ASSESSMENT OF MULTIDIMENSIONAL POVERTY IN AIZAWL DISTRICT OF MIZORAM, INDIA

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ABSTRACT

The study intends to examine the incidence and intensity of multidimensional poverty in Aizawl district of Mizoram, India. The core objective of the study was to compute Multidimensional Poverty Index (MPI) and decomposed into population sub-group, dimensions and indicators to examine distribution and pattern of poverty across the study area. The Alkire-Foster counting approach was employed in this study. The study followed 'Global MPI Brief Methodological Note, 2017' in the choice of dimensions, indicators, thresholds and weights assigned to each indicator. For collection of primary data, a multi-stage sampling technique was adopted. Requisite data were then collected randomly through structured questionnaires which was designed based on the requirement for computation of MPI. The study estimated headcount ratio, intensity of poverty and MPI to be 0.284, 0.382 and 0.10 respectively which implies moderate level of poverty. From the results of the analysis, nutrition, years of schooling, child mortality and cooking fuel are the major problem in the study area. The findings of the study can be based for formulation of government poverty reduction policies and can be used effectively in improving the existing poverty reduction strategies in the state.

KEYWORDS: *Multidimensional Poverty Index, Decomposition, Alkire-Foster Method, Aizawl District, Mizoram, India.*

1. INTRODUCTION

Poverty is one of the most important issues for developing countries so long as many government policies are concerned with poverty alleviation. However, the measures of poverty, in India, are usually single dimension which missed out multiple aspects that contribute to poverty. Since, single dimension does not capture multiple deprivations experienced by poor; therefore, there is a possibility of focusing the wrong targets when policies are formulated for the welfare of the people. This is the impediment that led to failure of Government policies and programmes. To fill this measurement problem, MPI was introduced by Oxford Poverty and Human Development Initiative (OPHI) and United Nations Development Programm (UNDP) in 2010. Since, MPI measures those experiencing multiple deprivations; arguably it is a better measure of poverty than the single dimension such as income or consumption expenditure. Mizoram, being one of the states of India territory, poverty has not been measured in terms of multidimensional aspects. It is therefore, an opportunity as well as a challenge to study poverty in terms of multidimensional aspect.

Unlike other states in India, the state of Mizoram has more number of population in urban areas (except Goa) both in 2001 and 2011 Census of India. According to Census of India (2011), 52 per cent of the total population in Mizoram are in urban areas while 48 per cent lived in rural areas. However, despite the larger number of population in urban areas, official poverty ratio according to Planning Commission has been higher in rural areas than that of urban areas. For example, as per Tendulkar methodology, the percentage of Below Poverty Line (BPL) in rural Mizoram was 23 per cent in 2004-05 while it was 7.9 per cent in urban area during the same period. Likewise, in 2009-10 there were 31.1 per cent BPL population in rural areas against 11.5 per cent in urban areas. The last Tendulkar estimate (i.e 2011-12) demonstrated an alarming result for Mizoram since percentage of BPL population in rural areas increased from 31.1 per cent in 2009-10 to 35.4 per cent in 2011-12 while its urban counterpart decreased from 11.5 per

cent to 6.4 per cent during the same period. This led to certain issues that need to be addressed such as why there has been higher incidence of poverty in rural areas, what are the factors responsible for higher incidence of poverty in rural areas. This study is therefore, the need of the hour to have an in depth analysis to illustrate the true picture of multidimensional poverty in Mizoram.

2. REVIEW OF LITERATURE

Poverty is a multidimensional phenomenon caused by many factors of many dimension not merely economic dimensions including over-population, low agriculture production, under utilization of resources, low rate of economic growth, rising price, unemployment and political factors (Preeti, 2015). The main causes of poverty in India were illiteracy, a population growth rate by far exceeding the economic growth rate for the better part of the past 50 years. The benefits of growth not widely spread to various sections in society and reached only marginally to low income groups (Parvathamma, 2014). India is experiencing varying degrees of incidence of poverty across the country despite various poverty reduction policies have been introduced.

