly. The determination of the surveyed Villages was made by using simple random sampling. The household in both Villages was recorded, and the listed communities were selected randomly. Following identifying the sample Villages, an informal survey was conducted in the sample areas. This has enabled the collection of a wide range of information by visiting the areas. Based on the information obtained and learned experience from the informal survey, a questionnaire was drafted and structured later in the formal survey. Moreover, the questionnaire was pre-tested for appropriateness and further improved before use.

Then, in the second stage, 337 households were selected randomly. This sample size was assumed to enable us to gather richer data concerning demographics, socio-economic behaviors, livelihood styles, institutional setup, etc. Moreover, 337 sample sizes would be more representative. After having the total number of households in each of the 2 Villages, probability proportional to size was employed to select the sample households.

The sample size was =

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{e^2(N-1) + Z^2 \cdot p \cdot q} - 1$$

$$n = \frac{(1.96)^2 \cdot 0.5 \cdot 0.5 \cdot 2456}{(0.05)^2(2456-1) + (1.96)^2 \cdot 0.5 \cdot 0.5} \quad n=337$$

n for kebele 1 =185, n for kebele 3= 152

2.2 Instruments and Methods of Data Collection

For the data collection, five enumerators who speak the local language fluently were recruited from the study area and they were trained. The enumerators have collected the required data under a close supervision of the researcher. The filled - in questionnaire was thoroughly checked every day. In addition to primary data, relevant secondary data were collected from various Organizations operating in the town. Published and unpublished documents were extensively reviewed to secure pertinent secondary information.

2.3 Method of Data Analysis

Descriptive methods

In the analysis of poverty, the starting point is the identification of the poor from the non-poor. To deal with this, the poverty line is vital in quantifying the various well-being indicators into a single index. Even though the choice of the poverty line is always arbitrary from country to country, the common argument is that there is a minimum level of consumption of food, which is 2200 calories, and non-food items, which makes it challenging to sustain our life (Damodar N. Gujarati). The most popular poverty line measures are based on three methods: direct calorie intake, food energy intake, and cost of basic need methods. This study applied the Cost of basic need methods to set poverty from the above three practices. Since the objective is to arrive at a consistent poverty line across regions and groups, this method yields a representative poverty line in that it provides a monetary value of a poverty line that accounts for food and non-food components. Moreover, the Cost of primary need method (CBN) was used in this study because it is more convenient, reliable, and widely used in most developing countries like Ethiopia (Damodar N. Gujarati).

In the data analysis, different models were used to address the objectives set in this study of chapter one. To attain the first objective, which is related to identifying and analysing the nature and extent of poverty at an urban household level, the Headcount index, poverty gap index, and FGT poverty measure introduced by (Foster, Greer, and Thorbecke, 1984) were used.

The mathematical expression of the model is as follows.

$$P\alpha = \frac{1}{N} \sum_{i=0}^q \left(\frac{z-y_i}{z} \right)^\alpha, 0 \leq \alpha \leq 2 \text{ for } y_i \leq Z \text{ -----2}$$

- $P\alpha$ the measure of poverty
- z is the poverty line for the household,
- q is the number of poor households,
- y_i denotes household income and
- α is the poverty aversion parameter. It represents the weight attached to a gain by the poorest. Usually, α takes the values of 0, 1, and 2.
- When we set α equal to 0, then $P\alpha$ will be reduced to the headcount ratio, which measures the incidence of poverty (the proportion of poverty in the total population).
- When α equals 1, $P\alpha$ gives the poverty gap. P_1 shows how far the poor, on average, are below the poverty line (intensity of poverty).
- Setting α equal to 2 gives the severity of poverty. This particular poverty index gives greater weight to the poorest of the poor, as it is more sensitive to redistribution among the equation,

Model Specification

On the other hand, to address the second objective of this study, which is the determinants of poverty, the binary logistic regression model is employed to examine the association of each explanatory variable with poverty. The built model can approximate the mathematical relationships between the independent and dependent variables. Therefore, in this study logistic regression model is fitted to estimate the strength of the relationship of each factor with poverty when the other variables are controlled.

