



## The Prevalence and Correlates of Multidimensional Poverty: A Survey Analysis of District Charsadda

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### ABSTRACT

This study estimates the prevalence rate of multidimensional poverty, and determines its socio-economic determinants through survey of Behram Dheri, a Union Council of district Charsadda. The prevalence and severity of multidimensional poverty has been estimated through Alkire-Foster approach having ten indicators of multidimensional poverty. Whereas, binary-logit model has been employed to determine the impact of contributory determinants of poverty on multidimensional poverty. In result it is concluded that the incidence of poverty is 0.842 which interprets that about 84% of the households are multidimensionally-poor in the study area. However, the intensity of poverty is 0.559 which implies that at average a household is deprived in almost 56% of the indicators in UC Behram Dheri. Finally, it has been concluded that the prevalence rate of the multi-dimensional poverty index is 0.4712. The logistic regression model results show that the non-ownership of agricultural land and livestock and households headed by female are more vulnerable to multidimensional poverty. Moreover, the results also concluded that people who are dwelling in nuclear family are less vulnerable to multidimensional poverty. It is also calculated that the families which have more dependent members have direct relation with multidimensional poverty. On the basis of results, it is recommended to implement anti-poverty programs, combined with quality education, training, and awareness at the grass-roots level, will undoubtedly ensure rural households' socio-economic empowerment.

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## 1. Introduction

Poverty is without a doubt a socioeconomic curse on humanity. Poverty is not just a problem for the poor; it is a problem for the entire world. We all hope for a world free of poverty. Poverty has a context-specific, dynamic, and multi-dimensional nature. It remains one of the most important economic problems for developing countries. Poverty is defined as "deprivation in welfare." According to the traditional view, well-being is linked firstly to control over commodities; therefore, the poor are defined as those who do not have enough consumption or money to rise above a certain minimum threshold. X. Wang (2022) claimed poverty as the lack of fundamental human rights is the sign of multidimensional poverty index. The similar results have also been concluded by the Ambave et al., (2021) who claimed living standards followed by education dimensions are important for poverty estimation (Musa & Rossazana, 2021; Mahmood & Hssain, 2022). From this perspective, Haughton and Khandker (2009), poverty is viewed primarily in monetary terms. Poverty has always been measured on a single axis: income, yet poverty have almost always been viewed as a multifaceted issue. People's ability to meet certain basic standards in a variety of areas, such as clothes, nourishment, and shelter, may be expressed well enough by their income level (Alkire & Santos, 2013). Poverty is progressively being recognized as a multidimensional phenomenon with the passage of time.

In the past, income-consumption has been broadly studied (Bhuiya et al., 2007). Health, education, and living standards are three dimensions of poverty, and there are ten indicators as well. Pakistan is also facing poverty in its multidimensional form. There are four provinces in Pakistan, and each province contributes to multidimensional poverty (Rohwerder, 2016). Khan, Saboor, Mian, and Malik (2011) made an estimation of poverty in the four provinces of Pakistan along with rural and urban areas. During the years 1998–1999, the estimated headcount of multidimensional poverty at the national level was 43.34 percent, while in 2001–2002 it rose to 45.05, and in 2004–2005 it declined to 37.95. Rural poverty remained substantially greater than urban poverty in these studied years. In Khyber Pakhtunkhwa (KP), there are 34 districts, and like other provinces, the prevalence and correlates of poverty exist here as well, and various factors determine poverty. There are also rural-urban disparities. In comparison to rural areas, urban areas have a higher standard of life. Disparities in the rate of poverty across different districts in KP are also visible.

This study selected Behram Dheri, a union council (UC) rural area of Charsadda, as the case study. A majority of the population is engaged with agriculture. It is divided into two parts: Upper Behram Dheri and Lower Behram Dheri. Their total population is 23,284 while the number of households is 2,855. The choice of the union council is justified for the comparatively non-availability of health facilities, communication, financial institution and education. Majority of the working population are illiterate, unskilled and agricultural laborer in this area. As a result, in comparison to other Union Councils in the district, the people in the Union Council are impoverished and backward in terms of livelihood. Poverty is increasingly recognized as a global dilemma. It is a threat to developing countries. Some literature observes the prevalence of multidimensional poverty at international, national, and regional levels. However, multidimensional poverty as compared to developed countries is high in developing countries. Pakistan is also a developing country, and various studies indicate that Pakistan has experienced multiple trends in the history of poverty. Along with the increasing trend at the national level, the problem of poverty is particularly more severe in rural areas. Increased poverty in rural and urban areas of Pakistan is one of the factors contributing to the utmost importance. So the goal of this research is to estimate the prevalence and correlates of poverty in UC Behram Dheri Charsadda, keeping its multidimensional nature in mind and to examine the deprivation rate which dimension contributes more to multidimensional poverty. The significance of this study is that it will assist policymakers in directing the prevalence rate and contributory determinants of multidimensional poverty, so that interventions could be carried out in the right direction for the alleviation of multidimensional poverty.