Owing to large variation on the extent of poverty in the country, the causes of poverty are also differ region to region. The major causes of poverty in a particular area may not be an issue in other areas. Yusuf (2014) examined on the use of rural financing as a strategy for poverty alleviation in Northern India through agriculture and found that rural financing through formal strategies has been ineffective in addressing the situation mainly because of low access to rural financing and concluded the need for enhancing rural financing. Beero (2014) had conducted a district level study of the linkages between irrigation and rural poverty in Odisha using simple and multiple regressions model. The results of the study demonstrated that irrigation influences in reducing rural poverty in districts of Odisha.

It is evidence from various existing literature that poverty is a complex subject having a range of meaning. The definition and measurement also varies depending upon how it is studied. During the first four decades of development studies (i.e.1950-90), poverty was primarily measured in monetary term either by household income or consumption expenditure. The limitation of monetary measure to capture the multiple deprivations that the poor experienced and the emergence of Sen's capability approach (Sen, 1985, 1999) led to growing interest to measure poverty in multidimensional aspects (Ghosh, 2016).

In 2010, Multidimensional Poverty Index (MPI) was developed by Oxford OPHI and UNDP to measure acute poverty which was incorporated in Human Development Report since then. Alkire and Foster, (2011) has provided detail methodology on counting approach to measure multidimensional poverty. This counting approach has offered many advantages in measuring poverty since it can be modified to fit regional specifications so as to capture the ground reality of poverty. The Alkire-foster counting approach has been used in estimating global Multidimensional Poverty Index till date by updating certain methodological issues. Alkire et.al (2017) have explained the main updates in the global MPI 2017 following the guidelines for updates presented in the 2014 Methodological Note (Alkire, Conconi and Seth 2014). The advantage of MPI is that it can be decomposed by population sub-groups, dimensions and indicators. It has flexible structure which is adaptable to other specifications. Regional or national MPIs can be constructed by adapting the method upon which the MPI is based to better address local realities, needs and the data available (Santos & Alkire, 2011). Taking advantage of the MPI method, Vijay et.al (2014) had made a multidimensional study by constructing an individual level multidimensional poverty measure instead of using the household as a unit of analysis. The study found that poverty rate was underestimated when household aggregates were used for analysis. According to the study, poverty rate calculated using individual-level data was almost double the poverty rate derived from household-level data. Dotter et.al (2014) also developed a relative multidimensional poverty measure to illustrate a relative multidimensional poverty across different Indian states. From the analysis, the study found the importance of the education dimension increased in explaining poverty, while the importance of the standard of living dimension decreased which is contrast to the result of the original global MPI.

On a whole, it can be stated that not many studies on multidimensional poverty based on the global MPI method have been found in India. There are multidimensional studies like; Mehta, et.al (2003), Thomas, et.al (2009), Mohanty (2011), Dotter, et.al (2014), Vijay, et.al (2014), Dehury, et.al (2015), etc. Even though these studies are based on multidimensional aspects, they differed from that of the global Multidimensional Poverty Index (MPI) in the choice of dimensions and indicators. In this study, attempt has been given to fill these gaps by examining poverty based on the method of global MPI in rural areas of Aizawl district in Mizoram, India. Decomposition of MPI by population sub-groups and dimensions is also given importance so as to reveal distribution and pattern of poverty in the study area

3. OBJECTIVES
1. To examine the incidence and intensity of poverty in Aizawl district
2. To decompose MPI by population sub-groups
3. To decompose MPI by dimensions and indicators.

4. METHODOLOGY
4.1 Data Source
The study employed both secondary and primary data. Secondary data was collected from Mizoram Below Poverty Line (BPL) baseline survey 2016, Village Profile and Developments Indicators 2017-18, Mizoram Economics Survey 2018-19, Mizoram Statistical Hand Book 2018. For the collection of primary data, a multi-stage sampling technique was adopted. At the first stage, Aizawl district was selected out of the eight districts in Mizoram. At the second stage, three rural development blocks were selected from five rural development blocks within the district. The third stage involves random selection of five villages from each block which make a total of 15 villages for conducting the survey. Five per cent of the total households in each village was covered which determined a sample size of 167 households. Requisite data were then collected randomly through structured questionnaires which was designed based on the requirement for computation of MPI.