The logit and probit models guarantee that the estimated probabilities will lie between the logical limit of 0 and 1 (Damodar N. Gujarati). Because of this and other facilities, the logit and the probit models are the most

frequently used when the dependent variable is dichotomous (Damodar N. Gujarati). Accordingly, in this model, the dependent variable takes a value of 0 if the household belongs below the poverty line, i.e., poor with the probability of P_i ; otherwise, it takes a value of 1, i.e., non-poor with the likelihood of $1-P_i$. Estimate this type of relationship, and it requires the use of qualitative response models. Specification of the model is as follows.

$$P_i = \frac{e^{Z_i}}{1 + e^{Z_i}} \text{-----3}$$

Where; P_i is 0 with the probability the household is poor; 1, otherwise

$$Z_i = \alpha_0 + \sum_{i=1}^n \alpha_i X_i + u_i \text{-----4}$$

Where; $i=1, 2, \dots, n$

- n = the number of explanatory variables
- α_0 = intercept term
- α_i = the coefficient of explanatory variables.
- u_i = disturbance term
- X_i = explanatory variables such as Household family size, Sex of household head, Age of Household Head, Marital status of household head, Education level of household head, Access to credit, Number of household members sick, Household House Tenure, Household Access Clear and Sufficient Water Service, Access to Remittance, Access to electricity, Access to market and Availability of strong institution, etc.

The probability that the household belongs to the non-poor will be $(1-P_i)$. That is, $1 - P_i = \frac{1}{1 + e^{Z_i}}$

The odds ratio can be written as:

$$e^{Z_i} = \frac{P_i}{1 - P_i}$$

In linear form by taking the natural log of odds ratio

$$\ln \left[\frac{P_i}{1 - P_i} \right] = \ln(e^{Z_i}) = Z_i \text{ The model is estimated through with the help of stats.16 computer software.}$$

According to the Planning and Development Commission of Ethiopia (2018) literature in Ethiopia the poverty line was estimated at Birr 1075.00 by 1995/96, Birr 3,781 in 2010/11, and Birr 7,184 in 2015/16 Survey based on a basket providing 2200 kcal per adult equivalent per day.

As mentioned above, the dependent variable is of a binary logistic regression model nature. Hence, it is assigned a value of 0 or 1, representing poor or non-poor. To estimate the values of the constant term (α_0) and coefficients of the parameters (α_i 's) of the logistic model, a data set was fitted to equation 4, which is stated above.

Before estimating the logit model, it is necessary to check if multicollinearity exists among the continuous variables and verify the correlation among discrete variables. Accordingly, the Variance Inflation Factor (VIF) technique was employed to detect the problem of multicollinearity for continuous explanatory variables (Gujarati, 1995). Each selected continuous variable is regressed on all the other continuous explanatory variables, the coefficient of determination (R_j^2) being constructed in each case. If an approximately linear relationship exists among the explanatory variables, this will result in a 'large' value for (R_j^2) in at least one of the test regressions. A popular measure of multicollinearity associated with the VIF is defined as:

$$VIF = (X_j) = (1 - R_j^2)^{-1} \text{-----5}$$

A rise in the value of R_j^2 , which is an increase in the degree of multicollinearity, does indeed lead to an increase in the variances and standard errors of the OLS estimates. A VIF value greater than 10 is used as a signal for the existence of severe multicollinearity (Gujarati, 1995).

Similarly, there may be also an interaction between qualitative variables, which can lead to the problem of multicollinearity or strong association. To detect this problem, contingency coefficients were computed from the survey data. The contingency coefficients are calculated as follows:

$$C = \sqrt{\frac{\chi^2}{n + \chi^2}} \text{-----6}$$

Where C is the coefficient of contingency, χ^2 is the chi-square test, and n= the total sample size. The values of the contingency coefficient range between 0 and 1, with zero indicating no association between the variables and values close to 1 indicating a high degree of association which means a high degree of multicollinearity.

