Investigating Multidimensional Poverty in District Shangla, KPK, Pakistan

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Abstract:

The main purpose of the present study is to investigate the multidimensional poverty in district Shangla. Primary data was collected through the questionnaire in 2018. A Multistage sampling technique has been used for the collection of data. The study has two main parts, one is to measure multidimensional poverty and the other is to investigate multidimensional poverty. For the measurement of multidimensional poverty, Alkire-Foster (2011) methodology was used. The results of the study indicate that 62 percent of the households are multidimensional poor, and the multidimensional poverty index (MPI) for this area is 0.427. Through the logistic regression model, various contributing factors of multidimensional poverty have been investigated. The results show that the household size, dependency ratio, and distance to the local administrative center are positively and significantly related to multidimensional poverty. The study has found that land holding, education of the household head, gender of the household head, availability of road, value of the household assets, and participation rate have a negative and significant impact on multidimensional poverty.

Key Words: Poverty, multidimensional poverty, measurements of poverty, local dimensions of poverty, determinants of poverty.

INTRODUCTION

Poverty is not only the problem of the specific country or region but it is a global phenomenon. In some regions of the world, the extent of poverty is low while in the other regions it is comparatively high. In developing countries, the problem of poverty is much severe. Throughout the world, 736 million people are poor if the poverty line is fixed at 1.90 dollars per person per day (PPP) (World Bank, 2018). According to this report, 10 percent of the world's population is living in extreme poverty. In Pakistan, the situation of poverty is also alarming. If 2 dollars are considered to be the minimum daily wage, then more than half of the country lives below the poverty line (Government of Pakistan [GOP], 2014).

Poverty has two main concepts; unidimensional poverty and multidimensional poverty. Unidimensional poverty is the traditional poverty concept that primarily considers the income or consumption deprivation in measuring poverty. The unidimensional approach assumes that one dimension (income) is a strong predictor of the individual's status in other dimensions. Sometimes, improvement in income does not guarantee the improvement in the welfare and standard of living. The multidimensional phenomenon of poverty goes beyond the traditional view of unidimensional poverty. According to the multidimensional approach proposed by Alkire and Santos (2010), poverty is not only the deprivation of income but also the deprivation of other important indicators

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like education, health and standard of living. Living standard consists of six indicators including cooking fuel, sanitation, drinking water, electricity, floors/walls, and assets.

The Ministry of Planning in 2016 published the first official report on multidimensional poverty of Pakistan. The findings of this report were also included in Pakistan economic survey (GOP, 16). According to the report, 39 percent of the people of Pakistan are multidimensional poor. In urban areas, 9.3 percent households are multidimensional poor while in rural areas 54 percent households are multidimensional poor indicating a huge urban rural disparity.

The present study investigates the contributing factors of multidimensional poverty in district Shangla, one of the northern districts of Khyber Pakhtunkhwa (KP), Pakistan. According to Sustainable Development Policy Institute (SDPI) report (Naveed & Ali, 2012), Shangla is on second position in the ranking of extreme poor districts of KP having 63 percent of population living below poverty line. The main objective of the study is to compute multidimensional poverty index and to find out the significant determinants of multidimensional poverty in district Shangla.

LITERATURE REVIEW

Poverty is a condition in which individual or household faces noticeable deprivation in their level of wellbeing (World Bank, 2001). According to this definition, poverty depends on the interpretation of wellbeing and the point from which deprivations are measured. So, to understand poverty and its measurement, the debate about the poverty line and wellbeing is very necessary (Albert & Roman, 2004). The threshold level below which the household or individual is considered poor is called poverty line. The selection of poverty line depends on the indicators of wellbeing (Gibson, 1999). In the study of individual utility and public judgment, Sen (1978) gives the concept of welfarist approach. According to this approach, the individual's or household's utility depends on their consumption or income.

Alkire and Santos (2010) investigated fundamental faults in unidimensional poverty because unidimensional poverty entirely concentrates on consumption or income data while examining poverty. So, poverty is now generally assessed in a multidimensional context. They estimated the multidimensional poverty index using three dimensions for measuring poverty. Gibba (2018) in his study on multidimensional poverty index for Gambia found out that multidimensional poverty gives clear situation of the deprivations faced by the household than the income poverty approach.