4.2 Data Analysis
The Alkire-Foster Method of measuring multidimensional poverty was employed in this study. We followedg 'Global MPI Brief Methodological Note, 2017' in the choice of dimensions, indicators, thresholds and weights assigned to each indicator as presented in table 1 below.

Table 1: Dimensions, Indicators, Thresholds and Weights assigned to each Indicator

Dimensions	Indicators	Deprived if...	Weight
Education	Years of Schooling	No household member aged 10 years or older has completed five years of schooling.	1/6
	School Attendance	Any school-aged child is not attending school up to the age at which he/she would complete class 8	1/6
Health	Child Mortality	Any child has died in the family in the five-year period preceding the survey.	1/6
	Nutrition	Any adult under 70 years of age or any child for whom there is nutritional information is undernourished in terms of weight for age.	1/6
Living Standard	Electricity	The household has no electricity	1/18
	Improved Sanitation	The household's sanitation facility is not improved or it is improved but shared with other households.	1/18
	Improved Drinking Water	The household does not have access to improved drinking water or safe drinking water is at least a 30- minute walk from home, roundtrip.	1/18
	Flooring	The household has a dirt, sand, dung, or 'other' (unspecified) type of floor.	1/18
	Cooking Fuel	The household cooks with dung, wood or charcoal.	1/18
	Assets ownership	The household does not own more than one of these assets: radio, TV, telephone, bicycle, motorbike, or refrigerator, and does not own a car or truck.	1/18

Source: Global MPI Brief Methodological Note,2017

4.3 Computation of MPI
Two steps are involved in the computation of MPI:
Step 1: Household assessment based on their achievements to determine that household is below the deprivation cut-off in each indicator. Household below a particular deprivation cut-off are given a score of 1 and persons in that household are considered deprived in that indicator whereas household above the deprivation cut-off are given a score of 0 and are considered as non-poor.
 Step 2: The deprivation score of each household is weighted by the indicator's weight. If the sum of the weighted deprivations is 33 per cent or more of possible deprivations, all the persons in that household

are considered to be multidimensionally poor or MPI poor.

MPI is a product of two parameters viz. (1) the incidence of poverty denoted as H and (2) the intensity of poverty denoted as A.

Formally, the first component is called the multidimensional headcount ratio (H) and can be expressed as;

$$H = \frac{q}{n},$$

where, H is multidimensional headcount ratio, q is the number of people who are multidimensionally poor and n is the total population.

The second component measures the breadth of poverty and is calculated by following formula;

$$A = \frac{\sum_{i=1}^{n} Ci\,(k)}{q},$$

where, A is the intensity of poverty, Ci(k) is the censored deprivation score of individual i and q is the number of people who are multidimensionally poor.

The MPI is then calculated by multiplying the incidence of poverty (H) and the intensity of poverty (A) and can be expressed as; $M_0 = H \times A$.

4.4 Decomposition of MPI by Population Sub-Groups
The study also decomposed MPI by population sub-groups. Decomposition by population sub-group simply refers to calculation of MPI for a particular group after which the contribution of each group can be calculated by the following formula;

Contribution of Sub-Group to $M_0 = \frac{\frac{n_i}{n} MPI_i}{Overall\ MPI} X\ 100$

where, M_0 the overall MPI, n_i is the population of ith group and n is the total population. MPI_i is the MPI of ith Group.

4.5 Decomposition of MPI by Dimensions and Indicators
The MPI can also be decomposed by computing the censored headcount ratio in each indicator multiplied by their respective weight assigned. The censored headcount ratio of an indicator or a dimension denotes the proportion of the MPI poor who are both multidimensionally poor and simultaneously deprived in that indicator. After decomposing MPI by component indicators, the contribution of each indicator can be worked out by the following formula;

Contribution of indicator i to $M_0 = \frac{Wi\ CHi}{Overall\ MPI} X\ 100$

where, w_i is the weight of ith indicator and CHi is the censored headcount ratio of ith indicator

Contribution of each dimension is simply adding up the contribution of each indicator within the dimension.

