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MULTIDIMENSIONAL OVERLAPPING DEPRIVATION ANALYSIS OF CHILDREN IN DISTRICT SARGODHA (PAKISTAN)

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ABSTRACT

This study provides estimates of multidimensional child deprivation in Tehsil Kot Momin, District Sargodha. National Multidimensional Overlapping Deprivation Analysis (N-MODA) Methodology introduced by United Nations International Children's Emergency Fund (UNICEF) is adopted in this study. Children are divided into two age groups, below 5 years of age and 5 to 17 years of age for analysis of seven multi-dimensions and six multi-dimensions of deprivations in both groups respectively. A survey is conducted in Kot Momin from sample of 387 children selected through cluster sampling. Selection of dimensions and indicators for survey questionnaire are also based on UNICEF and Children Rights Conference (CRC) and step by step guideline of MODA methodology. In children of first age group 92.78% are deprived in at least one basic dimension. At the cutoff point (deprivation benchmark) of this age group, 47.42% are deprived in four or more dimensions, while one out of ten children (10.4%) is deprived in six dimensions. In children of second age group 76.4% are deprived in at least one basic dimension and at cut off point (deprived in three or more dimensions) around one in four (25.8%) children is deprived. Overall results show that the first age group had more vulnerable condition.

Contribution/ Originality: This is a unique study on poverty which makes an overlapping derivation analysis. The dimensions and indicators of poverty have been calculated using most sophisticated tools adopted by UNICEF and Children Rights Conference (CRC) by applying MODA methodology. This is one of the very few studies which have tested most advanced techniques in the least developed areas of Pakistan. The findings will help decision makers in tackling problem of poverty and deprivation in a single go.

1. INTRODUCTION

Children's wellbeing has the direct impact on the future of a country. "Countries cannot achieve sustained growth and shared prosperity without investing effectively in their people, above all their children. Inclusive economic growth and the development of human capacities depend upon each other" (Unicef, 2012). Children are building blocks of society and they can do much better for the country if they are not deprived and poor. A harmful

effect of poverty usually leaves lasting effects on the suffered children (Esping-Andersen and Myles, 2009); (Corak, 2006). The Convention on the Rights of the Child (Unicef, 1989) is accepted by almost all countries. According to this convention, children have the right to survival (sufficient food, clean water, health care, shelter, etc.), development (the right of education and information), protection (the right to be protected from all forms of abuse and exploitation), and participation (the right of birth registration). Contrary to this fact Pakistan's situation is very alarming. As literature shows that the child poverty has a lasting or permanent influence on future of children and society both (Minujin *et al.*, 2006). To improve children's living standards, Pakistan needs to adopt some improved policies regarding its upcoming generation.

Inequality in child rights especially related to their major categories survival, development and participation is considered as robust source of child poverty. Due to inequality young age children are deprived of their basic necessities in life. As poverty is a curse which may move society especially deprived children towards evils of all kinds. From more than a last decade many studies use Multidimensional poverty approach for assessment of poverty for children and adults both.

Now new questions arise, why child poverty is different from poor households? Why do we focus separately on child poverty? As we know basic needs of adults and children are different. Like children are less likely to change atmosphere as compared to their elders. In our society, children are mostly not decision makers especially in financial matters. The decisions of parents or guardians may affect children positively or negatively according to their perception. That is why the children themselves are not responsible for their poverty.

1.1. Research Objective

The main objective of this study is to explore and analyze the multidimensional overlapping deprivation among children of district Sargodha (Pakistan).

2. LITERATURE REVIEW

Monetary approach of child poverty is always an area of more importance[1]. In monetary approach while measuring income level and the consumption level, money is always taken as a yardstick to measure poverty (Boltvinik, 1998). Revenue or income is considered as a source for taking capabilities (Maltzahn and Durrheim, 2008). In spite of all importance of money, income cannot be taken as a whole measure of poverty level. (Bourguignon and Chakravarty, 2002). Because monetary approach controls only raw material and fails to capture long term deprived resources in society (Dewilde, 2003). Monetary approach is unidimensional (it discusses only one dimension income/consumption) that's why it is highly argued in many previous studies and preferred non-monetary wellbeing. Unidimensional method to measure poverty only provides the policies which will decrease poverty for short period of time (Jamal, 2009). It is also analyzed in literature that monetary factors of poverty are highly connected with non-monetary dimensions (Thorbecke, 2008) that is why we cannot consider only monetary poverty.