Hameed, Padda and Karim (2016) conducted a study on mapping multidimensional poverty for rural Pakistan and used rural household survey data for the analysis. They identified the deprivations at individual level in education, wealth, health, and standard of living. The study shows that 59 percent of rural Pakistan households are unidimensional poor and 43 percent of the households are multidimensional poor.

Salahuddin & Zaman (2008) found out that multidimensional poverty gives a clear picture of poverty. They also acknowledged that the households of Pakistan are mostly deprived of education and health indicator. Bronfman (2014) empirically assessed Chile's multidimensional poverty by using four dimensions of wellbeing; education, health, income, and living standards. The results indicated that fewer households are multidimensional poor as compared to the number of poor according to the income poverty line.

Ravallion (2011) concluded that the supporters of multidimensional poverty should be accepted. He identified that only the property accumulation is not enough to eradicate poverty but it is also necessary to consider some other dimensions of poverty. Batana (2008) conducted a study for Sub-Saharan countries and used Alkire-

Foster methodology for measuring multidimensional poverty. For this purpose, he distributed the countries into three groups according to their headcount ratios. After applying the Alkire-Foster methodology, the result shows that multidimensional poverty is many times greater in those countries whose head count ratio is greater than countries with less head count ratio.

Chakravarty and D'Ambrosio (2006) conducted a study on the measures of social exclusion at an individual level. They used social exclusion as a measuring proxy for the capability of an individual's function in society. While European Union and Italian data is used for the analysis of different measures of social exclusion. This study is based on Sen's (1985) capability approach of multidimensional poverty.

Dehury and Mohanty (2015) used Alkire-Foster counting methodology and conducted a study on India's multidimensional poverty. They decomposed the multidimensional poverty index in 84 subnational regions. Naveed and Ali (2012) estimated in a study that 33 percent of the population is below poverty line. In this study, they used the Alkire-foster methodology for the measuring of multidimensional poverty. The research shows the highest rural-urban disparities according to the multidimensional poverty.

Concluding the literature review, it can be said thatin the recent era poverty is recognized as multidimensional because income and consumption as indicators of wellbeing; alone fails to capture various deprivations faced by households. The practical presentation to measure multidimensional poverty started from the Alkire-Foster (2011) methodology and later on various studies on multidimensional poverty in different ways has been conducted by other researchers.

THEORETICAL FRAMEWORK

Multidimensional Poverty uses a broader concept of poverty than unidimensional which considers only income and wealth in measuring poverty. Multidimensional poverty reflects the deprivation in various dimensions. The poor cannot pay for any need and are deprived of health, facing inadequate standard of living, absence of power andscarce income. So, the necessity for the multidimensional concept of poverty gets up because the households face multiple deprivations at the same time. The household becomes poor with the increase in the deprivations (Robano & Smith, 2014). This approach of measuring multidimensional poverty is different from the Sen's (1980) command over commodities approach of poverty. While measuring multidimensional poverty, some information about a specific type of consumption good, for example education, enough food shelter or health care is required (Deutsch & Silber, 2005). This broadest concept of poverty by Sen (1985) capability approach argues that wellbeing comes from the capability to function in society.

According to capability approach, poverty is not only deprivation of income instead it is deprivation of other social indicators, i.e., health, education, and other capabilities. The first empirical presentation of capability approach has been established by Human Development Index introduced by Amartya Sen and Mahboob Ul Haq (United Nations Development Program [UNDP], 1990). After the Human development index, various multidimensional poverty measures have been introduced by different scholars like Bourguignon and Chakravarty (2003). According to this method, household is considered as multidimensional poor if it lies below the poverty line in one or more dimensions. One measure of multidimensional poverty is developed by Chakravarty and D'Ambrosio (2006), but this basically deals with the social exclusion. This approach of measuring multidimensional is also based on Sen's (1980) capability approach.

Alkire-Foster (2011) methodology is used to measure multidimensional poverty. In this method, different dimensions of an individual or household deprivation are explored . The Alkire-Foster (2011) methodology deals with multiple dimensions, like education, employment, and health status of household and standard of living.

