

Multidimensional Poverty: Quantitative and Qualitative Analysis from District Sargodha, Pakistan

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Abstract

Poverty is highly responsive to economic growth, and there is a negative relationship between poverty and economic growth. Hence, it is essential to eradicate it from the world as it is a cause of many social problems. The present study analyzes multidimensional poverty in the Sargodha, Punjab, Pakistan district through quantitative and qualitative approaches. The study applied Alkire and Foster's (2007) technique in quantitative analysis to measure the Global Multidimensional Poverty Index for district Sargodha. Year of schooling and child school attendance are the indicators used to assess the dimension of education. Nutrition and child mortality are the indicators for the dimension of health, while electricity, sanitation, drinking water, flooring, cooking fuel, and asset ownership are indicators of living standards. Focus Group discussions and case studies have been done to analyze multidimensional poverty qualitatively to make evidence-based policy. The study surveyed 300 households from district Sargodha by adopting the multi-stage sampling technique. The multidimensional poverty index for Sargodha is 0.186, showing that 18.6 percent of the population is multidimensional poor. Education contributes 39 percent to overall poverty, which is higher than the other dimensions. The indicators for health are improved in rural settlements compared to urban areas, and almost 75 percent of the population is deprived of sanitation facilities. Based on the findings, MPI should be used to allocate scarce resources efficiently. There should be different policies for different geographical settlements. Providing quality education and improved health facilities are the key factors to eradicate poverty in the future.

Keywords: Poverty Measurement, Multidimensional Poverty, Capability Approach, Deprivation, Health, Education, Quality of Life

Introduction

In 2002, the UN adopted the United Nations (UN) Millennium Declaration; they presented eight goals named MDGs. At that time, 191 UN member states and 22 international organizations committed to achieving MDGs by 2015. The UN set eight goals to achieve world development. These goals were focused on eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and women empowerment, reducing child mortality, improving mental health, fighting against HIV/AIDS and other diseases, ensuring environmental

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sustainability for the world, and developing international partnerships among countries. Considering the first goal of MDGs, the following change has happened. In 1990, approximately half of the population lived under \$1.25 in developing countries; this percentage dropped to 14 percent in 2015.

The most critical question about poverty is why it is essential to measure it. There are four reasons to answer this question presented by (Ravallion, 1998). The first reason is to keep poor people in the discussion of who they are and what they need; the second is to measure poverty to target domestic and worldwide intervention. The third reason is to evaluate and monitor different projects introduced for the betterment of people with low incomes; the fourth reason for measuring poverty is an evaluation of the effectiveness of institutions working for the deprived group of society.

According to the transition from MDGs to SDGs Report (2015). In many countries, most of the MDGs were not achieved; significant progress means that the world we are living in today has improved since the MDGs were adopted. In 1990, approximately 58 percent of the population lived in a low-income country, and this percentage dropped to 41 percent in 2000 and became 12 percent in 2013. In 1990, approximately 58 percent of the population was in extreme poverty of 3 people. This share has declined to 28 percent by 2000 and 11.5 percent in 2015 (1 out of 8).

Nevertheless, approximately 850 million people live under \$1.25 a day. The heterogeneity in the outcome of MDGs at the country level translates to regional differences. On one end, East Asia and the Pacific region have achieved all goals; on the other end, sub-Saharan Africa is off target on most MDGs' goals. The South Asia and sub-Saharan Africa regions have started improving the most required goals. They have made significant progress on health-related MDGs, which the world needs help achieving. Substantial accomplishments have been observed in South Asia and sub-Saharan countries. The 17 SDGs- with the motto "Leave No One Behind" have replaced the MDGs and provided the blueprint for strategic plans of government, international institutions, and donor agencies.

The aim of Sustainable Development Goals (SDGs) is to end poverty and hunger for all, promote health and well-being for all, ensure the availability of water for all, and ensure energy for all. SDGs have 169 targets to achieve 17 goals, according to the World Bank Report (2015). The MDGs were highly influential in reducing poverty worldwide during 2000-2015. Despite this massive poverty reduction, there are still one billion poor people who are not able to get 1.25\$ per day worldwide, and more than 800 million people do not have enough food to eat for a living. The global community has adopted SDGs to complete unfinished goals and maintain and sustain the goals achieved by MDGs. The new proposal of SDGs is universal because these goals are not just for developing countries but also for developed economies.

Poverty is very famous among academia, researchers, and policymakers worldwide. Kakwani (1993) found that poverty is highly responsive to economic growth, and there is a negative relationship between poverty and economic growth. Hence, it is essential to eradicate it from the world as it is a cause of many social problems. The key objective of public spending is to allocate scarce resources to attain maximum benefits and significantly impact the deprived group of society. There are some social protection and development programs in every developing country. The key objective of these programs is to identify the most deprived group of the population and to make them non-deprived through suitable policies for the betterment of any economy. Sachs (2008) has calculated the total cost of ending extreme poverty in 20 years. According to him, the total yearly cost required for it is \$ 175 billion, representing less than one percent of the combined income of the wealthiest countries in the world.

Transformation of Uni-dimensional to Multidimensional Measure

According to the capability approach presented by Sen (1976), poverty is not a deprivation of income. It also deprives health, education, and other capabilities. After the capability approach presented by Sen (1976), the attention of many economists and policymakers moved toward the multidimensional poverty approach and raised the demand for data. Poverty is a multifaceted phenomenon. The justification for adopting multidimensional poverty is that it is better than an income indicator because a deficit in income leads to ambiguous poverty estimates (von Maltzahn & Durrheim, 2008). The uni-dimensional picture of poverty is accurate because poverty is not a lack of income.