3. RESULTS AND DISCUSSION

Determination of Poverty Line in Nageelle Arsi Town

The poverty line is setting a line that demarcates the standard of living in society. In this respect, a household's consumption expenditure is preferred to income as an indicator of a household's well-being in Nageelle Arsi town for the abovementioned reasons. Thus, to distinguish between people experiencing poverty and the non-poor, it is essential to draw a specific standard of consumption that must be achieved if an individual is not classified as poor.

The Cost of basic need approach method determines a total poverty line that covers the minimum basic needs of food items and allows for the qualification of non-food items. For this study, the minimum food basket that gives 2200 Kcal per day per adult (which is the minimum calorie suggested by WHO required for a day per adult), this research adopted the food basket that gives 2200 Kcal per adult per day for Nageelle Arsi town. Then, the basket of food items is valued at local prices collected concurrently with the household survey at Nageelle Arsi town. The food poverty line in the city is settled by using the following equation: $Z_f = PF$, Where Z_f is the food poverty line, P is the commodity price vector, and F is the food basket common in people's diets. Accordingly, the food poverty line Z_f for Nageelle Arsi town is 38.3 Birr per adult per day, equivalent to 13,788 Birr per adult per year. This divergence could be associated with the current rampant inflation prevailing in the country, particularly in Nageelle Arsi town during the research time (January 2020). This fact can be substantiated by the central statistics authority's (CSA) and West Arsi Trade office's annual average retail prices index of some selected cereal crops in the Nageelle Arsi market. On average, the prices of all selected cereal crops drastically increased over the last five years in the town. Hence, such consistent increments in the price of cereal crops will inflate the food poverty line.

Since people experiencing poverty cannot be expected to live from food alone, incorporating values into non-food consumption is needed. Which, assumes that the total poverty line is obtained by dividing the food poverty lines by the average food budget share of households that are in the neighbourhood of the food poverty line; accordingly, the people of Nageelle Arsi town devote 95% of their total consumption expenditure to food items and 5% of their income is dedicated to non-food commodities like clothing, shelter, education and health services, etc., based on these, the total poverty line for the Nageelle Arsi is 14,436 Birr per adult per year, The Figure is also far above the national mean per capita consumption expenditure calculated for urban areas, which is 7,184 Birr per adult per year in determined by PDCE (2018) for the year 2015/16

Head Count, Poverty Gap, and Severity Gap of Poverty in Nageelle Arsi

Once households are categorized into poor or non-poor or different welfare groups based on the total poverty line (Cost of primary need approach method) constructed above, then one can also drive the various measures of poverty such as its poverty incidence, poverty depth and poverty severity for the town using the following formulas.

The above calculation attests that about 40 percent of the people of Nageele Arsi lived under the poverty line (Po), with on average 26.5 percent shortfall (P1) to reach the poverty line and severity level (P2) of the town found to be 7 percent. Based on the food poverty line, the poverty headcount index, depth, and intensity of poverty in Nageele Arsi town are 36%, 25.7 %, and 6%, respectively. However, according to UNECA (2019), the food poverty line headcount index at the national level indicated 24.8, and food poverty Line headcount index at the urban was 15.2, the total poverty Line headcount index at the national level indicated 23.5, and the food poverty line headcount index at urban was 14.8. The town's food poverty Line and complete poverty line headcount index are far above the national average for urban areas, which was 36 percent and 40 percent in Nageele Arsi town.

Profile of Poverty by Villages

337 household heads were surveyed in the town's two villages (01, 03), and the study results show the following. From the total population 185, 152 sample households were drawn from Village 01, and 03, respectively. The study found 202 (60 %) households of the total population are above the poverty line and 135 (40%) households below the poverty line. The incidence of poverty in each village shows that there are 64 (34.6%) and 71(46.7%) households who live below the poverty line, and 121 (65.4%) and 81 (53.3%) households who live above poverty in villages 01 and 03, respectively.