Capability approach related to measuring poverty also explains that monetary/income poverty is not reliable indicator of scarcities in all other dimensions of human wellbeing such as health, education and violence (Sen, 1999).

The Scholars of this field also recognize the multidimensional nature of poverty. They analyze that those households are considered poor if they had inadequate financial resources to access clothing, food, housing and other basic necessities at the level of subsistence (Rowntree, 1901). It is stated that almost all the poverty measures with monetary poverty are multidimensional.

Multidimensional poverty pulled research towards both monetary and non-monetary deprivations. Deprivation study focuses on the actual access of the household and the existing goods and services (Ravallion, 2012). The multidimensional approach measures by Alkire and Foster (2007) is used for the creation of the Multidimensional

1 World Bank , Boltvinik (1998).

Poverty Index by Alkire and Santos (2010). Their significant work summarizes an extensive range of information in one measure, which can be used for comparison.

This method also analyzes the intensity of deprivation in the measurement, along with the number of deprived children. This method has some major weaknesses. It is more complicated as compared to a unidimensional method. The results using this method are not easily interpreted (Ravallion, 2011; Roche, 2013).

Over the last decade, increased attention has been received by the measurement of child poverty particularly after the emergence of the Bristol approach. It introduced a methodology for the measurement of multidimensional child poverty. The Bristol approach presented a way to bring the measurement of child poverty with child rights together (Gordon, 2003). Alkire and Roche (2011) argued that child poverty must not be evaluated only according to the occurrence of poverty. It must also be assessed by the intensity of simultaneous deprivation which affects the lives of poor children negatively.

MODA (Multiple Overlapping Deprivation Analysis) is developed by UNICEF. It is an approach which provides a comprehensive method to the multidimensional behaviors of child poverty and deprivation (De Neubourg *et al.*, 2012). It is constructed on past studies related to multidimensional child poverty measurement with the contributions of the Bristol approach. [Gordon (2003) and the work of Alkire and Foster (2007) and Alkire and Roche (2013) for the OPHI[2]]. An extensive set of tools extending from headcount rates of deprivation by dimension and indicator to overlap analysis of deprivation to multi-faced deprivation proportions are incorporated. This methodology focuses on the children as for the analysis rather than household. The approach identifies that children's needs vary depending on their age. It focuses on children according to their appropriate age-group and does not analyze the whole child population together.

As from results of N-MODA[3] study in Mali[4] it is clear that not every monetary poor (belong to low income family) child is deprived of other non-monetary (other than income) basic dimensions (nutrition, water, health, shelter, education, information etc.). It means both concepts are different. As well as "Necessities of adults and children differ because they differ in nutrition, health and education" (White *et al.*, 2007). So to identify all aspects of child poverty we have to focus those dimensions which are based on children.

3. DATA AND METHODOLOGY

3.1. Data Source and Sampling

Primary data is used for this research study. Data is taken from five union councils of Tehsil Kot Momin of Sargodha district using cluster sampling method. Children of two age groups comprising first age group of children 0-4 years (infancy and early childhood), and second age group 5-17 years (primary childhood and adolescence).
By using formula of Slovin (1960) at the confidence interval of 95% we find the sample size.

$$n = \frac{N}{1+Ne^2} = \frac{3895}{1+(3895)(0.05^2)} = 364$$

Where N is population size, e is error and n is sample size. The sample size is above 5% of population which is 3895. The estimated sample size is 364 children.

Sample size is most suitable because it must be more than 5% of population. The study selected 110 households' questionnaires. For survey 387 samples are taken from household data which is above the calculated. For analysis we take data of 208 questionnaires from rural areas and 179 from urban .This sample size fulfill sensitivity condition of MODA methodology that sample size must be above thirty for sub groups.