Multidimensional Poverty Trend in Pakistan

According to the Multidimensional Poverty Report (2016) published by UNDP Pakistan, By using the Pakistan Social and Living Standard Measurement (PSLM) Survey 2014-15, the MPI of Pakistan has been recorded at 0.20, i.e., 19.70 % of people are multidimensionally poor. The confidence interval at 95% is between 0.18 and less than 0.20. MPI is the product of the Headcount ratio (H) and Average intensity of deprivation (A). According to PSLM 2014-15, the headcount ratio is 38.80%, and the Average intensity of deprivation is 50.90 % for Pakistan. According to PSLM 2015-16, many differences are observed in multidimensional poverty at the regional level. As shown in the following table, MPI is more significant in rural areas than in urban areas,

Table 1: Multidimensional Poverty at Regional Level

Index	Population share (%)	Values	Confidence Interval (95 %)
MPI	33%(urban)	0.04	0.03-0.05
H		9.40%	8.20-10.50 (%)
A		43.10%	42.50-43.60 (%)
MPI	67%(Rural)	0.28	0.27-0.29
H		54.60%	53.1-56.0 (%)
A		51.60%	51.2-52.0 (%)

Source: Multidimensional Poverty Report (2016)

Research Questions

Research questions of the present study are

1. How multidimensional poverty is effective tool for policy making?
2. Which dimension (health, education and living standard) has more share in overall poverty?
3. Is poverty high in rural settlement than urban?

Objectives of the Study

The general objective of this study is to measure the Multidimensional poverty through quantitative and qualitative approach by applying Alkire and Foster (2007), method for District Sargodha.

The specific objectives of the study are:

1. To find the share of each dimension in overall poverty,
2. To make the comparison between rural multidimensional poverty and urban multidimensional poverty and
3. To suggest policy recommendations based on evidence.

Literature Review

There is a growing literature all over the world discussing different approaches for measuring poverty. The following chapter covers a review of previous studies analyzing how researcher adopted multidimensional poverty measures from uni-dimensional poverty measures. This chapter has further two sections one is uni-dimensional poverty analysis: a traditional measure, it will have covered all the literature regarding unidimensional poverty analysis while the other section is a measurement of poverty through multidimensional prospective: a modern measure, it will have covered the previous studies of multidimensional poverty analysis. History of poverty is very old; it is not merely a problem of developing nations but also the problem of developed nations. Since 1947, Pakistan is trying to fight against poverty. In Pakistan, after Household Income and Expenditure Survey (HIES) in 1960's Poverty captured the attention of government. The key objective for conducting HIES was to evaluate the performance of government but after some time the researchers started to measure poverty by using HIES dataset. They used expenditure of household as a proxy variable of income in Pakistan while measuring poverty. Many researchers used household survey for measuring poverty, inequality and well-being in Pakistan because these are the burning issues of present development policies. The literature review on poverty at national and international level exposed that welfare is not a uni-dimensional phenomenon, it is multidimensional. So, the development economist started to shift their attention toward multidimensional welfare. Literature is further divided into two parts. The first part will explain literature on unidimensional poverty and remaining part will explain literature on multidimensional poverty.

Literature on Uni-dimensional Poverty: A Traditional Approach

Naseem (1973) checked the trends of poverty in Pakistan by using HIES data set from the year 1963-64 to 1970-71. This study used expenditures as a proxy variable of welfare while measuring poverty. Laspeyer's price index was used to update the poverty line. To adjust the poverty line 1959-60 considered as a base year. The estimated poverty lines were divided into two categories, the higher poverty line and lower poverty line for the urban region as well as for rural region. In poverty figures, there was no trend of both regions for the higher poverty line category while the trend was increasing from period 1963-64 and from 1968-69 for lower poverty lines estimates, and there was a diminishing trend for the rest of the periods.

Alauddin (1975) investigated the poverty trend for Pakistan by using consumption expenditures and income as a welfare indicator. The study based on HIES data set for years 1963-64, 1966-67, 1969-70, and 1971-72. Four poverty lines were used to find out the headcount ratio in this study. To deflate the welfare indicators, which are expenditures and income Fisher price index was used. The findings revealed that there was no significant trend for any poverty line for all years.

Mujahid (1978) estimated the poverty trend for Pakistan at the regional level by employing HIES data set for years 1963-64, 1966-67, and 1969-70. Higher poverty line and lower poverty line were developed for urban as well as for rural region. The study found the poverty estimates do not only depend on income but also on household size. This study used income and consumption expenditures as a welfare indicator along with household size. The results revealed that there was a declining trend in poverty for urban areas through the period while in rural area poverty rates first increased then decreased. Moreover, the results also showed that there is an inverse relationship between per capita income and household size.

De Kruijk et al. (1985) examined the poverty trend for Pakistan by using HIES data set for the years 1969-70 and 1979. The poverty line used in this study is of Rs.233 per day. The results of

this research indicated that the rate of poverty decreases in Pakistan for both urban as well as for rural for this time period.

Kakwani and Son (2006) utilized a new poverty line and examined the poverty in Pakistan. HIES data set was used for this research for the years 2001-02 to 2002-04. By combining the required calories intake and required expenditure on non-food items the new poverty line was made. To update the poverty line of 2004-05 Tornqvist price index was used. Results of this study showed that in Pakistan the incidence of poverty was diminished by 10 percent for the year 2000-01 to 2004-05.

Ikram et al. (2010) employed HIES data set and explored poverty in rural Punjab from 1998-99 to 2004-05. At divisional level poverty examined under this research. This research measured the contributions of divisional poverty to overall poverty in Punjab and the headcount ratio for Punjab. According to the findings of this research the poverty in rural Punjab two times greater than the poverty in urban Punjab and this gap has enlarged with the passage of time.