## **2. Literature Reviews**

Poverty has existed as long as humans have been greedy and concerned with their own personal gain. Poverty is an undeniable fact of modern life. It has an impact on people all over the world. However, developing countries are in a worse situation than developed countries due to a lack of technology and skilled labour. Several scholars have worked in this area in various ways. Like, X. Wang (2022) employed the Alkire and Foster (AF) technique to examine the connections and differences between income poverty and multidimensional poverty and analyzed the theoretical correlation between the income and multi-dimensional poverty. They used the "Logit Model" to conduct the regression test and discovered that, although the impact is minimal, an increase in income can dramatically lower the incidence of multidimensional poverty and each dimension of it. It follows that measuring poverty founded on income isn't likely to show how big and complicated poverty is. Mosasane and Oyekale (2021) estimated that poverty has many faces and its prevalence rate is high among South African households. Using Alkire-Foster (AF) to evaluate the indicators of multidimensionality, they concluded that a large proportion of rural people in KwaZulu-Natal were poor, with a poverty rate of 93%.

The provinces of Limpopo and the Eastern Cape had poverty rates of 90% and 92 percent, respectively, while the Western Cape had a poverty rate of 61%. Moreover, Male household headship, age, household size, and several provincial characteristics significantly evaluated multidimensional poverty. Ambaye, Tsehay, and Hailu (2021) analyzed the situation and causes of Jimma Geneti Woreda's (Ethiopia) multifaceted rural poverty using mixed-methods technique based on 387 respondents. They discovered that 80.1 percent of respondents in the sampled area are multidimensionally poor. The outcome revealed a headcount ratio of 53.1 percent and a poverty intensity of 66.3 percent. C. Wang et al. (2021) explain that the multifaceted picture of poverty has been extensively admitted in Southeast China's hilly regions using Alkire-Foster

and logistic regression model for assessing multidimensional poverty and its correlates. In results, it was discovered that among 198 rural families, around 60% of the surveyed population experience multidimensional poverty. Musa and Rossazana (2021) created a household multidimensional poverty index in Nigeria using the Alkire and Foster methodology. Their study also observed the factors of multidimensional poverty among different households by collecting data through a questionnaire from 432 households. The findings revealed that households are 37 percent impoverished across the board, particularly in terms of living standards. Findings also examined that people in the research region lack regular improved sanitation, a nice house floor, modern cooking fuel, clean drinking water, electricity, and a variety of other assets that make up the living standard dimension of poverty.

Salam, Pratomo, and Saputra (2020) analyzed that assessment of multidimensional poverty emerges due to the disappointment of assessing poverty only through a monetary perspective. They aimed to analyze the impact of a household's socioeconomic characteristics on multidimensional poverty position in rural and urban regions of East Java. They found that female heads of households are facing more multidimensional poverty in rural areas as opposed to urban areas. They also analyzed that poor infrastructure in villages is still the main determinant contributing to multidimensional poverty in rural regions. They also discussed other variables that have a powerful impact on multidimensional poverty in rural and urban areas: dependency ratio, household head age, job status of household head, household head education, and families with disabilities. Kiani and Kazmi (2020) observed the prevalence and correlates of multidimensional poverty in Pakistan. They selected 6919 samples of urban and rural households to assess the prevalence rate and the factors which determine multidimensional poverty in Pakistan. The study concluded that about 63 percent of urban and rural households are experiencing multidimensional poverty in Pakistan. The study observed education as a strong determinant for coping with poverty and sustaining household welfare.

Sulaimon (2020) assessed the multifaceted causes of poverty in Nigeria using cross-sectional data from 2016. The findings showed considerable differences in multidimensional poverty between geopolitical regions, as well as between the north's majority of sub-regions and the south's sub-regions. The results also showed that multidimensional poverty has significant implications on fertility rate and labour force participation, with the latter showing a positive link. S. (2020) investigated inter-state differences in the 'determinants' and 'correlates' of multidimensional poverty among social groups, as well as their impact on human development in the respective states using OPHI multidimensional poverty framework. He conducted both state-level macro and household-level micro analyses based on primary and secondary data. The study discovered that inter-state disparities in the incidence of enabling variables have been reinforcing the persistence of human development divergence across Indian states. This study also reveals a positive index gap (0.24) between HDI and MPI in India, confirming the mutual divergence of these indices across Indian states. Furthermore, there is a significant imbalance between the "income" and "non-income" based measures of poverty, as the incidence (52%) based on the multidimensional approach is two-fold higher than the income-based official estimation of poverty (22%).