2" Oxford Poverty and Human Development Initiative"

3 "National -Multiple overlapping derivation analysis"

4 De Milliano and Handa (2014).

3.2. Methodology

1. *Selection of dimensions and indicators* is based on International standards. International conference on child rights named as The Convention on the Rights of the Child (Unicef, 1989) summarizes standards for selection of dimensions for children's basic rights and some bench marks of measuring child poverty particularly for the study are attached as appendix 1 and 2 respectively.
2. *Reliability and Scalability of Questionnaire* is based on Cronbach's Alpha test. It is applied to test the scalability of the questionnaire used in study. It tells the coefficient of dependability (or consistency). The value of Cronbach's alpha reliability scale is above 0.7. It is normally accepted that the scale value of Cronbach's alpha is at least 0.7.
3. *Correlation tests* have been applied to test whether the selected aggregated indicators indicate its selected age group. Correlation test is also applied to avoid the problem of perfect substitutes or perfect complements. Its value must not equal to 1 otherwise it may double counting of same dimension or in case of negative sign with 1 ,the indicator is not referring to the underlying dimension. The value of correlation must be between 1 and -1.This study adopts the equal weighting system[5] where each of the indicators has equal importance.
4. *Identification of Multidimensional Deprivation methodology* is simple and easily understandable. It measures the deprivation level of each child in each dimension then it derives the results about the proportion of deprived children in particular dimension. By which a policy maker can easily identify which dimension is less available to the children of particular area as in this study Kot Momin is selected.
5. *Deprivation Overlapping Analysis* is generally taken as a statistical method in which relation of two variables is described .In current study to increase Venn diagram is used as visual display for understanding of simultaneously occurring events. It presents the proportion of children who are deprived in more than one dimension. Venn diagram is constructed which describes the each dimension separately.
6. *Multidimensional deprivation cut-off point (*k) is taken as a limit. A child i[th] is deprived if his/ her number of selected deprived dimensions D_i is equal to or greater then cut off point K, otherwise non deprived.
7. *Headcount and Adjusted Headcount Ratio* is applied to recognize the proportion of multidimensional deprived children in N MODA[6] or for a definite sub-sample group. We calculate a headcount ratio with the formula of $H = \frac{q}{n}$ and *Alkire and Foster Headcount Measure* through $A = \frac{\sum c_i(k)}{q_k d}$.

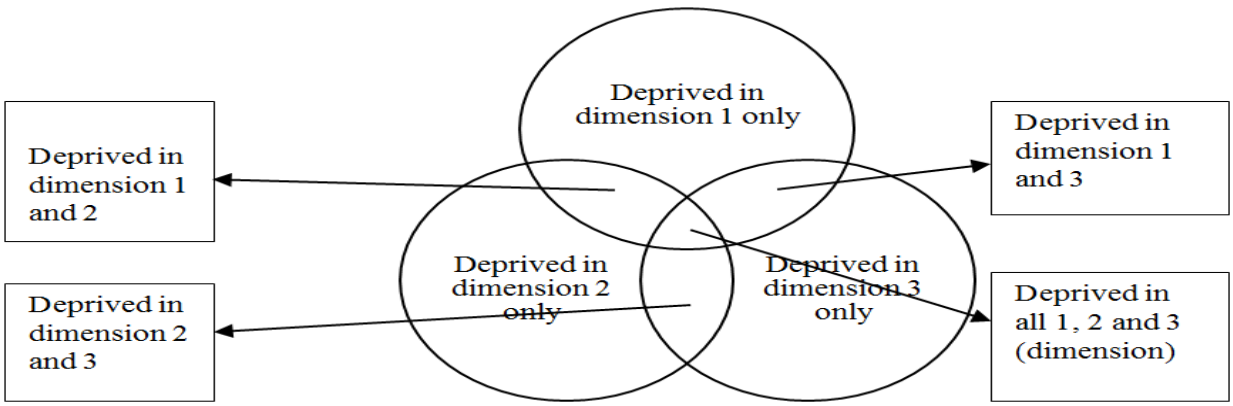

Figure-1. Representation of Overlapping by Venn diagram

5 Unicef (2012). *Step-by-step Guidelines to the Multiple Overlapping Deprivation Analysis*, or Decanq and Lugo (2009). *Setting Weights in Multidimensional Indices of Well-being and Deprivation* for more information on weighting.

6 Multidimensional overlapping at national level

4. FINDINGS

This study is divided into two parts based on two age groups separately. First part discussed the children between (0-4 years) and second part discussed the results of second age group (5-17years).

4.1. Deprivation Analysis of Children of First Age Group (0-4 years)

This section describes the children who are deprived in a single dimension or overall deprived up to cut off point three. (If deprived in four dimensions are called Multidimensional deprived).