Table 1 Summary Statistics of Discrete Variables Included in the Model

Variable	Code	Poor		Non-poor		χ^2	Source: survey result (2020) Note: ***, ** and * Significant at 1%, 5% and 10% probability level, respectively
		Frequency	Percent	Frequency	Percent		
Sex of household heads	0	32	23.7	30	15	5.055**	
	1	103	76.3	172	85		
Marital status	0	96	71.1	94	46.5	10.550***	
	1	39	28.9	108	53.5		
House tenures	0	59	43.7	80	39.6	9.071***	
	1	76	56.3	122	60.4		
Access to electricity services	0	46	34	165	81.7	10.823***	
	1	89	66	37	18.3		
Access to Credit	0	109	80.7	114	71.3	21.355***	
	1	26	19.3	88	28.7		
Access to clear and sufficient water	0	27	21	196	97	26.567***	
	1	108	79	6	3		
Existence of strong institution to reduce poverty	0	22	16.3	197	97.5	20.973***	
	1	113	83.7	5	2.5		
Access to market center	0	35	26	138	68.3	1.292	
		100	74	64	31.7		
Access to remittance services	0	37	27.4	76	37.6	3.789*	
	1	98	72.6	126	62.4		
Access to Aid	0	12	8.8	12	6	1.063	
	1	123	91.2	190	94		

Sex of household heads (sexhhh) in this Study, Male and female household heads in the overall sample households were 81.6 and 18.4 percent, respectively. From the total of 135 low-income families in the survey, about 23.7 % of the female households fall below the poverty line. In contrast, of 202 non-poor households, about 15% of female households fall above the poverty line. The survey result revealed a significant difference at a 5% significant level between male and female household heads. This result was also confirmed by (Jayamohan and Kitesa).

Marital status of household heads (masthh): According to the survey result, about 28.9 And 71.1 percent of married and single households were found to be poor, whereas non-poor families consisted of married (53.5) and

single (46.5%). The survey result revealed a significant difference of 1% between married and single household heads. This finding aligns with various studies conducted in different parts of the world (Anyanwu et al.)

Household head house tenures (House) The survey result revealed a significant difference at a 1% significant level. The survey observed that 43.7 percent and 56.3 percent of poor households are owners of their houses or not, respectively. Whereas the corresponding non-poor families who are owners of their house and not were 60.4 percent and 39.6 percent, respectively. This finding is consistent with (Zainal et al.).

Household heads Have access to electricity services (acofel-t). The survey result revealed a significant difference at a 1% significant level. About 66 percent of the poor households had no electricity services, and the remaining 34 percent had access to their own. Likewise, 18.3 percent of the non-poor households had no electricity services, and the remaining 81.7 percent had access to electricity services. This finding is consistent with (Dasso and Fernandez).

Household head Access to Credit (accredit) The survey result revealed a significant difference at a 1% significant level. About 80.7 percent of the poor households were not Access to Credit, and the remaining 19.3 percent were Access to Credit headed. Likewise, 28.7 percent and 71.3 percent of the non-poor households needed Access to Credit and Access to Credit, respectively. It is also in line with a Study by (Mebrahtu)

The survey result revealed access to clear and sufficient water in the compound (acwater). There is a significant difference at a 1% significant level. About 79 percent of the poor households had no access to clear, sufficient water in their compound, and the remaining 21 percent had access to clear and adequate water. Likewise, 3 percent and 97 percent of the non-poor households needed access to clear and sufficient water in their compound and access to clear and adequate water in their compound, respectively. It is also in line with the Study by (Geda).

Existence of Strong Institutions to reduce poverty (intitu) The survey result revealed a significant difference at a 1% significant level. About 83.7 percent of the poor households were not Access to Strong Institution, and the remaining 16.3 percent were Access to Strong Institution headed. Likewise, 2.5 percent and 97.5 percent of the non-poor households had no Access to Strong institutions or Strong Institutions, respectively. It also aligns with the Study by (Acemoglu and Robinson).