Chen, Leu, and Wang (2019) discussed how poverty is multifaceted. In their study, they employed numerous data sources and analytical perspectives to examine multidimensional poverty studies in Taiwan using multilevel modeling techniques and the Alkire-Foster method to analyze multilevel determinants and multidimensional poverty, respectively. At the macro level, they found that the service-to-manufacturing ratio and level of urbanization expressively correlate with the level of multidimensional poverty. Saleem et al. (2019) investigated Pakistan's rural and urban poverty levels on a variety of fronts. They included the three crucial factors of people's living standards, health, and education. According to the study, multidimensional poverty in Pakistan increased much more in rural areas than in urban areas during all time periods. Moreover, In the study of Chioma and Mona (2018), they analyzed economic and social determinants that correlate with low or high poverty rates using the dataset of 50 states in the United States. They found that the strongest correlations existed between the poverty rate and female-headed households and between the poverty rate and unemployment. Fransman and Yu (2019) used data from the Community Surveys conducted in 2007 and 2016 along with the Censuses of 2001 and 2011 to create a multidimensional poverty index for South Africa for every year. They claimed that multidimensional poverty was declining more quickly than income

poverty in terms of both prevalence and severity over time. They also came to the conclusion that Africans were responsible for more than 95% of multidimensional poverty, with the three most significant indicators being the number of years of education, disability, and unemployment.

Megbowon (2018) used data from a sample population of 3033 households interviewed in the Province during the General Household Survey conducted by Statistics South Africa in 2014 to summarize and connect family multidimensional poverty level. Results showed that numerous deprivations are mostly present in the province's rural areas; multidimensional headcount is greater there, despite the level of multidimensional poverty being roughly equal in both places. Unjum (2018) investigated the nature and magnitude of poverty on multiple levels, as well as the determinants of poverty in Jammu and Kashmir's rural areas. She used the Alkire-Foster method to investigate the extent of multidimensional poverty in rural Kashmir. The findings showed that both unidimensional (income poverty) and multidimensional poverty are prevalent in rural Kashmir. According to the Alkire-Foster method, which presents the intensity and incidence of poverty, the incidence of poverty in rural Kashmir was 0.856, which means that approximately 85 percent of the households in rural Kashmir were multidimensionally poor. However, the intensity of poverty was 0.461, implying that a household in rural Kashmir is deprived of nearly 46% of the indicators.

Saleem and Khan (2017) analyzed the International Multidimensional Poverty Index evaluation for Pakistan using the methodology of (Alkire, Conconi, & Seth, 2014). they found that Pakistan's multidimensional poverty was much worse in rural areas than in urban areas. Ali (2007) examined the effect of socio-economic variables on household poverty in Chitral Valley based on the survey dataset of 252 households. They concluded that household income and livestock population have a negative effect on household poverty, while dependency ration has a positive effect on household poverty. Y. Wang and Wang (2016) evaluated measures of multidimensional poverty for the poverty-affected counties and their contributing agents. The case study of eleven Hechi city counties showed that each county has at least four different types of poverty. Second, family health, unsafe housing, and adult illiteracy were the three major contributors, while additional factors included children's enrollment rate and fuel type, among others.

Mustafa, Siddique, Irshad, Abbasi, and Khan (2016) analyzed various dimensions of poverty for the rural regions of Punjab. They estimated the multidimensional and unidirectional angles of poverty for rural Punjab. Their study also observed the effect of different socio-economic variables on poverty. They concluded that except in D.G. Khan and Multan, in the utmost regions of rural Punjab, unidimensional poverty is very low. Due to the accessibility of fewer employment opportunities, because most of the people rely on daily wages, which are sometimes unreachable because of lack of work, this is the main reason for higher poverty in D.G. Khan and Multan rural regions. But due to the poor accessibility of basic necessities of life, multidimensional poverty is very high in rural Punjab. The main causes of multidimensional in most of the rural regions of Punjab are the unavailability of health services, a poor education system, and electricity. Khan et al. (2014) assessed the incidence of multidimensional poverty at regional levels in Pakistan's Sindh province from 1998–1999 to 2007–2008. They used the deprivation of health, education, and housing facilities as a dimension of poverty. They came to the conclusion that the magnitude of multidimensional poverty differed significantly across the areas of Sindh province. However, the rate of poverty in rural regions was greater than in urban areas.