Correlation test is applied to find whether the indicators within the each given dimension. No value in the overall result does not exceed from the 50% within the indicators of child deprivation. This shows that there is overlapping present between indicators but not very high or at substitution level

4.1.1. Single Deprivation Analysis by Dimension

Single deprivation analysis is applied for accumulation of deprived children in each dimension. Headcount analysis gives the percentage of deprived children at aggregate level in each dimension.

Table-1. Single Deprivation Analysis by Dimension

Dimensions	Headcount (%) of Deprived	Non-Deprived (%)
Information	15.46	85.54
Housing	67.01	32.99
Water	36.08	63.92
Sanitation	56.70	43.30
Domestic Violence	20.62	79.38
Child Protection	61.86	38.14
Health	56.70	43.30
Nutrition	43.30	56.70

Results show that more than half of children are deprived of basic health facilities. The high percentage of deprivation in hospitals, housing and sanitations shows that construction facilities are less in this locality. The fraction of deprived children in information is least 15.46 %. This shows that most of the children in the area have availability of the information devices. Same condition of water is also comparatively in better condition. Graphical representation of deprived children shows sanitation, child protection and housing are the three major problems in the particular area.

4.1.2. Multiple Deprivation of First Age Group

Following Table shows percentage of children who are deprived in different dimensions according to various cutoffs.

Table-2. Deprivation Level at Cut off Point

Cutoff Point	Deprived (%)	Non-Deprived (%)
1-8 deprivations	95.97	1.03
2-8 deprivations	92.84	2.06
3-8 deprivations	86.6	11.36
4-8 deprivations	63.92	36.08
5-8 deprivations	51.55	48.4
6-8 deprivations	25.77	74.2
7-8 deprivations	13.40	86.60
8-8 deprivations	4.12	95.88

For overall results for finding multidimensional poverty results a cutoff point four as a benchmark is selected. This cut point is selected as suggested in technical note on MODA by Plavgo and Wei (2012) and also used in most of studies of N-MODA (De Milliano and Handa, 2014; Chzhen and Ferrone, 2015). At cut off point one 92.7% children are deprived in seven dimensions whereas only 1.03% children are deprived in all seven dimensions.

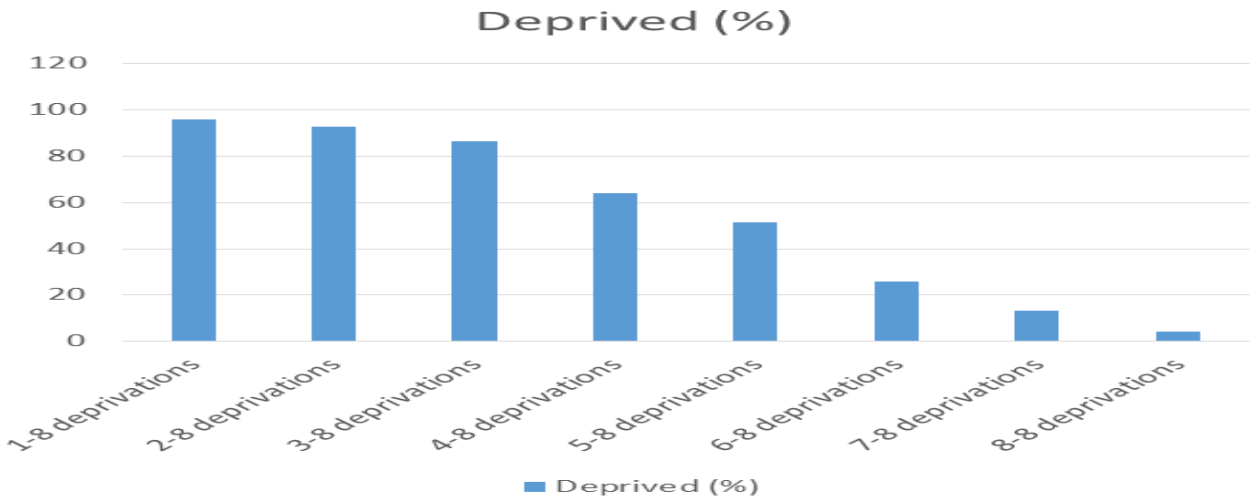

Figure-2. Multiple Deprivation of First Age Group

Table-3. Multiple Deprivation Analysis

Cutoff Point	Headcount ratio	Average no of deprivations among the deprived	Average intensity among the deprived (A), %	Adjusted headcount ratio (*M0*) %
1-8 deprivations	95.97	3.65	52.2	50.0
2-8 deprivations	86.60	3.70	54.9	47.5
3-8 deprivations	74.23	4.20	60.2	44.6
4-8 deprivations	47.4	4.76	68.9	24.8
5-8 deprivations	36.08	5.39	77.2	37.3
6-8 deprivations	25.77	6.09	87.1	22.4
7-8 deprivations	13.40	7.02	92.9	12.44
8-8 deprivations	4.12	8.00	100	4.12