METHODOLOGY AND DATA

This study uses Alkire-Foster (2011) methodology for the measurement of poverty and Binomial Logit Regression method for the estimation of determinants of multidimensional poverty. Logistic Regression Model is used to find out various social, regional, demographic and economic factors contributing to multidimensional poverty.. The identification of the poor by Alkire-Foster (2011) methodology involves certain steps.

Firstly, defining the set of dimensions is a very important step in the identification of the poor. This study has used three dimensions of the well-being proposed by Alkire and Santos (2010). The second step in the identification of the multidimensional poor is the selection of indicators for each dimension. For this purpose,ten indicators for the entire three dimensions proposed by Alkire et al., (2015) are used. The proposed dimensions, indicators and their allotted weights for each indicator are given in the following table. The third step in identification process is applying cutoffs. In this regard dual-cutoff approach is used in the Alkire-Foster (2011) methodology, one is the deprivation-cutoff and the other is the poverty cutoff. The deprivation cutoff is the threshold level of deprivation for each indicator, while poverty cutoff is the threshold level of poverty in all dimensions.

Table 1: Dimensions and Indicators

Dimensions		Indicators	
I	Health (Weighted at 1/3)	1	Child Mortality
		2	Access to Health Facilities
			(weighted equally at 1/6)
II	Education (weighted at 1/3)	3	Years of schooling
		4	Child enrolment
			(weighted equally at 1/6)
III	Standard of living (weighted at 1/3)	5	Cooking fuel
		6	Sanitation
		7	Drinking water
		8	Electricity
		9	Floor/walls
		10	Assets
			(weighted equally at 1/18)

Deprivation Cutoffs

Deprivation cutoffs are applied in such a way so that when the household is considered deprived in an indicator, the assigned weight is multiplied by 100, and for the non-deprived household, the weight is multiplied by zero.

a. Dimension of Health

The household is considered deprived in the indicator of child mortality if any child has died in the household. The household is deemed to be deprived in the indicator of access to health facilities if the health facilities are not used at all, or only used once in a while, because of access constraints.

b. Dimension of Education

The household is considered deprived in the year of schooling if no member of the age 10 years and above in the household has completed five years of schooling. The household is considered deprived in the indicator of child enrolment if any school-aged child (between 6 and 11 years of age) is not attending school.

c. Dimensions of Standard of Living

The household is considered deprived of **cooking fuel** if the household uses solid fuel for cooking like wood, crop remainder, cool, or dung cakes. The household is also considered deprived of **sanitation** if the household has not improved toilet facility. Household is also considered deprived of **drinking water** if it does not have access to clean drinking water. The household is considered deprived of **electricity** if the facility of electricity is not available.. In walls and flooring, the household is considered deprived if the house is made of mud, uncooked bricks or wood or has unimproved walls and floor.

The household is considered deprived of **assets** if it does not fulfill the following criteria of assets;

a. If it does not possess more than two small assets like radio, tv, iron, fan, sewing machine, video cassette player, room cooler, and bicycle.
b. If it has no significant asset like refrigerator, air conditioner, tractor, computer, car and motorcycle.

The poverty cut-offs

Estimation Methodology

A Binomial Logit Regression Technique is used for the estimation of determinants of multidimensional poverty.

$$P_i = \alpha_0 + \alpha_1 DLAC + \alpha_2 AOR + \alpha_3 DR + \alpha_4 HSIZ + \alpha_5 LHH + \alpha_6 EHH + \alpha_7 GHH + \alpha_8 PAR + \alpha_9 VAH + u_i \quad \text{(i)}$$

P = 1 if the household is multidimensional poor and 0 otherwise.

u_i is the error term of the model.

Where DLAC is the distance to the local administrative center, AOR is the availability of road, DR is the dependency ratio, HSIZ is the household size, LHH is the ownership of landholding with household, EHH is the education of the household head, GHH is the gender of the household head, PAR is the participation rate of the household and VHA is the value of household's assets.

Following are the dummy variables of the model

- D_{AOR} = 1 if the road facility is available and 0 if the facility of road is not available.

- D_{GHH} = 1 if the head of the household is female and 0 if the head of household is male
- D_{LHH} = 1 if the household has land ownership and zero otherwise.