Masood, Muhammad, and Amir (2012) analyzed multidimensional poverty for Pakistan's four provinces by using the PSLM dataset for the years 2005-2006 through Alkire and Foster methodology. For the study, they chose nine dimensions, which are education, sanitation, empowerment, land, assets, expenditure, water, electricity, and housing. They came to the conclusion that Baluchistan is experiencing the highest poverty followed by Khyber Pakhtunkhwa, Sind and Punjab. Salahuddin and Zaman (2012) argued that poverty cannot be properly measured by one dimension because poverty is by nature a multidimensional phenomenon. They used the Alkire-Foster Multidimensional (AFM) poverty measure to create time series trends of poverty in Pakistan from 1998 to 2006. They concluded that with regard to education and health, Pakistani people are vastly deprived. Education has had the worst record in the previous decade and a half. In the study of Di John (2011), they investigated determinants that estimate deprivation and are linked to various levels of deprivation in Nsukka, Nigeria through survey

analysis. The outcomes estimated that between 70% and 78% of the residents were considered deprived in the study. Moreover, the main determinants of deprivation across its several constructs are a low level of education, large family size, rural location, poor employment, and poor health. For the same purpose, Nayyar (2005) analyze disparities in poverty between states over time in rural India and came to the conclusion that economic growth is a key factor in reducing poverty. The agricultural and non-agricultural sectors' "per capita" real income levels rising, he explained in his studies, do matter. Furthermore, according to his research, there is a need to control inflation through appropriate macroeconomic policies and that because starting conditions matter, higher investments in infrastructure, health care, and education can help any rate of economic growth reduce poverty. These investments can also aid with more effective land reforms.

## 2.1. Summary of the Literature

According to a review of literature, researchers are primarily interested in the technical aspects of poverty, such as methodology, poverty variables, and human well-being. In the poverty analysis, these studies primarily used a unidimensional approach. Income, consumption and expenditure are the main parameters used in the poverty analysis. Except for the studies by Alkire, the exhaustive studies reviewed by the investigator revealed that the given studies did not make a serious attempt to bring out the 'intensity of poverty.' A paradigm shifts in poverty studies occurred following the publication of the first international Report on Human Development. Scholars began to consider human capabilities in poverty analysis rather than the traditional approach of income or consumption expenditure-based poverty line estimation. The Report included a new measure called the Multidimensional Poverty Index, developed by OHPI, to estimate multidimensional poverty across the world's countries. Studies have been done so far to measure both multi-dimensional poverty and uni-dimensional poverty and analyze the impacts of various determinants that determine the multi-dimensional poverty index. Multi-dimensional poverty exists more compared to urban regions, in rural locations. It is believed that union council (UC) Behram Dheri is one of the deprived union councils in district Charsadda. However, no attempt has been made to estimate the multidimensional poverty index, and no study has been conducted to examine the number of independent variables that contribute to multidimensional poverty in the selected union council of district Charsadda. Hence, to cover this gap, this study estimated the prevalence and correlates of the multidimensional poverty index calculated by Alkire and Forster in UC Behram Dheri-Charsadda.

## 3. Data Specification and Research Methodology

### 3.1. Data Collection and Sampling Procedure

Primary data was collected through questionnaire from different households of the sampled area. The study has conducted survey to estimate the prevalence and correlates of multidimensional poverty in UC Behram Dheri of district Charsadda during May-Jun in the year of 2022. Sample size is determined through the Formula of Yamane (1973) as given:

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

Where symbol "n" is used for sample size, "N" is used for Households size/total population of the study area and "e" is used for margin of error which we assumed as 5% (Yamani, 1967). The sample size for sampled area (with N=2855) was calculated as under:

$$\begin{aligned} n &= 2,855 / 1 + 2,855 (0.05)^2 \\ n &= 2,855 / 1 + 7.1375 \\ n &= 2,855 / 8.1375 \\ n &= 350 \end{aligned}$$

Thus, sample size of 350 households was initially selected from the UC Behram Dheri-Charsadda by using the simple random sampling method and the required data related to the prevalence and correlates of multidimensional poverty index and its attributes such as health, education, and housing facilities were collected through structured questionnaire (Mosasane & Oyekale, 2021). The comprehensive descriptions about the variables are discussed in Table: 1 below:

**Table 1: Variables coding, scale and description**

Variables	Variables Coding	Variables Scale	Descriptions	References
Multi-dimensional Poverty Index	MPI	If deprived Yes = 1, Not deprived No = 0.	MPI=HxA, where H is the poverty incidence, while A is the poverty intensity.	Alkire and Santos (2013)
Land Ownership	LANG-OWN	Land ownership Yes = 0, No = 1.	Ownership of land means a right over a piece of land. Its value will be 1 if no ownership of land, and 0 if otherwise.	Maloma (2016)
Household Head Gender	HH-HEAD	Male = 0, Female = 1.	The study will measure the household based on binary gender, i.e., male headed or female headed.	Adepoju (2018)
Livestock and Poultry	LIVE-STOCK	No = 0, Yes = 1.	Poultry refers to the raising of birds. Birds such as chickens, ducks, etc. Whereas livestock refers to the raising of mammals such as cows, sheep, and goats, both are used by rural households as a source of income to fulfill their needs.	(Sonaiya, 2007)
Number of Dependent Members	DEP-FAMILY	Less than 5 = 1, 5-15 = 2, 16-25 = 3.	A person who relies on someone else for financial support and can include children or other relatives.	Chioma & Mona (2018)
Family Structure	FAMILY-STRUCTURE	Nuclear = 1, Joint = 2, Extended = 3.	The family type may be joint or nuclear. A family is said to be joint if the head of the households' siblings and their family lives in the same family. Otherwise, family is called nuclear.	Dartanto and Nurkholis (2013)

**3.2. Prevalence Rate of Multidimensional Poverty**

The questionnaire consists of two indicators for each Health and Education whereas six indicators are for the Living Standard as presented in Appendix No. 1. Following X. Wang (2022), (Ambaye et al., 2021) and Salam et al. (2020), the prevalence rate of MPI has been estimated by the given formula:

$$MPI = H \times A \quad (2)$$

The percentage of persons who are classified as multidimensionality poor, or the poverty headcount, is shown by the letter "H" (incidence of poverty). While "A" shows the poverty intensity means average percentage of dimensions in which the poor individuals are deprived. "H" is multidimensional headcount ratio can be expressed like:

$$H = \frac{q}{n} \quad (3)$$

The entire population is "n", the size of people represented with "q" who are poor multidimensionality. "A" is intensity of poverty can be expressed as:

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

**3.3. Logistic Regression Model**

This study makes use of the binary logistic model, which bases its assumptions on the logistic distribution function. Once the answer variables have been translated into Logit form, this model employs the strategy known as the maximum likelihood (Carson, 2008). It determines the likelihood of multidimensional poverty. In order to determine the deprived and non-deprived individuals, the dummy variable is employed. A value zero is assigned for non-deprived households while the value of one is coded for deprived of multidimensional poverty. Following the translation of dependent variables into the natural log of likelihood, the reduced form of Y as dependent variables for multidimensional poverty index is carried out. The model can be written in reduced form by equation 5 as follows:

$$Y_i = \log(\text{odd event}) = \log \frac{\text{prob}(\text{event})}{\text{prob}(\text{non event})} \quad (5)$$

In the existing literature, Soltani, Baraty, Razaghian, and Foroughzadeh (2019) and Khudri and Chowdhury (2013) advocated that household characteristics and demographic variables are identified as key the determinants of poverty, including: the Household Head's

Gender, Family Size, Land Ownership, Number of Dependent Members, Family Structure etc. Hence, including the aforementioned variables, the logistic regression model is as under:

$$MPI_t = \beta_0 + \beta_{1i} \sum_{i=1}^p LAND - OWN + \beta_{2i} \sum_{i=1}^p HH - HEAD + \beta_{3i} \sum_{i=1}^p LIVE - STOCK + \beta_{4i} \sum_{i=1}^p DEP - FEMILY + \beta_{5i} \sum_{i=1}^p FAMILY - STRUCTURE \quad (6)$$

In the above equation, MPI is the dependent variable which shows multidimensional poverty index. Moreover, B1, B2, B3, B4, B5 are the respective coefficients of land ownerships, households' head gender, livestock and poultry, dependent family members and family structure. In addition, e is the residuals term in the model.