5. AREA OF STUDY
Aizawl district is the most advanced district among eight districts in Mizoram based on socio-economic indicators like infant mortality rate, number of registered Micro Small and Medium Enterprise (MSME) units, literacy rate, per centage of BPL. Aizawl is the largest city as well as the capital of the state of Mizoram in India. There are five Rural Development Blocks (R.D Block) in Aizawl district viz; Tlangnuam, Darlawn, Phullen,, Aibawk and Thingsulthliah R.D. blocks. Out of the total five R.D blocks, three blocks are selected as area of study in the present study. As per Village Profile & Development Indicators (2017-18) there are 93806 households in Aizawl district with a population of 466328 persons which is 35 per cent of the total population in Mizoram. The District socio-economic profile is presented in table 2 below.

Table 2: Socio-Economic Profile of Aizawl District

Sl.No	Socio-Economic Profile of Aizawl District	
1	No. of Village	83
2	No. of R.D Block	5
3	No. of Population	466328
4	No. of Household	93806
5	Literacy Rate	97.89
6	Sex Ratio	1009
7	Child Sex Ratio (0-6 Age)	979
8	Density/sq.km.	112
9	Percentage of Schedule Tribe Population	93.31
10	Percentage of Schedule Caste Population	0.16

Source: Village Profile 7 Development Indicators (2017-18), Mizoram and Census of India

6. RESULT AND DISCUSSION

The overall state of multidimensional poverty in Aizawl district is shown in table 3 below.

Table 3: Status of Multidimensional Poverty in Aizawl District

Status of Multidimensional Poverty in Aizawl District, Mizoram		
Sl. No.	Particulars	Aizawl District
1	Headcount Ratio (H)	0.284
2	Intensity of Poverty (A)	0.382
3	MPI (Adjusted Headcount Ratio)	0.10

Source: Field Survey (2018-19).

Table-3 clearly shows that the headcount ratio, incidence and intensity of poverty in Aizawl district. The headcount ratio is 0.28 which implies that 28 per cent of the sample population in the study area are multidimensionally poor. As regard to intensity of poverty, the district witnessed 0.382 demonstrating that 38 per cent of deprivations in the total weighted indicators are experienced by the people in the study area. The value of MPI is 0.10. This means that the poor on an average experienced only 10 per cent of the total potential deprivations in society.

The reason behind the low values of MPI in Aizawl district is attributable to many factors like more numbers of health institutions, easy access to the healthcare system, better means of transportation compared with other districts in Mizoram. The number of school and teacher are also comparatively higher than other districts in Mizoram All these facilities are likely to have direct and indirect impact in improving the tree dimensions of MPI.

6.1 Block-wise Decomposition of MPI in Aizawl District

A better way to analyse and assess the distribution of poverty is to provide decomposition by population sub-groups. Decomposing of MPI by population sub-groups (i.e block-wise) helps us to show the prevalence of poverty within and between the blocks. Table 4 below shows decomposition of MPI by population sub-groups in Aizawl district.

Table 4: Block-wise Decomposition of MPI in Aizawl District

Name of Blocks	H	A	MPI	Per centage Contribution to Aizawl District MPI
Aibawk	0.205	0.357	0.073	29
Darlawn	0.301	0.387	0.116	32
Tlangnuam	0.34	0.4	0.136	39
Aizawl District	0.283	0.386	0.109	-

Source: Field Survey (2018-19)

Referring to column-2 of table 4, Tlangnuam block has the highest incidence of poverty followed by Darlawn block with headcount ratio of 0.34 and 0.30 respectively. Aibawk block has the lowest incidence of poverty in Aizawl district with 0.25 or 25 per cent. The overall incidence of poverty in Aizawl district as a whole is 0.283 which clearly shows that less than one-third of the people in Aizawl district are facing multiple deprivations making them MPI poor.