At the cutoff point three average number of deprivation is 4.2, at this point 71.17% children are deprived. For children cut off point four is selected to take as benchmark of deprived and not deprived.[7] At the cutoff point four average number of deprivation is 4.7, where 47.42% children are multidimensional deprived. The results also calculate intensity of average deprivation to avoid the problem of censoring, 68.7% shows high intensity of deprivation at cutoff point. The headcount ratio is highest at the cutoff point of one is 92.7% and lowest at the cutoff point seven is 10.3%. The adjusted head count at cutoff point for the value is 34.1%.The adjusted headcount ratio is highest at the cutoff point of one is 50.0% and lowest at the cutoff point seven is 9.8%.Overall adjusted head count results show that 27.8% children below age of five are deprived in five dimensions. At cutoff six the results shows the ratios of deprived children decreases up to 9.8%.

7"Step-by-Step Guidelines to the Multiple Overlapping Deprivation Analysis (MODA)",

7" Child Poverty and Deprivation in Bosnia and Herzegovina: National Multiple Overlapping Deprivation Analysis (N-MODA)"

4.1.3. Overlapping

Overlapping method is to represent which deprivation is most deprived .One dimension deprivation also effects on other dimensions.

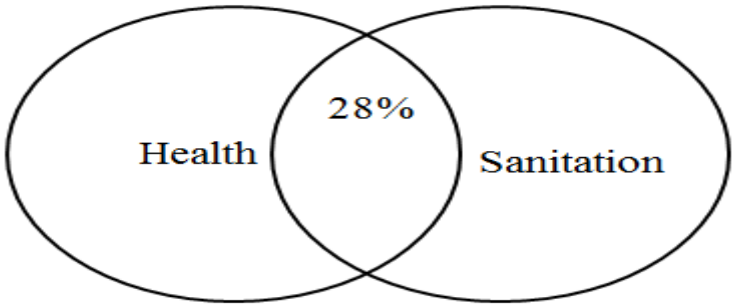

Figure-3. Overlapping

Health overlaps with sanitation, the dimension with the third highest headcount. Around (28%) children are deprived in these dimensions consecutively, while only 6.9% are not deprived in any of these dimensions. The headcount value 56% shows one of highest deprivation in health in children. The overlapping results also suggested that high rate of health issues may be causes sanitation problems also. More health problems in rural is not surprising because of lack of improved water and sanitation (Jayasuriya and Wodon, 2003). Access of improved water, availability of sanitation, and breast-feeding shows interactive effects on infant child health.

4.2. Deprivation Analysis of Children of Second Age Group (5-17 years)

In this study, the rationale for using the correlation test is for selection of indicators or dimensions used in the analysis for identification of deprived children. Correlation test is applied to avoid the problem of complement or substitute indicators. No value of coefficient of indicator is found as perfect complement.[8]In the analysis, selection of indicators within the dimension depends on correlation results that each indicator complement other in defining the (non-)recognition of children rights.

4.2.1. Single Deprivation Analysis for Each Dimension

Single deprivation revealed the breath of the each child among deprivations. Specially, for accounting of deprivations this measure discover in which dimension most of children are deprived. Headcount ratio tells the aggregate level of children deprived in each dimension.

Table-4. Single Deprivation Analysis for Each Dimension

Dimensions	Headcount of Deprived (%)	Non-Deprived (%)
Information	5.62	94.38
Housing	53.93	46.07
Water	15.73	84.27
Sanitation	54.49	45.51
Child protection	38.76	61.24
Education	24.16	75.84

In Sanitation 54.49% of children are deprived and which is highest among all dimensions. Diarrhea alone kills more young children annually then AIDS, T.B, malaria. The main cause of malaria is nutrition, sanitation and water (Bartram and Cairncross, 2010). In education 24.16% children are deprived. Among the social measurements,

8i.e. correlation between all indicators is less than 1.

education is reflected as critical variable recognizing the poor from the non-poor (Arif and Farooq, 2012). The fraction of water is 15.73 %. This shows that most of the children have availability of the safe water. Information is the least deprived dimension where just 5.15% of children are deprived. The Pakistan Demographic and Health **S**urvey (2012-2013) shows rural population in Pakistan possess 83% cell phones. However results may be different when we consider internet connection as information indicator.