DATA COLLECTION

The primary data is used for this study collected through surveys. Cochran (1953) method is used for the selection of sample size. A well-designed questionnaire was used for the collection of the data. Multistage sampling technique is used for the selection of the sample. At the first stage, the study selected two union councils (UCs) of Sub tehsil Makhozi i.e., UC Chawga and UC Ismail Khel which is 33 percent of the total UCs of Tehsil Puran, district Shangla. Each UC is a cluster of several villages. Cochran (1953) method is used for the selection of sample size.

MEASUREMENT OF MULTIDIMENSIONAL POVERTY AND RESULT INTERPRETITON

In following table, the estimates of multidimensional poverty are given. Multidimensional poverty index (MPI) is the product of two factors,i.e., intensity of poverty (A) and incidence of poverty (H).

Table 2: Multidimensional Poverty Index

Incidence of poverty (H)	Intensity of poverty (A)	Multidimensional poverty index (MPI)
0.627	0.689	0.427

The incidence of poverty is the first estimate of the multidimensional poverty, which shows the share of the population living below multidimensional poverty line. The above table clearly shows that the incidence of poverty is 0.627, which means that 62 percent of the population is multidimensional poor and their deprivation score is above 33 percent. The intensity of poverty shows how much a person is poor. This result of the intensity of poverty shows that the multidimensional poor live in significantly worse conditions because 68 percent score is far away from 33 percent poverty line. MPI simultaneously shows both the features of poverty. This measure of multidimensional poverty is also known as the adjusted headcount ratio because it is adjusted for poverty intensity.

Villages wise Incidence and Intensity of Poverty

The estimates of the intensity and incidence of poverty are given for both UCs in the following table.

Table 3: Village wise Incidence and Intensity of Poverty for UC Chawga

S. No.	Name of Village	Incidence of Poverty (percent)	Intensity of Poverty (percent)
1	Balwar	76	85
2	Asharosar	75	76
3	Batkram	73	71
4	Fiza	71	71
5	Doob	70	69
6	Amanderi	69	69
7	Madoobawri	68	68

8	Akral	68	67
9	Machay	66	67
10	Dunkacha	60	66
11	Baina	58	61
12	Lochana	45	61
13	Chawga	40	60

Table 4: Village wise Incidence and Intensity of Poverty for UC Ismail Khel

S. No.	Name of Village	Incidence of Poverty (Percent)	Intensity of Poverty (Percent)
1	Barjokanay	85	83
2	Braim	83	82
3	Shatidara	80	81
4	Sangri	77	79
5	Dambara	75	74
6	Naranj	66	72
7	Machkandi	63	71
8	Deransar	60	69
9	Kuzpaw	58	67
10	Marikzi	56	74
11	Palangsar	53	67
12	Maira	42	66
13	Awarpatay	40	64
14	Karori	35	48
15	Boagi	33	45

Indicator wise Deprivation

Table 5: Indicator wise Deprivation

S. No.	Indicators	Percentage deprived people
1	Child mortality	60
2	Access to health facilities	40
3	Years of schooling	65
4	Child enrolment	42
5	Cooking fuel	97
6	Sanitation	52
7	Drinking water	55
8	Electricity	68
9	Floor/walls	76
10	Assets	51

Table 5 shows the results of indicator-wise deprivation for the whole sample.

The first deprivation indicator is Cooking fuel because due to the absence of gas people use solid materials as a cooking fuel. The second highest deprivation is the material used in the construction of floor and walls of the house. The majority of the houses are made up of wood, mud and uncooked

bricks because people cannot afford the high prices of cement and steel due to high transportation costs. The third highest deprivation is highlighted in the indicator of electricity where 68 percent households are deprived of electricity. The deprivations in other indicators are also not satisfactory because in all other indicators the deprivations are more than 50 percent except in the indicator of child mortality which is 42 percent.

The Estimation of Logistic Regression Model for Poverty Determinants

This sectiondiscusses the results of the logistic regression model. The purpose of this model is to explain the determinants of multidimensional poverty. The estimates of the determinants of multidimensional poverty by logistic regression model are described in Table 6. The logistic regression model estimates show that all the variables are significant at 5 percent significance level and different from zero.