The intensity of poverty in column-3 also shows the degree of deprivations in ten set of indicators. The value of intensity varies between 0.357 – 0.40. Tlangnuam block occupies top position in terms of intensity of poverty. Since, villages in Tlanguam block are not far from Aizawl, the results look quite

confusing as these villages are expected to be more advanced than villages in remote areas. However, the result can be interpreted in that, villages near Aizawl city have more economic opportunities than other villages and hence more option of livelihoods for poor people. Knowing these opportunities, immigrants and some minorities choose to reside in these areas and hence the area is intermingled with different social and ethnic groups. Even when the survey was conducted, some households did not have ration card and even voter's identity card. Some school going children are also left out of school. With such situation, some families are deprived of even the minimum needs. The intensity of poverty in other two blocks are lower than Tlangnuam block, but marginally.

The values of MPI for the three blocks and for the district as a whole are shown in column 4 of table 4. From the results, the most deprived block identified based on 10 set of indicators is Tlangnuam block with MPI value of 0.136 followed by Darlawn block with MPI value of 0.116. Aibawk block has relatively lower value of MPI with 0.073 which shows excellent performance by not exceeding the MPI value estimated for the whole district (i.e. Aizawl district). It is worth to note that all the multidimensional poverty measures (i.e. MPI, H and A) are lowest in Aibawk block in Aizawl District.

From the result of the analysis, Aibawk block outperformed other blocks since the block holds the lowest incidence and intensity of poverty in the district.

The MPI value of Darlawn and Tlangnuam block witnesses marginal difference indicating that the level of multidimensional poverty is similar to a large extent. The better performance of Aibawk block may be related to the fact that all the villages in Aibawk block are medium size with good village council administration. No immigrants or minorities are to be seen in the block. Apart from that the block can also utilize all the facilities available in Aizawl city. The other blocks do not have the same advantages like Aibawk block. For example, Darlawn block has good village council administration but cannot utilize all the opportunities in Aizawl city because of long distance. Tlangnuam block can grab all opportunities in Aizawl city but is adversely affected by the intermingling nature of the block with different social and ethnic groups

Column 5 of table 4 and graph 1 shows block-wise percentage contribution to overall MPI in Aizawl district. Since the contribution of each block is determined by the value of headcount ratio and MPI, Aizawl district with different MPI values also witness huge variation in percentage contribution to overall district MPI. Tlangnuam block, with highest value of intensity of poverty supported by largest number of MPI poor, has the largest contribution by sharing 39 per cent to overall MPI. Darlawn block come to the next position by contributing 32 per cent to overall MPI of the district. Aibawk block contribute only 29 per cent to the district MPI.

Graph 1: **Blockwise Per centage Contribution to Overall MPI of Aizawl District**
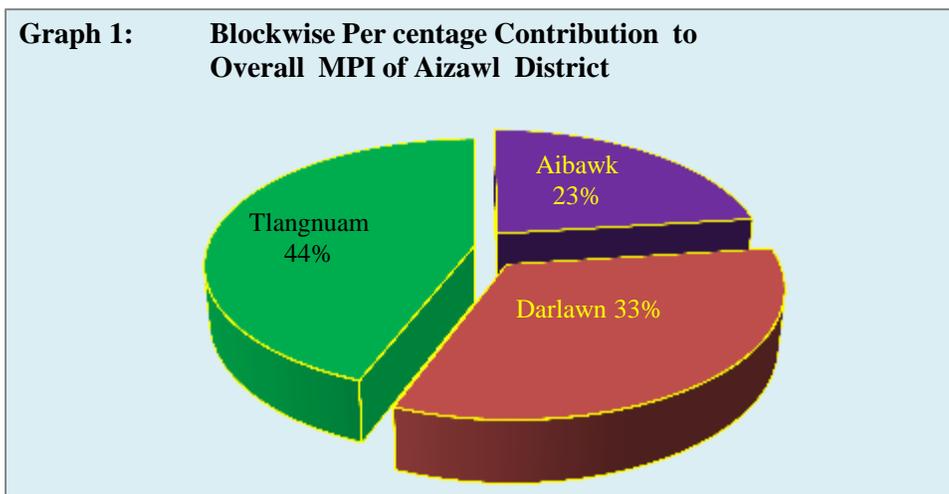
Source: Field Survey (2018-19).