Cheema and Sial (2010) made research on Pakistan and estimated poverty and inequality for different years 1992-93, 1993-94, 1996-97, 1998-99, 2001-02, 2004-05 and 2005-06. HIES data set was used to made analysis for this study. Paasche Price Index (PPI) was applied to regulate the variations in price among urban, rural and provinces. The equivalent scale used by Federal Bureau of Statistics (2001) and World Bank (2002) was employed to add the difference in household composition in the analysis. For Pakistan, a measure of poverty which is Foster Greer Thorbecke (FGT) was also estimated. Standard errors and t- values of results also calculated by this study. The result found that there was an accelerating trend in poverty measure for given time period except 1992-94 and 1996-97. For all the given data sets the poverty in rural areas was greater than in urban areas.

Literature on Multidimensional: A Modern Approach

After the consequences of the disadvantages of traditional measure of poverty, Cerioli and Zani (1990) gave the proposal of fuzzy approach for the first time. According to the fuzzy approach, the values of poverty function lies between 1 and 0. The poor person has value 1 while the non-poor person has value 0 in a fuzzy approach. The partially poor person has assigned intermediate values between 1 and 0. This poverty function has applied on Italian region afterward the new index was proposed that was the generalized form of uni-dimensional indices but new index also has the issue of arbitrary values.

Cheli and Lemmi (1995) have proposed a new approach named as Totally Fuzzy and Relative (TFR) after fuzzy to estimate the multidimensional poverty. This method, is very helpful and useful to examine the multidimensional poverty because it avoids random values for poverty threshold. In this approach, there were various problems like the problem of aggregation, comparison and interpretation issue. This approach used arbitrary aggregation that was a problem. Awan et al. (2011) has used the Multiple Indicator Cluster Survey (MICS) and estimated multidimensional poverty in Punjab at the district level. The study selected education, expenditure, water, land, assets, sanitation, electricity and housing in the analysis. The study has applied Alkire and Foster (2007) for estimations. The result illustrated that least deprived district of Punjab was Jhelum, Lahore, Rawalpindi, Sialkot and Gujranwala. The most deprived cities were Rajanpur, Kasur, Okara, Rahimyar Khan, and Muzaffargarh.

Masood et al. (2012) estimated the multidimensional poverty in case of Pakistan by employing Pakistan Social and Living Standard Measurement (PSLM) survey of 2005-06. The study used a counting technique of Alkire and Foster (2007). The dimensions to measure poverty were

expenditures, education, water, land, assets, sanitation, electricity, empowerment and housing. According to the finding of this study there was 22.8 percent people were declared multidimensional poor. Multidimensional poverty was high in the rural region than urban 26.8 percent in the rural region and 11.3 percent in the urban region.

Battiston et al. (2013) employed (Alkire & Foster, 2007) methodology in Latin American countries from the year 1992 to 2006 and measured multidimensional poverty. In this study, six dimensions were used for analysis. The dimensions were child school attendance, water, shelter, income, sanitation, and education of the household head. Equal weights were assigned to each dimension. The results found that poor sanitation and education of household head are major contributors in overall poverty estimates in all countries of Latin American. The poverty rates were high in the rural region than urban.

Leu et al. (2016) measured the child deprivation and social exclusion in Taiwan. The study used the House-hold Living Conditions (HLC) survey conducted in 2014. The study used a fuzzy set theory (1990) to measure deprivation, perceived necessity and social exclusion. The fuzzy approaches helped to measure multidimensional poverty and contribution of each dimension in overall poverty. The results showed that two-thirds of respondent identified that all items are necessary. Housing, medical care and clothing dimensions were declared the highest perceived necessity. The highest deprivation and exclusion faced by the child were in the dimension of the environment, recreation and education. The result also found that family income and family type of child were significantly related to the degree of perceived necessity, level of deprivation and exclusion. Family with large numbers of children faced a higher level of deprivation.

Alkire and Foster (2016) published Pakistan country briefing and measured the GMPI for Pakistan. The study used three dimensions and ten indicators to make comparison among different countries. The study used nutritional status and child mortality for health dimension, year of schooling and school attendance for education dimension and electricity, sanitation, floor, assets, cooking fuel, water for living standard dimension. The study assigned equal weights to each dimension. Counting technique is employed to measure MPI. The study used the Demographic Health Survey (DHS) 2012-13 for analysis. The results illustrated that 23 percent of people are multidimensional poor. The nutrition, floor, cooking fuel, sanitation have a major contribution to overall poverty. The urban MPI is less than rural MPI. Baluchistan has the highest percentage of multidimensional poverty i.e. 40.2 % as compared to other provinces of Pakistan.

Data and Methodology

Reliable data set and suitable methodology is the core of any empirical research studies. This section is further divided into two sections. First sectional will explain data source and other will explain methodology used in present study.

The study target district Sargodha, 11th most populous District of Pakistan with the population of 370,358,8 (PBS, census 2017). Sargodha district has seven tehsils with total 161 union councils. Sargodha, Kotmomin, Bhalwal, Shahpur, Sillanwali, Bhera, Sahiwal are tehsils of district Sargodha. The study used multi-staged sampling while selecting the households. In the first stage of sampling, the study selected three tehsils of district shown in map below i.e. Sargodha, Shahpur and Kotmomin based on probability proportional to size (PPS). In the second stage, the study used one urban union council and one rural union council from each tehsil. UC-89, UC-155 and UC-38 represents rural settlement while UC-20, UC-157 and UC-37 representing urban settlement shown in figure 1. The study interviewed 50 households of each settlement of each tehsil by random

selection. The overall sample of the study is 300 households based on Yamane (1967) sample formula.

$$n = \frac{N}{1 + N(e)^2}$$

n= Sample size

N= Total population

e= Acceptable sample error

Figure 1: Map of District Sargodha



Source: Google Map (Author's Own Illustration)

Survey Tool

In order to achieve the research objective. The questionnaire is being used for the household. The designing of the questionnaire is based on the questionnaire used in PSLM and it has four sections. The first section is known as Household roster, in which basic information of household has been asked. For example name of household, relationship to head, sex, age, marital status, occupational status and monthly income. The educational information has been asked in the second section of the questionnaire. This section has been used to calculate the indicators for education dimension. Educational section includes following questions. Person attended school in past or attending, the highest level of education, type of educational institution a person is attended or attending an educational monthly expenses. In the next section, random question has been asked to fulfil the requirement of living standard of the household. In this section type of cooking fuel household used, drinking water facility, type of floor, electricity availability, type of toilet, asset ownership have been asked. Last section included information related to the health status of the household. Weight and height has been recorded to calculate Body Mass Index (BMI) for adults and z-score for the child. Information related to the last visit to the hospital, type of hospital, the expense of last visit and death of any children in the last five years are included in this section.