4.2.2. Multiple Deprivations of Second Age Group (5-17)

For children (5-17 years) multidimensional poverty a cutoff point three as a benchmark is selected. This cut point is selected as suggested in technical note on MODA and studies of N- MODA.

Table-5. Deprivation Level at Cut off Point

Cutoff Point	Deprived (%)	Non-Deprived (%)
1-6 deprivations	76.40	23.60
2-6 deprivations	48.31	51.69
3-6 deprivations	25.84	74.10
4-6 deprivations	13.48	86.50
5-6 deprivations	4.49	95.51
6-6 deprivations	1.12	98.88

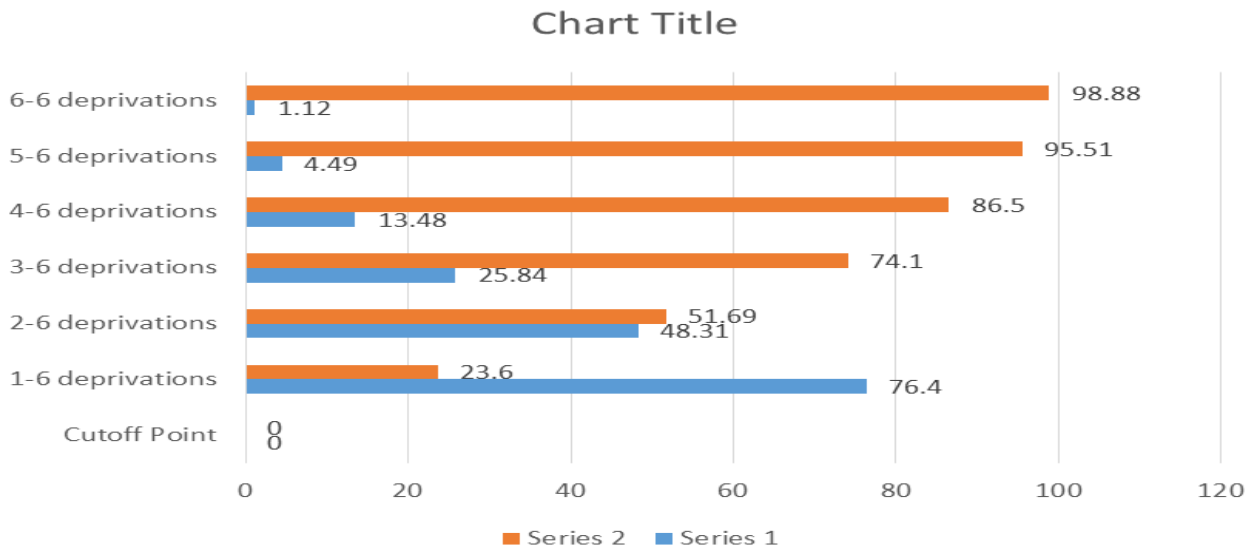

Figure-4. Multiple deprivations of Second Age Group (5-17)

Cut off point is similar to threshold in which numbers of deprived dimensions are selected above or equal to which the children are considered deprived. Results show that deprivation level is indicated at each cut off point. Only 23.6 percent people are non-deprived at cut off point one .It means 76.4 percent children in Kot Momin are deprived in at least one dimension.

4.2.3. Measuring Multiple Deprivation Analysis Using A-F Method

Cut off point three is selected to identify the multidimensional deprived children. Average intensity method identifies the breath of deprived dimensions by using formula suggested by Alkire and Foster (2011). Adjusted headcount is applied in this analysis because it is sensitive to breath of poverty. We can also say that this method avoids the problem of *dimensional monotonicity*. This Adjusted headcount method adjusts those children who are previously not deprived but now multidimensional deprived.