## 4. Results and Discussions

### 4.1. Prevalence of Multi-Dimensional Poverty

The prevalence rate for the MPI has been calculated according to the formula explained by Equation (2) in the former section. The multidimensional headcount ratio "H" and intensity of poverty "A" both together form the MPI and are calculated from the collected dataset by MS excel<sup>1</sup>. Hence, to determine the MPI, multiply 'H' by 'A' as given below:

$$\begin{aligned} MPI &= H \times A \\ H &= 2748 / 3262 = 0.84 \\ A &= 1537.05 / 2748 = 0.55 \\ MPI &= H \times A \\ MPI &= 0.842428 \times 0.559336 \\ MPI &= 0.4712 \end{aligned}$$

### 4.2. Interpretation

According to the ratio of headcount (H) calculation, the poverty incidence is 0.842, which means that approximately 84 percent of people in the sample area are MPI poor. As a result, they are deprived of at least i) all indicators of a single dimension or ii) a combination of dimensions, such as no clean drinking water in a household with an underweight child, dirt floor, and no proper sanitation system. According to the calculation of the intensity of poverty "A," the intensity of poverty is 0.559, which means that approximately 56 percent of people of the weighted indicators are deprived in the sampled area. According to the level of the deprivation experienced, the MPI reflects the percentage of the population that is multi-dimensionally poor. The results of the MPI show that the population is deprived in 55 percent of the total potential deprivation. So it is estimated that the prevalence rate of MPI in the area under study is 0.4712.

### 4.3. Correlates of Multi-Dimensional Poverty

#### 4.3.1. Testing Statistical significance

The Pearson's Chi square test has been applied to test the statistically significance of each of the independent variable in the model. The null hypothesis that there are no statistically significant differences between the observed values of the indexes and their predicted values is tested using the Pearson's chi-square statistic. The values of Pearson's Chi Square test for the independent variables are presented in Table 2 as follows:

**Table 2: Testing Statistical Significance of independent variables**

Factor Number	Variables	Chi-Square
1	Dep-Family	128.44 (0.00)
2	Family-Structure	147.38 (0.00)
3	Hh-Head	15.64 (0.00)
4	Lang-Own	38.44 (0.00)
5	Live-Stock	21.131 (0.00)

<sup>1</sup> MS-Excel programming is employed for estimating the Head Count Ratio (H) and Intensity of Poverty (A) are available on demand.

In table 2, it is shown that the p-values of all variables are lower than the threshold alpha value of 1% significance level. Therefore, there is sufficient evidence to infer that the null hypothesis should be rejected and to conclude that there is a statistically significant difference between the real and observed values of all independent variables in the model.

### 4.3.2. Logistic Regression Model for MPI

Binary logistic regression model is used to determine the impacts of different variables including: agricultural land ownership, gender of the head of family, family structure, numbers of dependent variables and use of livestock and poultry as source of income. The descriptive statistics of the dependent and independent variables are explained in table 3.

**Table 3: Descriptive Statistics**

Variables	Kurtosis	Skewness	Mean	Std. Deviation
Marita_Status	5.21	2.07	2.13	0.39
Dep-Femly	-3.81	.054	1.91	0.61
Lang-Own	-1.51	.706	0.33	0.47
Hh-Head	-1.82	.435	0.39	0.48
Family-Structure	-.63	.113	1.68	0.56
Live-Stock	-1.75	-.509	0.62	0.48
HeadHH_Income	-1.64	.356	2.20	1.30
HeadHH_Age	-.73	.025	2.62	0.87
HeadHH_Education	-1.01	.601	2.62	1.66
HeadHH_Occupation	-.81	-.09	4.48	2.02
Edu_5years	2.98	-2.22	0.87	0.33
Child_outSchol	3.53	2.34	0.12	0.32
ChildDied_5year	-1.98	-.161	0.54	0.49
Mulnrishd	-1.99	.138	0.46	0.49
Electr_Acess	9.22	3.34	0.07	0.25
Acess_Drnkng	-0.00	-0.00	0.00	0.00
Sanitn_Facilty	-0.00	-0.00	1.00	0.00
Flor_Condtn	-1.79	.459	0.38	0.48
Fire_Sourc	-1.87	-.374	0.59	0.49
Tech_Availblty	-1.51	-.706	0.66	0.47
MPI			0.81	0.39