Empirical Methodology

The study has used Multidimensional proposed by (Alkire & Foster, 2007) for measuring the multidimensional poverty. Consider any society in which households are denoted by N households

whereas dimensions are denoted by D . Let X represent $N \times D$ matrices and $X \in X$ represents an achievement matrix of a society a_{nd} representing the achievement of n^{th} household in the d^{th} for all $d = 1, \dots, D$ and $n = 1, \dots, N$. The row vector and column vector are representing $X_n = (x_{n1}, \dots, x_{nD})$ and $X_{.d} = (x_{1d}, \dots, x_{Nd})$ respectively. The X_n is representing all the achievement faced by n household in D^{th} dimensions whereas $X_{.d}$ denotes the single dimension of poverty achieves by N -households. For the development of deprivation matrix g^0 , D -dimensional deprivation cut-off vector (z) whereas z is the deprivation cut-off. The deprivation matrix g^0 consists of only two values 0 and 1.

$$g_{nd}^0 = \begin{cases} 1 & \text{if } x_{nd} < z_d \\ 0 & \text{if } x_{nd} \geq z_d \end{cases}$$

If nd^{th} is equal to 1 the household is deprived and for 0, the household is declared as non-poor. Now from deprivation matrix, g^0 column vector C is constructed by adding all the dimensions faced by n^{th} household. If the dimension is cardinal in X , then normalized gap matrix g^1 is constructed whereas

$$g_{nd}^1 = \begin{cases} \frac{z_d - x_{nd}}{z_d} & \text{if } x_{nd} < z_d \\ 0 & \text{otherwise} \end{cases}$$

The $g_{nd}^1 \in [0, 1]$ for all N -households and all D -dimensions, where each element of g_{nd}^1 represents the extent of deprivation experienced by N^{th} -household in D^{th} - dimensions. The generalized gap matrix is denoted by g^α , whereas " α " represent the normalized gap.

Now we are able to measure the multidimensional poverty proposed by (Alkire and Foster, 2007). The first stage of multidimensional poverty is to identify who is poor. There are two approaches for the identification of the poor, union approach and an intersection approach. In union approach, if any household is deprived in a single dimension then that household would be declared poor while in intersection approach the household would be considered poor if the household is deprived in all dimensions used in the analysis. Alkire and Foster (2007) proposed a multidimensional approach according to which a household is considered poor if the household is at least K dimensions where $K = 1, \dots, D$.

For the identification of poor (ρ_k), a household would be considered poor if $\rho_k(x_n, z) = 1$ where $c_n \geq k$ and for $\rho_k(x_n, z) = 0$, the household is considered non-poor when $c_n < k$. The household is multidimensional poor if the household is the deprived in K number of dimensions. In union approach the value of K will be equal to 1 while in intersection approach the value of K would be equal to D . A censored matrix $g^0(k)$ is obtained from g^0 by replacing the n^{th} row with zero when $\rho_k(x_n, z) = 0$. An analogous matrix $g^\alpha(k)$ is developed for $\alpha > 0$, with nd^{th} element of $g_{nd}^\alpha(k) = g_{nd}^\alpha$ if $\rho_k(x_n, z) = 1$, and $g_{nd}^\alpha(k) = 0$ if $\rho_k(x_n, z) = 0$.

According to the identification method proposed by Alkire and Foster (2007). The first step is to identify the percentage of individuals who are multidimensional poor that is called headcount ratio (H) which is defined as the $H = Q/N$ whereas Q is the number of households who are declared as poor and N is the total population. This measure is completely intensive to intensity and distribution of poverty suggested by Watts (1967) and Sen (1976) while measuring the uni-dimensional poverty and it does not follow the properties of monotonicity and transfer. This problem is being addressed by Alkire and Foster, (2007) as follow, for any poor household, if household become deprived in an additional dimension in which household was not deprived previously does not affect the H . finally the headcount ratio (H) is not flexible enough for the decomposition of dimensions which is used for the purpose of policy making.

In order to decrease the limitation of multidimensional headcount ratio, an adjusted Foster Greer Throbecke (FGT) measure has been used which is defined by $M_\alpha(X; z) = \mu(g^\alpha(k))$ for $\alpha \geq 0$. For

$\alpha = 0$ the measure known as Adjusted Head Count ratio which is denoted by $M_0 = \mu (g^0 (k)) = HA$ defined as the number of the population who are declared poor divided by the total population. When $\alpha = 1$ the measure would be called adjusted poverty gap represented by $M_1 = \mu (g^1 (k)) = HAG$ which is defined as the sum of normalized gaps of the poor ($g^1 (k)$) divided by the highest possible sum of normalized gaps and if the value of α is equal 2 the adjusted FGT measure become Adjusted Squared Poverty Gap, denoted by $M_2 = \mu (g^2 (k)) = HAS$ which is a sum of squared normalized gap of poor ($g^2 (k)$) divided by the normalized gap (ND) of total population.