Table 6: Results of Logistic Regression Model

S.No.	Explanatory variables	Odds ratio	Coefficient	P value
1	LHH	0.0254	-3.6720	0.000
2	DR	1.0196	0.0194	0.049
3	HSIZ	1.2048	0.1863	0.004
4	EHH	0.8445	-0.1689	0.027
5	GHH	0.2607	-1.3441	0.013
6	DLAC	1.1461	0.1364	0.001
7	AOR	0.1162	-2.1518	0.001
8	VHA	0.9973	-2.7106	0.002
9	PAR	0.6984	-0.0318	0.003

The p valve for land holding (LHH) shows that the coefficient of land holding is highly significant. The coefficient of land holding has a negative sign, which means that the land holding by the household and poverty are negatively related. As the land ownership of the household increases the probability of poverty reduction. The dependency ratio (DR) has a positive and significant impact on the household's multidimensional poverty because the p value is less than 5 percent and the coefficient has a positive sign. The odd ratio for the dependency is greater than one whichimplies a positive relation between the dependency ratio and the probability of falling in poverty.

The coefficient of household's size (HSIZ) is positive, and the odds ratio is greater than one. This implies that the size of the household and poverty are positively related. The chance of poverty for the household increases with its size . So, the size of the family has a significant and positive impact on the household's poverty. The coefficient of the size of household is significant because the p value is less than 5 percent. The odds ratio is 1.2048 which means that one child increase in the household increases the odds of poverty by 20 percent.

The greater incidence of poverty has been observed in those households where the family head is illiterate. The result of the logistic regression model shows that the odds ratio is less than one and the sign of the coefficient is negative. This implies that the educational attainment by the head of household and poverty are negatively related. As the education of the head of household increases,

the probability of poverty falls. So, there is a negative and significant relation between multidimensional poverty and the education of thehead of household (EHH).

The odds ratio for the gender of the head of household (GHH) is less than one, and the sign of its coefficient is negative. According to the p value, it is concluded that the gender of the head of household and poverty have a negative and significant relation. For the male headed household, the chance of poverty falls. The variable distance to the local administrative center (DLAC) accepts the hypothesis that as the distance to the local administrative center increases, the probability of poverty also increases. The results show that the odds ratio for distance to the local administrative center is greater than one, and the sign of its coefficient is positive. This implies that the coefficient of distance to the local administrative center has a positive and significant impact on multidimensional poverty.

The availability of road (AOR) has a negative and significant impact on multidimensional poverty because the sign of its coefficient is negative; the odds ratio is less than one and p value is less than 5 percent.

The household assets like livestock and agriculture machinery are significant sources of income in the rural areas of Pakistan. The coefficient of the value of the household's assets (VHA) has a negative and significant effect on the probability of poverty because the odds ratio is less than one. The labor participation rate of the households (PAR) shows the employment condition of the household. The results of the regression model support the hypothesis that higher the earning by the household lower will be the probability of poverty. The greater participation reflects the greater earning and low poverty. The coefficient of the participation rate has a negative sign, and the odds ratio is less than one. The p-value shows that the coefficient of the participation rate is statistically significant.

CONCLUSION

This studyhas investigated and analyzed multidimensional poverty in two UCs of district Shangla. The data from 373 households was collected via questionnaire. The study has two main parts, one is to compute multidimensional poverty and the other is to find the determinants of multidimensional poverty. The Alkire-Foster (2011) methodology was used for the computation of multidimensional poverty. Three dimensions used in finding multidimensional povertyare; education, health, and standard of living. The study also estimated the incidence and, intensity of poverty and the multidimensional poverty index for the area. Further, it also estimated the village wise incidence and intensity of poverty and indicator wise deprivations for both union councils. At the end, study investigated different social, regional, demographic and economic determinants of multidimensional poverty by using logistic regression model.

POLICY RECOMMENDATIONS

The findings of the study calls for serious steps to ensure availability of gas as an alternative cooking fuel. In this regard, investment in biogas plants will be beneficial. Safe drinking water and improved sanitation facilities should be prioritized in every village. Provision of electricity must be ensured to each household. In this regard, the installation of water turbines on local streams and bourns is needed because some people have installed the turbines on self-help bases which are very

successful. The improved and well-equipped health care centers are required in each village. The study also recommends that the enrolment of children in schools should be increased. In short, poverty hit areas need more resource allocation to elevate their standard of living.

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