Table 4 displays the logistic regression's estimations. The Results showed that some variables are positively associates with the multi-dimensional poverty index while some are negatively correlates with the multi-dimensional poverty index. As for land ownership in agriculture is concerned, it's odd ratio is less than unity, showing a negative relationship between land ownership and multidimensional poverty. This means that those who are owners of agricultural land are 0.12 times less likely to be deprived of multidimensional poverty. Again, the coefficient of the variable that shows the existence of agricultural land ownership of the family head is -2.111, which shows that if the individuals are provided with agricultural land, their multidimensional poverty rate will be decreased by 2.111 units (Anwar, Qureshi, Ali, & Ahmad, 2004; Kousar, Makhdum, & Ashfaq, 2015; Meinzen-Dick, Kameri-Mbote, & Markelova, 2007). Similarly, the logistic model has also regressed the impact of gender differences across the heads of families on the multidimensional poverty index. It has been concluded that the odd ratio of the variable "HH-HEAD" showing the gender of the family head is 2.127, which is greater than the threshold value of unity. In other words, the probability of being deprived of a family headed by a female is 2.127 times greater than that of those who are headed by a male.

**Table 3: Result of Logistic Regression Model**

Variables	B	S.E.	Wald	Sig.	Exp(B)
Lang-Own	-2.111	0.439	23.136	0.000	0.121
Hh-Head	0.755	0.341	4.906	0.027	2.127
Joint Fam_Structur	1.884	0.642	8.609	0.003	6.581
Extended Fam_Structur	1.301	0.580	5.037	0.025	3.674
Live-Stock	-3.043	0.422	51.980	0.000	0.048
Dep-Family_5-15	1.075	0.537	4.008	0.045	2.929
Dep-Family_16-25	1.185	0.439	7.282	0.007	3.270
Constant	1.729	0.745	5.390	0.020	5.633

The variable of family structure has also been found to be a statistically significant variable in determining the multi-dimensional poverty index for households. By assuming nuclear family as the reference category for family structure, the result shows that the odd-ratios of joint and extended family structure are 6.581 and 3.674 respectively. This shows that the odds of being



deprived of MPI are higher in joint and extended family structures as compared to the nuclear family structure. Going into more depth of analysis, the coefficient of joint family (1.88) is higher than the coefficient of extended family members (1.301). The result indicates that if the family structure is transformed from a nuclear family structure to a joint family structure, the MPI will increase by 1.884 units (Hanif and Sadia, 2010). The model has also shown the negative and statistically significant impact of income earned through livestock & poultry with the multi-dimensionally poverty. Such inverse relationship has also been confirmed by the odd value of this variable, which is less than unity, e.g., 0.048. It shows that the odds of being deprived of multidimensional poverty is less likely by 0.048 for those households who use livestock and poultry as a source of income as compared to those households that do not use livestock and poultry as a source of income (Riise, Permin, & Kryger, 2005; Sonaiya, 2007), Ali, 2007).

In addition, the variable of dependent members has also been found a statistically significant variable in the cause of multi-dimensional poverty for the families. Family with depended members less than 5 have been assumed as a reference category for the variable of dependent family members. The result indicates that the odd-ratio of the dependent members' category (5-15) is 2.929 and for category (16-25) is 3.270. This shows that the odd of being multidimensional poor for households is more in categories (5-15) and (16-25) as compare to the reference category (less than 5). Analysis further shows that the coefficient of the dependent member category (16-25) is higher (1.185) than the coefficient of the dependent member with (5-15 members) which is 1.075. It shows that if the dependent household members increased from the category of (less than 5 members) to the category of (16-25 members) the MPI will be increased by 1.185 units (Rani & Schmid, 2007) Ahmed 2008, Asif 2007).

## **5. Conclusion and Policy Recommendations**

This study not only calculates the multi-dimensional poverty index but also determines various factors responsible for the multi-dimentional poverty index. About 350 individuals have been selected through simple random sampling method from different villages of UC Behram Dheri of district Charsadda. The factors that contribute to poverty were identified using the logistic regression model. Following the Alkire-Foster method, the findings show that there is multi-dimensional poverty in the area under consideration. The incidence of poverty in UC Behram Dheri-Charsadda has been estimated 0.842, which means that approximately 84 percent of the households in UC Behram Dheri are multidimensionally poor. However, the intensity of poverty remains at 0.559, implying that a household in UC Behram Dheri is deprived of nearly 56% of the indicators under study. Finally, it has been concluded that the prevalence rate of the multi-dimensional poverty index is 0.471.