MPI is the product of multidimensional headcount (H) which is known as the incidence of poverty and intensity of poverty (A).

$$MPI = H * A$$

Whereas

H: Incidence of Poverty, the percentage of people who are identified as Multidimensional Poor

A: Intensity of Poverty, the average percentage of dimensions which are faced by poor

The poverty can be decomposed into population subgroups. For example the achievements matrices X_1 and X_2 of population size N_1 and N_2 respectively. The overall poverty can be measured by

$$M (X_1, X_2; z) = \frac{N_1}{N} M (X_1; z) + \frac{N_2}{N} M (X_2; z)$$

Atkinson and Bourguignon (1982) and Boland and Proschan (1988) both found the same level of poverty by interchanging the one achievement matrix with another which is an evidence that MPI is neutral to inter-dimensional interaction. The achievement of each household in each dimension is not related to the achievement in other dimensions in this measure (Bourguignon & Chakravarty, 2003).

Table 2: Dimensions, Indicators, and Cutoffs

Dimensions	Indicators	Deprived	Weights
Education	Years of Schooling	If any member of household aged 10 years or older has not completed five years of schooling.	1/6
	Child School Attendance	If any school-aged child* of household is currently not attending school up to the age at which he/she would complete class 8. *(UNESCO 4-14)	1/6
Health	Child Mortality	If any child has died in the family during the last five years (2012-17).	1/6
	Nutrition	If any adult member aged less than 70 years of household is undernourished if their Body Mass Index (BMI) is less than $18.5m/kg^2$ or any child is malnourished if the z-score of weight for age is below minus two standard deviations from the median of the reference point	1/6
	Electricity	If it does not have the facility of electricity or if any household are using shared electricity connection	1/18
	Improved Sanitation	If the sanitation facility of household is not improved according to MGDs guidelines or if it	1/18

Living Standard	is improved but sanitation (toilet facility) is shared with other household		
Improved Drinking Water	If household does not have access to facility of safe drinking water or if location of drinking water is more than 30 minutes round trip from home		1/18
Flooring	If the household has natural floor i-e sand, clay		1/18
Cooking Fuel	If the household used animal dung, wood or charcoal for the purpose of cooking.		1/18
Assets ownership	If household does not own more than one radio, TV, telephone, bicycle, motorbike or refrigerator and does not own a car or truck..		1/18

Source: (Alkire et al., 2016)

Results and Discussions

Results and discussion are important for evidence-based policy making. This section is further divided into two sections the first part will explain quantitative results and other part will elaborate qualitative analysis.

Quantitative Results

This session explains the multidimensional poverty index of District Sargodha and comparison of poverty estimates at the regional level. Table 3 illustrates the headcount ratio (H), Intensity of Poverty (A) and Multidimensional poverty index (Mo) for district Sargodha.

Table 3: Multidimensional Poverty Index for Sargodha

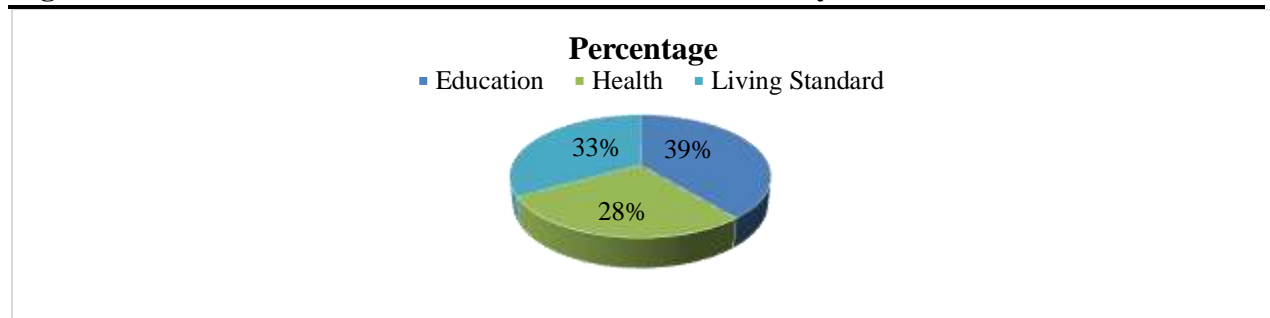
Sargodha	Coefficient	Standard error	(95% confidence interval)	
Headcount ratio(H)	0.425	0.035	0.356	0.494
Intensity(A)	0.437	0.012	0.414	0.461
MPI(M0)	0.186	0.016	0.154	0.217

Source: Author`s Own Calculation

From the table 3, it is shown that about 18.6 percent people are multidimensional poor which is according to UNDP report on Multidimensional poverty 2016 that is 16.4 percent. The difference is due to the difference in indicators and sampling size. Multidimensional poverty index is the product of headcount ratio and intensity of poverty. Headcount ratio showed that 42.5 percent of people are multidimensional poor (k=3) in district Sargodha. The intensity of poverty (A) means that these 42.5 percent poor are deprived in 43.7 percent dimensions on average. All the coefficients are significant at 5% and lie within the confidence interval (95%). According to results, 18.6 percent population is multidimensionally deprived while the rest of the population is considered non-deprived that is 81.4 percent. Figure 2 shown in illustrates the contribution of each dimension to overall Multidimensional Poverty Index (MPI). This study used three dimensions of MPI that are education, health and living standard. Education contributes about 39 percent to overall poverty. While the contribution of health is less than education. Health contributes 28 percent to overall poverty. The contribution of living standard is more than health but less than education that is 33