Household heads have access to the market center (acmarket). The survey result revealed an insignificant difference between access to the market center and not access to the market center household head, which is different from the prior hypothesis. About 26 percent of the poor household head were access to the market center, and the remaining 74 percent needed access to the market center. Likewise, 31.7 percent and 68.3 percent of the non-poor households head did not have access to the market center and access to the market center, respectively. This research hypothesized that access market center-headed households are less likely to be poor than those not access to market center-headed ones. However, the result does not show this hypothesis and is also not in line with the Study made by (Abu et al.).

Household heads have access to remittance services (remhh). The survey result revealed a significant difference at a 10% significant level. About 72.6 percent of the poor households had no remittance, and the remaining 27.4 percent had access to remittance at least once a year. Likewise, 62.4 percent and 37.6 percent of the non-poor households needed access to remittance and remittance headed, respectively. Moreover, It is also in line with the Study by (Mebrahtu)

Household head access to aid (aid) The survey result revealed an insignificant difference between access to aid and not access to aid household head, which differs from the prior hypothesis. About 91.2 percent of the poor households had no access to aid, and the remaining 8.8 percent had access to aid headed. Likewise, 94 percent and 6 percent of the non-poor households did not have access to aid and access to aid headed, respectively. Though this research hypothesized that access to aid-headed families is less likely to be poor than those not access

to aid-headed ones, the result does not show this hypothesis and is not in line with the Study made by (Arndt et al.).

Table 2 Summary Statistics of continuous variables included in the model

Variable	Poor		Non-poor		Total sample		t – value
	Mean	SD	Mean	SD	Mean	SD	
Household head Family Size	6.559	2.595	5.992	2.016	6.332	2.393	2.141**
Age of household heads	39.569	10.627	46	9.116	42.145	10.520	5.755***
Household head Education level	4.084	5.353	7.570	4.332	5.480	5.249	6.309***
Number household member sick	1.866	1.428	1.623	1.355	1.721	1.388	1.577

Source: stata output from own survey data (2020). *** and ** Significant at 1% and 5% probability level

Household head family Size (fsizehh) The mean family size for poor and non-poor sample households was 6.559 and 5.992 per household with SD of 2.595 and 2.016, respectively. The survey results also revealed a statistically significant difference in the mean family size at a 5 percent considerable level between poor and non-poor sample household groups. This was above the national average of 5 persons (CSA and World Bank)

Age of household heads (Agehh) Various scholars argue that the prevalence of poverty decreases when age increases. This is because the productivity of an individual in old age increases, and an individual has high investment potential; when age increases in a developing country, the return on investment will increase income, and most likely, at old age, an individual becomes independent.

The mean age for poor and non-poor sample households was 39.569 and 46 per household, with SD of 10.627 and 9.116, respectively. The mean difference is statistically significant at the significance level of 1%. It also aligns with the study (Anyanwu et al., 2013).

Household head Education level (Eduhh) The mean Education level for poor and non-poor sample households was 4.084 and 7.570 per household with SD of 5.353 and 4.332, respectively. And the mean difference is statistically significant at the significance level of 1 %. The statistical analysis shows that as the Education level of a household increases, the probability of a household being poor decreases. The survey result is in line with the study by (Grobler and Sekhampu).

The number of household members sick (Noill) The proportion of sample households becoming poor increased as the number of sick members grew. The mean number of household members ill for poor and non-poor sample households was found to be 1.866 and 1.623 per household with SD of 1.428 and 1.355, respectively. And the mean difference is found to be statistically insignificant at any level. The survey result needed to be consistent with the hypothesis made in this research and not in line with the study made by (Grobler and Sekhampu).

Results of The Econometric Model

The VIF of all continuous explanatory variables was smaller than 1.5; not only individual VIF but also the mean of VIF was equal to 1.03. Hence, the problem of multicollinearity could have been more severe among all continuous variables. Because of this estimation, all the hypothesized four continuous explanatory variables were included in the model estimation. The correlation coefficient for Sex of household head, marital status household head, household head house tenure, household head access to aid, household head access to electricity, household head access to remittance, household head access to the market center, household head access to credit, household head access to clear and sufficient water in their compound and Existence of vital institution to reduce poverty. The result was found to be lower than 0.3. Hence, the problem of multicollinearity could have been more severe among all discrete variables. Because of this estimation, all the hypothesized ten discrete explanatory variables were included in the model estimation.