Afterward, a logistic regression model has been regressed to determine the impacts of different independent variables on the status of MPI. While regressing the impacts of land ownership in agriculture on MPI, it is concluded that the likelihood of depravity for individuals is greater for those who are not the owners of any agricultural land. By interpreting the odd value of the coefficient of gender head of the family (2.127), It predicts that if the family is headed by a female instead of a male, MPI will likely be increased by 2.127 times. In other words, the probability of being deprived of a family headed by a female is 2.12 times greater than that of those who are headed by a male. Family structure is still a significant variable in the model used to determine a family's poverty status. It has been concluded that families that have a joint and extended family system are more vulnerable to multidimensional poverty, while those that have a nuclear family system are less vulnerable to poverty. Interestingly the result shows that the MPI will go up by 1.884 units if the family structure changes from a nuclear family structure to a joint family structure.

Moreover, the existence of income earned through livestock and poultry has negative and statistically significance impact with multidimensional poverty. Through its odd value, it is concluded that for individuals, the odds of being deprived of multidimensional poverty are less likely by 0.048 for those households who use livestock and poultry as a source of income as compared to those households that do not use livestock and poultry as a source of income. In light of the results we obtained, the following recommendations have been suggested: (a): More liberalized module that allows women to work and manage their financial earnings without compromising their social standing. (b): The government should increase its budget share of education to provide upgraded basic facilities at schools to boost education quality. (c): In order

to increase the efficiency of agro-based industry, workers are supposed to be trained with innovative techniques.

In addition to boosting industrial output, this policy will increase per person marginal productivity of labors in both agro and non-agro sector. (d): The government must implement new specific programs for school and hospital for lagging villages in Khyber Pakhtunkhwa to have basic health and education facilities at the door steps. (e): According to the results, MPI is higher in families that don't conform to the nuclear family model due to increased number of non-working family members. Restructuring of family modules are required to ensure that all the working age family members are meant for economic contributions at least in their family.

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**Appendix 1**

<b>Questionnaire</b>	
The Prevalence and Correlates of Multidimensional Poverty in Union Council Behram Dheri-Charsadda	
<b>Introduction</b>	
Respected Sir/Madam	
<p>The following survey instrument is purely developed for an academic purpose to acquire data for the MS research thesis. The researcher is a MS Scholar in Economics at Department of Economics, University of Peshawar. The objective of this survey is to acquire data regarding the prevalence and correlates of multidimensional poverty in the Union Council of Behram Deri, Charsadda. For the attainment of an aforementioned objective, your kind support is required and greatly valued to fulfill this survey questionnaire.</p> <p>Please Note: The information given through this research survey will be highly confidential and will be used only for the purpose of MS research dissertation. You can fill this questionnaire for household sector and for your working place as well.</p>	
<b>1.</b>	Marital Status: a) Single, b) Married, c) Widowed, d) Divorced
<b>2.</b>	Number of the dependent members in the households: _____
<b>3.</b>	Monthly income of the household: _____
<b>4.</b>	Age of the household head: _____
<b>5.</b>	Gender of the household head? a. Male b. Female
<b>6.</b>	Educational level of the head of household?
	a. Illiterate b. Primary c. Metric d. FA/Fsc e. MA/Msc, f. M.Phil/PdD
<b>7.</b>	Occupation of the household head?
	a. Govt. Servant, b. Private Employee, c. Farmer, d. Self Employed, e. Employed for wages f. Retired g. Unable to work
<b>8.</b>	Do you own agriculture land? _____. a. Yes b. No
<b>9.</b>	Do you use livestock and Poultry as source of income? a. Yes b. No
<b>10.</b>	Structure of family? a. Joint b. Extended c. Nuclear
<b>11.</b>	Is there any family member who has not completed five years of schooling?
	a. Yes b. No.
<b>12.</b>	Is there any school-age (1-8years) child who is not attending school?
	a. Yes b. No.
<b>13.</b>	Is any child died in family under the age of five years? a. Yes b. No.
<b>14.</b>	Is there any adult or child for whom their id nutritional information is malnourished?
	a. Yes b. No.
<b>15.</b>	Does the family have an access to electricity? a. Yes b. No
<b>16.</b>	Does the family have an access to soft drinking water? a. Yes b. No
<b>17.</b>	Is there proper sanitation system available? a. Yes, b. No
<b>18.</b>	Is the floor made up of sand, dirt or dung? a. Yes, b. No
<b>19.</b>	Does the household cook with wood, charcoal, or dung? a. Yes b. No
<b>20.</b>	Does your household have?
	i) Radio/Television: a. Yes, b. No. ii) Refrigerator: a. Yes, b. No. iii) Mobile/Telephone: a. Yes, b. No vi) Bicycle/Motorcycle: a. Yes, b. No v) Car/Truck/Tractor: a. Yes, b. No