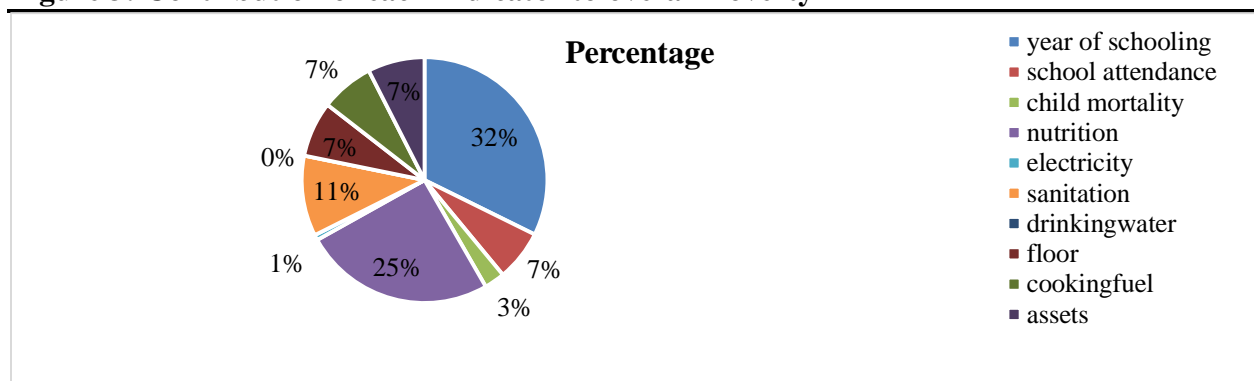
percent. In the education dimension, there are two indicators year of schooling and school attendance. Nutrition and child mortality are the representative of the health dimension. Six indicators including electricity, cooking fuel, floor type, drinking water, sanitation, assets are the indicators for the living standard.

Figure 2: Contribution of each Dimension to overall Poverty

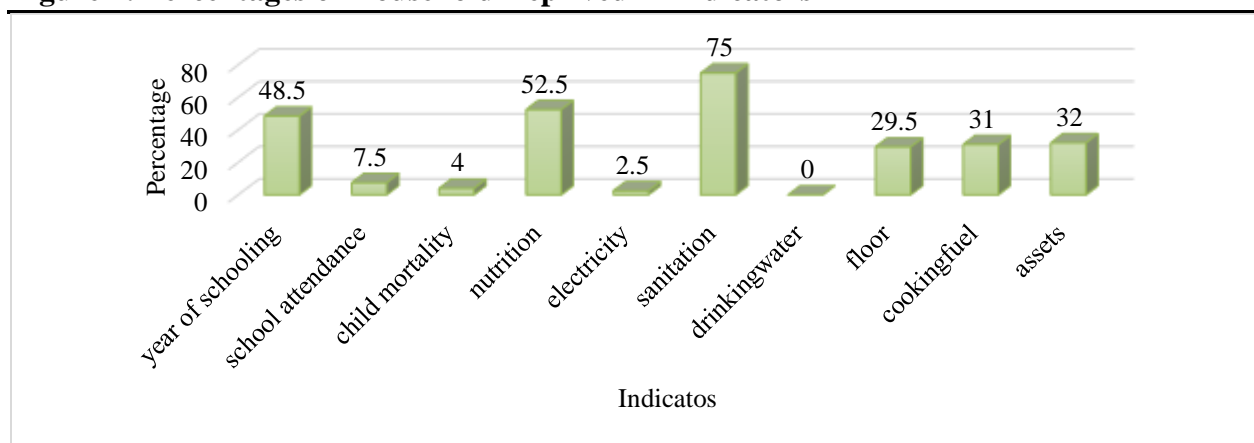


Source: Author's Own Calculation

Figure 3 illustrates the percentage of contribution of every indicator to overall poverty. Year of schooling contributes higher than all other indicators that are 32.3 percent. School attendance contributes by 6.7 percent. In the health dimension, child mortality contributes 2.7 percent while nutrition contributes 25.2 percent that is the second highest contributes after a year of schooling. In living standard, the drinking facility contributes zero percent to over all poverty showing that no one is deprived of this indicator shown in figure 2. The contribution of electricity is almost negligible that is 0.7 percent. The contribution of sanitation is 10.6 percent to over all poverty. The contribution of floor type, cooking fuel and assets are 7.3, 7 and 7.5 percent respectively. Figure 4 below represents the percentage of household that are deprived of different indicators of poverty. It has been observed in a diagram below that sanitation is considered at its alarming stage because almost 75 percent of household are deprived. In the year of schooling and school attendance, the percentages of deprivation are 48.5 and 7.5 respectively. 52.5 percent household are deprived in nutrition and only four percent are poor in child mortality meaning that they are the victim of facing the death of any child in the last five years. In electricity, 2.50 percent households are deprived 29.5 percent household have a natural type of floor and 31 percent of the household are not using cooking fuel according to a threshold. In assets ownership, 32 percent of household are deprived and no one is deprived in a facility of drinking water. In electricity, 2.50 percent households are deprived and rests of percentage are non-deprived.

Figure 3: Contribution of each Indicator to overall Poverty

Source: Author`s Own Calculation

Figure 4: Percentages of Household Deprived in Indicators

Source: Author`s Own Calculation

Table 4 represents the headcount ratio (H), Intensity of poverty (A) and multidimensional poverty index (Mo) for district Sargodha with different cutoff along with standard error.

Table 4: Multidimensional Poverty with Different cut-offs (k)

K	H	Standard Error	A	Standard Error	M0	Standard Error
1	0.855	0.025	0.324	0.011	0.277	0.012
2	0.690	0.033	0.364	0.011	0.251	0.014
3	0.425	0.035	0.437	0.012	0.186	0.016
4	0.175	0.027	0.548	0.015	0.096	0.015
5	0.135	0.024	0.578	0.015	0.078	0.014
6	0.035	0.013	0.698	0.019	0.024	0.009
7	0.020	0.010	0.736	0.012	0.015	0.007