Result of Logit Model

Table 3 Logit Model Result for the Determinant of Urban Poverty in Nageele Arsi Town

Logistic regression $y = \text{Pr}(\text{povstatus}) (\text{predict}) = 6528532$

Variable	Coef.	Std. Err.	dy/dx	P>z
sexhhh*	-1.090062***	.06726	-.2145769	0.008
Agehh	-.0813985***	.00349	-.0184478	0.000
masthh*	-.7535746**	.06616	-.1651815	0.018
Fsizehh	.1501493**	.01493	.0340292	0.023
Eduhh	-.1684904***	.00678	-.038186	0.000
House*	.7805436**	.06753	.1767686	0.010
aid*	-.5240553	.12854	-.1093331	0.444
remhh*	-.1855563	.07111	-.0416332	0.563
Noill	-.0453421	.02543	-.0102761	0.686
acofel~t*	1.127963***	.07938	.2673011	0.001
acmarket*	.6348588*	.0688	.1370124	0.061
acredit*	1.32597***	.06042	.2732801	0.000
acwater*	1.780045***	.11721	.4171801	0.002
intitu*	1.4282**	.13934	.3425359	0.022

Number of obs = 337

LR chi2 (16) = 161.51***

Prob > chi2 = 0.0000

Log likelihood = -146.1332

Pseudo R2 = 0.3559

Source: STATA output from own survey data (2020)

***Significant 1%, ** Significant 5%, * Significant at 10%

Sex of household head (sexhhh) as indicated in the logistic model estimate, the coefficient for sex of household head is statistically significant at 1% probability level. It means that keeping all other variables constant, as the household head increases by one male, the probability of the household falling into poverty decreases by 21.4%. The result is consistence with the finding of descriptive statics of this research and the model result of (Jayamohan and Kitesa).

Marital status of the household head (masthh*) as indicated in the logistic model estimate, the coefficient for the household head was statistically significant at a 5% precision level. It means that keeping all other variables constant, as the household head increases by one married person, the marginal effect of the household falling into poverty reduces by 16.5 percent because of various responses. The result is consistence with the finding of descriptive statics of this research and the model result of (Anyanwu et al.)

Household Head House Tenure (House) As the logistic model estimate indicated, the household head house tenure coefficient was statistically significant at a 5% precision level. It means that keeping all other variables constant, as the household head increases by one house tenure, the marginal effect of the household falling into poverty reduces by 17.6 percent. The result is consistence with the finding of descriptive statics of this research and the model result of (Zainal et al.).

Household head access to electricity in their compound (acofel~t*) Results of logistic regression revealed that the coefficient for this variable is positive and statistically significant at a 1 percent precision level. It means that keeping all other variables constant, as the household head's access to electricity increases by one household head, the marginal effect of the household falling into poverty reduces by 26.7 percent. The result was consistence with the finding of descriptive statics of this research and the model result of (Dasso and Fernandez).

Household head access to credit (acredit*): Logistic regression results revealed that the variable coefficient is positive and statistically significant at a 1 percent precision level. Keeping all other variables constant, as the number of households doesn't access credit for different purposes increases by one person, the probability of such

households falling into poverty increases by 27.3 percent relative to households having access to credit. The result was consistent with the finding of descriptive statistics of this research and the model result of (Mebratu).

Household heads have Access to Clear and Sufficient Water Service in their compound (water*). Logistic regression results revealed that the coefficient for this variable is positive and statistically significant at a 1 percent precision level. Keeping all other variables constant, if the household doesn't have access to Clear and Sufficient Water Service for different purpose increase by one household's head, the probability of such a household falling into poverty increases by 41.7 percent relative to households having access to Clear and Sufficient Water Service. The result is consistent with the descriptive statistics of this research and the model result of (Geda).