6.2 Decomposition of MPI by Dimensions and Indicators in Aizawl District

Decompositions by dimensions and indicators is a useful tool to identify which deprivation are being experienced more and which deprivation are less experienced. It also enables us to understand the contribution of each dimension and indicators to overall MPI. Table-5 below shows the contribution made by each indicator and dimension to MPI of Aizawl district.

Column 5 of table 5 represents dimensions-wise contribution to the MPI of Aizawl district. In Aizawl district, the contribution of standard of living to MPI is highest with 41.5 per cent. This is a reflection of a slight deterioration of standard of living which is affected mostly by limited economic opportunities. The dimension of health contributes more than the weight assigned to it. It is the education dimension that contributes disproportionately less than its weight with just 21.5 per cent signifying low degree of deprivation in this dimension.

Table 5:Decomposition of MPI by Dimensions and Indicators in Aizawl District

Dimensions	Indicators	Censored Headcount Ratio	Per centage Contribution by Indicators	Per centage Contribution by Dimensions
Education	Years of Schooling	0.102	16.5	21.5
	School Attendance	0.034	5	
Health	Child Mortality	0.097	15	37
	Nutrition	0.146	22	
Standard of Living	Electricity	0.00	0	41.5
	Sanitation	0.185	9	
	Drinking Water	0.145	7.5	
	Flooring	0.157	8	
	Cooking fuel	0.237	12	
	Assets	0.086	5	

Source: Field Survey (2018-19)

In case of decomposition by indicators, the maximum contribution has been made by nutrition reflecting that malnourishment is the biggest challenge in rural areas. The second place is occupied by years of schooling with 16.5 per cent followed by child mortality with 15 per cent. Cooking fuel also come up in the front line with a contribution of 12 per cent, which is a large contribution considering the weight assigned to it. Electricity, by not contributing to poverty, reveals the vast coverage of electricity in Mizoram. The finding also matches the record of Power and Electricity Department, Government of Mizoram. The contributions of others indicators are moderate with small differences ranging between 5 per cent and 9 per cent

7. RECOMMENDATION

The most important recommendation that can be made from this study is measuring poverty in terms of multidimensional approach rather than income or consumption approach since single dimension does not capture multiple deprivations. In this study we employed the method of global Multidimensional Poverty Index, 2017 to estimate the extent of poverty and found 28.4 per cent of multidimensionally poor which is more than the estimate of Tendulkar for the state of Mizoram in 2011-12 despite differences in reference period. The finding is also more than the estimate of Mizoram BPL baseline survey which estimated 13.63 per cent BPL population in Aizawl district. This clearly revealed the fact that the extent of poverty largely depend upon the methodology adopted to measure poverty. Thus, to capture various deprivations that the poor suffer, it is highly recommended to adopt multidimensional measure of poverty so that effective policies and programme may be designed to reduce poverty.

8. CONCLUSION

In this study the multidimensional aspects of poverty is measured using Global MPI Brief Methodological Note, 2017, which follows the Alkire-Foster Methodology. The study found 28.4 per cent of Headcount ratio, while the intensity of poverty was estimated to be 38.2 per cent. The overall MPI was estimated to be 0.10 implying that only 10 per cent of the estimated headcount ratio, intensity of poverty and MPI to be 0.284, 0.382 and 0.10 respectively which implies that the poor on an average experienced only 10 per cent of the total potential deprivations in society. By decomposing the MPI into population sub-groups and dimension, the distribution and pattern of poverty was also highlighted. Dimensional breakdown showed that nutrition, years of schooling, child mortality and cooking fuel are the major problem in the study area. From the result of the analysis, Aibawk block is beyond the reach of other blocks since the block has the lowest headcount ratio, intensity of poverty and MPI among

the three blocks. The MPI value of Darlawn and Tlangnuam block witnesses marginal difference indicating that the level of multidimensional poverty is similar to a large extent. The study concluded that the incidence and intensity of poverty in the study area was more or less moderate and is in consistent with the existing records of the Government of Mizoram.

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