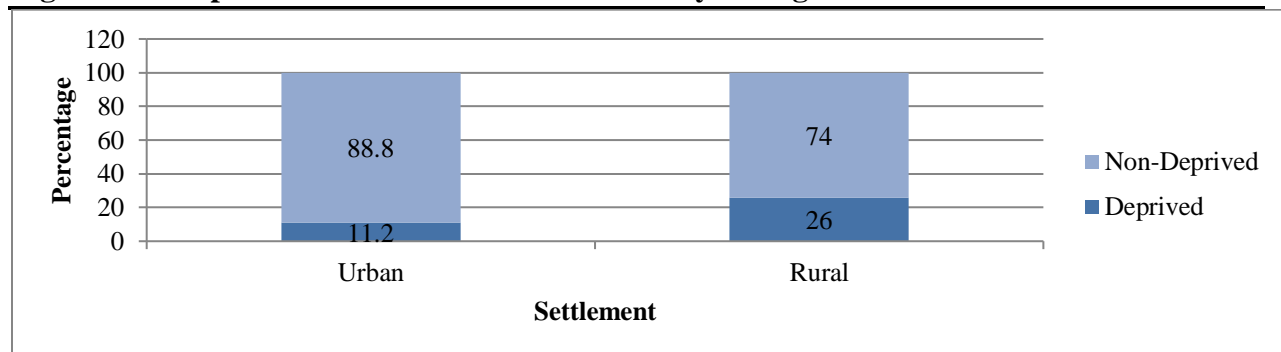
Source: Author`s Own Calculation

From the table 4, it has been observed that as values of `k` increases the M0 decreases. For k=1 meaning that if a household is deprived in a single indicator out of total indicators used to measure poverty, he would be poor that is why poverty is high at this cutoff. At k=1 almost 85.5 percent

population is deprived and 27.7 percent population is multidimensional poor. As the value of k increases head count ratio (H0) decreases and intensity of poverty (A) increases by minor value up to $k=6$ then decreases, M0 also decreases. For $k=7$ only 1.5 percent population is multidimensional poor. For all values of “ k ” head count ratio, intensity (A) and M0 all are significant at 5% level of significance.

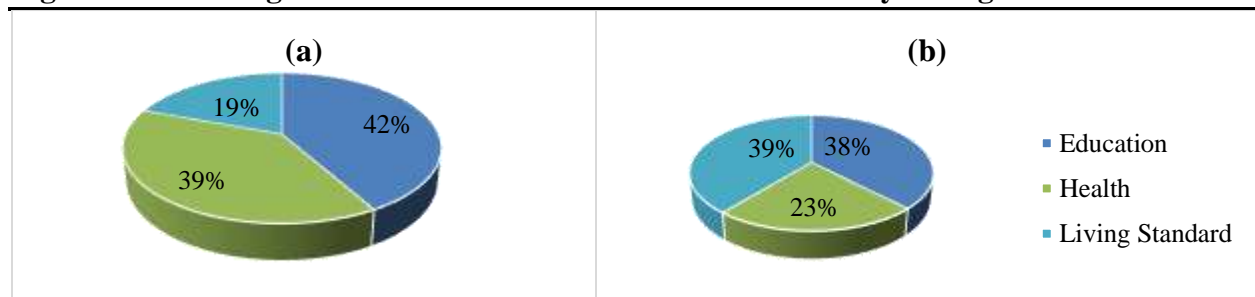
The study also estimated the multidimensional poverty for urban settlement as well as for rural settlement. The urban-rural comparison will be included in this section. Figure 5 represent the percentages of deprived and non-deprived for both settlements i.e. urban and rural. The deprivation percentage is higher in the rural settlement as compare to urban settlement. In the urban settlement, 11.2 percent population is multidimensional poor while it is 26 percent in rural settlement and 88.8 percent are non-deprived in urban settlement and 74 percent are in a rural settlement. Figure 6 illustrates the percentage of every dimension to overall multidimensional poverty for urban as well as for rural settlement. In the urban settlement, the contribution of education to overall poverty is 42 percent while it is 38% in a rural settlement. Education includes the year of schooling and school attendance. The health status is improved in rural settlement than urban. In urban health contributes 39 percent to overall multidimensional poverty while the contribution of the same dimension is 23 percent in a rural settlement. The health dimension includes nutritional status and child mortality. The contribution of living standard to overall poverty is higher for rural settlement than urban settlement in rural it is 39 percent while in urban it is 19 percent. The dimension of the living standard includes cooking fuel, electricity, assets ownership, drinking water, sanitation, and floor.

Figure 5: Comparison of Multidimensional Poverty at Regional Level



Source: Author's Own Calculation

Figure 6: Percentage share of each Dimension in Overall Poverty at Regional Level



Source: Author's own calculations

Qualitative Results

This section delineates with the comprehensive overview of the qualitative results of the research. The collection of the data has been done through qualitative research tools of focus group discussion and in-depth interview during the months of August and September 2017. The research broadened its application by covering both rural and urban settlements as two FGDs were conducted in both settings. A set of questions were presented before the participants of both urban and rural focus group discussion. While conducting the research, local language has been used to make the participants feel comfortable in sharing their views and opinions. Following a set of questions was asked from the participants;

1. What do you think of poverty being a uni dimensional or multidimensional phenomenon?
2. What are the severe issues faced by the people of your area?
3. What do you think are the ways to overcome the problems in your area and how poverty can be reduced?

The qualitative results of the FGDs are described below as per its setting;

Focus Group Discussion (Rural Settlement)

The discussion was conducted at Chak 88 NB from union council no. 88 of tehsil Sargodha. The participants were 8 in number and were from different professions of life. One of them was a doctor, two of them belongs to the teaching profession and remaining were from the general public. The Focus Group Discussion was initiated with the general discussion but later on, the above-mentioned research questions were introduced one by one in their local language. The views of the people about the nature of poverty were more prone towards multidimensional aspect as they negated poverty being defined as the “lack of income”. They believed that the lack of education, health facilities, and employment opportunities are other defining signs of poverty. So, for them, the multidimensional perspective of poverty was more dominant. One of them was said poverty is a “lack of Income” if you do not have money even your relatives are not with you and with money you can give a good education, food and all basic needs to your children. The participants were asked about the severe issue being faced by them in their area, and they complained about the worst health and sanitation conditions around them. There, the people are bound to visit the private hospitals because of the insufficient health facilities in the government hospital of their area. One of them said that the quality of education is not up to the mark. The government schools are lack basic facilities like drinking water and sanitation. They were of the view that government bodies must take notice of the declining sanitation and deteriorating health conditions of the rural areas and provide basic facilities to government schools along with quality education. There should be equal access to opportunities for everyone to minimize the poverty i-e inclusive growth. Lastly, they were asked that which program among BISP and microfinance should be promoted to raise the individual income level. Majority of the people favored micro finances because for them BISP can be ended by any government and is not a permanent source of income but microfinance can assure small businesses for them. One, of a teacher from them, suggested that microfinance should be provided with some vocational training otherwise it will just increase the income for a short period of time.