Existence of strong institutions to reduce poverty (intitu*); logistic regression results revealed that the coefficient for this variable was positive and statistically significant at a 5 percent probability level. Keeping all other variables constant, if the household head which does not have substantial institutions increases by one household head, the probability of such household falling into poverty increases by 34.2 percent relative to 66 households having access to solid institutions. The result is consistent with the finding of the descriptive statistics of this research and the model result of (Acemoglu and Robinson).

Household head Access to market center (acmarket*); logistic regression results revealed that the coefficient for this variable was positive and statistically significant at a 10 percent probability level. From the model output, the marginal effect indicated that a 0.25-kilometer increase in the residence of households from the market center increased the probability of being poor by 13.7 %. Because in the study area, households living far from the market center were mainly producing consumable product items compared to those living close to the market center producing products and services for sale. Even if the result is inconsistent with the finding of the descriptive statistics of this research and the consistency model result of (Abu et al.).

Household Head Family Size (Fsizehh): This variable was statistically significant at a 5% probability level and positively associated with household poverty. It means that keeping all other variables constant, as the household head family size increases by one individual, the marginal effect of the household falling into poverty increases by 3.4 percent. The result is consistent with the finding of the descriptive statistics of this research and the model result of (Anyanwu et al.).

Age of household head (Agehh) -this variable was found to be very significant at a 1% probability level and has a Negative association with household poverty. It means that keeping all other variables constant, as the household head age increases by one year, the marginal effect of the household falling into poverty decreases by 1.84 percent. The result was consistent with the finding of the descriptive statistics of this research and the model result (Sherif, 2020).

The educational level of household head (Eduhh) This model estimate shows that the higher education level of household head was statistically significant at a 1 percent probability level and influences poverty negatively. It means that keeping all other variables constant, as the household head's education level increases by one year, the marginal effect of the household falling into poverty decrease by 3.81 percent. The result is consistent with the finding of the descriptive statistics of this research and the model result of (Grobler and Sekhampu).

CONCLUSIONS AND RECOMMENDATION

The study found that family size has the power to aggravate poverty in the study area. Therefore, working more on family planning, reducing mortality rate, and creating employment opportunities for economic active members. This might improve the livelihood of people experiencing poverty. With this regard, Nageele Arsi Health Office and the micro and small enterprises office can play a vital role.

Poverty in the study area is highest in female-headed households; thus, working more on gender-related economic, political, and social issues is crucial. As female is everything in the household, supporting and enabling them to generate their income has multi-effects to improve the lives of the households. With this regard, Nageele

Arsi Town Women's Office, micro and small enterprises office, and Technical and Vocational Training can play a vital role.

Having access to electric power and access to clear and sufficient water supply in their compound also influences poverty, and both of them are statistically significant variables. The government should expand the electric and water connection lines to improve access to electric power and apparent and sufficient water supply demand for poor households. For this part, Nageele Arsi Town electric utility branch, Nageele Arsi Town Water Supply Office, can take the initiative in collaboration with other non-government institutions. The government needs to work towards providing housing and creating improved employment opportunities to reduce poverty.

A strong institution is vital in reducing poverty by reducing transactional costs. Government institutions need reform to reduce transactional costs through performing administrative reforms. The government and non-government need to work towards providing health care, and roads and creating improved employment opportunities and market centers to reduce poverty. Involving the community in constructing infrastructures would speed up the process by sharing the burden.

Access to credit can create an opportunity to be involved in economic activity that generates household revenue. Small and micro business agency in the town has started the movement of organizing and training every business community who are interested. The provision of startup capital in the form of loans is provided through different microfinance institutions.

In general, the problem of poverty in the town can be reduced significantly so long as there are joint efforts to identify the causes and consequences of poverty in the city. This calls for coordinated commitment from the government, NGOs and communities, researchers, the poor, and other stakeholders.

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