Focus Group Discussion (Urban Settlement)

The second FGD was conducted at Shahpur city from union council no. 157. The participants were seven in number and from different fields of life. There were a farmer, teacher, university students and the general public in the discussion. The discussion was initiated with general notes and later

on, some question was floated to the participants about the nature of poverty, issues being faced by them and their views about the effectiveness of BISP and micro finances.

The people seemed divided on the nature of poverty as some believed that poverty is a multidimensional phenomenon and few were of the view that it just about “lack of income” with the justification “Money is everything. One of them was of the view that if you have not enough money, even though your relatives are not with you. People of the area pointed out that the drastic situation of sanitation. They are sending their children to private schools because of the corrupt system and low standards of the government education sector. They emphasized the need for the corresponding authorities to take interest in improving the infrastructure and facilities of the government sector. The government should improve the educational standard of government schools. There should be inclusive growth so that everyone should have equal access to opportunity in education, health, and employment. The people showed an interest in microfinance loans as they can be a source of the establishment of small businesses and an element responsible for the increase in individual income but one of them said that BISP funds are not to be paid back and in this way, it is better. One of them was of the view that while providing the loan, the government should add an effective business plan that beneficiary can do to raise the level of income. After these results of two FGDs, it is concluded that sanitation, education and healthcare are the major issues of the public and microfinance loans are considered to be a better source of increasing individual income as compared to BISP.

Case Study: A Story from the Ground

Hayata Bibi, a 65 years old widow who lives in block no. 09 Sargodha. She lives with her two sons, a daughter in law and a grandchild. After the death of her husband, she migrated to Sargodha city from a rural area for the availability of better living facilities. Because of lack of a proper income, she could not afford basic education for her children. For a living, she started working as a maid and later on initiated her own small business. Through her savings, she built a “Tandoor Shop”, about 500 meters away from her home. One of her sons is working on a tikka shop as a salesman and the other one is still dependent on her. So, their source of income is not permanent. Moreover, she has to pay for the residence they are living in, as well which is an amount of 9000 rupees per month.

On a typical day, as per her routine she wakes up at 6.00 a.m., her daughter in law presents her the breakfast and she helps her daughter in law with the home chores. About 10.00 a.m. she leaves for her work and purchases a sack of flour to make bread at her Tandoor. She works till 9.00 p.m., despite the environmental conditions around which are mostly harsh in summers. The working men around her shop purchases bread from her on a regular basis. The price of a single bread piece is Rs. 6 and her total earnings result into a hand to mouth economic condition. Recently, she took a loan on a high interest rate to establish a small business for her son which was a mere failure. The burden of that loan added to her miseries.

She was asked about the nature of poverty in relation to the lack of income. She was convinced that the lack of education and unemployment are basic criteria of poverty nowadays, so poverty is a multidimensional phenomenon. She highlighted the problems of her area and the lack of health facilities and problem Sui gas during the winter season is what affects her business most. The lack of Sui gas becomes the cause of high prices of LPG and wood. She demanded that the government should provide basic health and education facilities at the government institutions.

The household of Hayata bibi is multidimensional poor. The shaded boxes of figure 7 represent the indicators in which household is deprived.

Figure 7: Indicators in which household is deprived

Education	Year of Schooling
	School Attendance
Health	Child Mortality
	Nutrition
Living Standard	Cooking Fuel
	Sanitation
	Water
	Electricity
	Floor Asset

Source: Author's own calculations

Conclusion and Policy Recommendations

The present study was accompanied to analyze the multidimensional poverty for district Sargodha through qualitative and quantitative approaches. In quantitative, Alkire and Foster's (2007) methodology has been used to measure GMPI. The study used three dimensions and ten indicators to develop GMPI. Year of schooling and school attendance are the indicators used to analyze the dimension of education; child mortality and nutrition are health indicators. In contrast, the indicators for the dimensions of living standards are the type of floor, electricity, cooking fuel, sanitation facility, asset ownership, and source of drinking water. In the qualitative approach, two focus group discussions were conducted, one from the urban settlement and the other from the rural settlement. A case study is also developed by following the methodology of OPHI to strengthen the quantitative results. In qualitative analysis, the results of Focus Group Discussions (FGDs) revealed that lack of sanitation facilities, poor quality of education, and unemployment are severe problems in the rural settlement of district Sargodha. To solve these problems, they suggested that there should be different policies and settlements and that the government of Pakistan should not follow a single medicine for all diseases. There should be equal access to opportunities for all, meaning they demand inclusive growth rather than economic growth. Based on empirical results, the study suggested the following policies:

- Poverty is higher in rural areas than in urban areas, so different policies should exist for different settlements.
- Rural settlements are most deprived of education, asset ownership, and sanitation, so proper measures should be taken to improve sanitation facilities while considering the policy for rural settlements.
- A multidimensional poverty index should be considered when allocating resources to reduce poverty.
- The government should improve the quality of education in public sector schools so that parents can easily send their kids to public sector schools.
- The government should conduct awareness seminars regarding nutritional intake and dietary requirements periodically.

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