Table-6. Measuring Multiple Deprivation Analysis using A-F Method (2011)

Deprivation level Cutoff Point	Headcount Ratio (%)	Average deprivations among deprived	Average intensity among deprived (A), %	Adjusted headcount (*M0*) %
1-6 deprivations	76.40	1.69	37.7	28.2
2-6 deprivations	48.31	1.41	48.7	23.5
3-6 deprivations	25.84	3.73	62.3	16.10
4-6 deprivations	13.48	4.41	73.6	9.9
5-6 deprivations	4.49	5.26	87.5	3.9
6-6 deprivations	1.12	6	100	1.12

To measure the depth of child poverty firstly we measure the deprived children in each dimension Afterward we look towards multidimensional poverty to drive attention towards dimension in which children are deprived simultaneously. When there is single deprivation among the children which are deprived. At the cutoff point three 25.85% children are deprived in 3.73 dimensions. It also calculates intensity of average deprivation to avoid the problem of deprivations censoring.

The head count method at cutoff point shows that 31.5 % children out of total sample population are deprived. The headcount ratio is highest of children in Kot Momin at the cutoff point one which is 76.40% and lowest at the cutoff point seven is 1.12%.

The adjusted head count at cutoff point is 16.40 %. The adjusted headcount ratio is highest at the cutoff point of one is 28.2 % and lowest at the cutoff point seven is 1.12%.

Overall results show that, most of children above age of five are deprived in three dimensions and their percentage of deprivation is 24.84 %.

4.2.3. Overlapping in Second Age Group (5-17)

Overlapping shows the percentage of children who are deprived in housing or sanitation or in both housing and sanitation simultaneously.

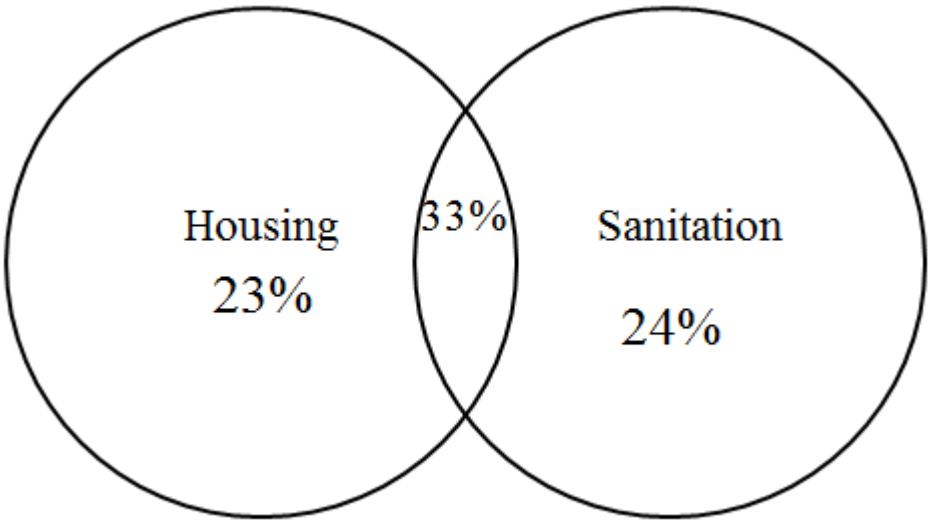

Figure-5. Overlapping in Second Age Group (5-17)

It drives the attention towards the severity of the dimensions. In case of dimensions, coefficient of correlation between dimensions is below 50% and is at their substantial level. Highest positive correlation is present between housing and sanitation, the value of correlation coefficient is 0.3324. Results are similar with the results of (De Neubourg *et al.*, 2012).

5. OVERALL COMPARISON OF DEPRIVATION LEVEL BETWEEN TWO AGE GROUPS

When we do comparison of level of deprivations between two age groups by taking the dimensions which are common between them .The results depict that the children below age of 5 years are more likely to deprive in common dimensions. More deprived ratio in housing and sanitation may shows the results that children who are below the age of five years are dependent on their parents. Parents mostly invest 50 to 60% of their income level on children.

But when numbers of dependents increase their spending ratio on children is decreased because it is divided between the all members of family. But in many cases elder children may increase their wellbeing by working in their lower age. According to report of De La Cruz *et al.* (1996) child labor have big positive contribution in increasing their family income. These results also may contribute in debate of child labor (Becker, 1987). According to him the cost of children may decrease by increasing their employment opportunities.

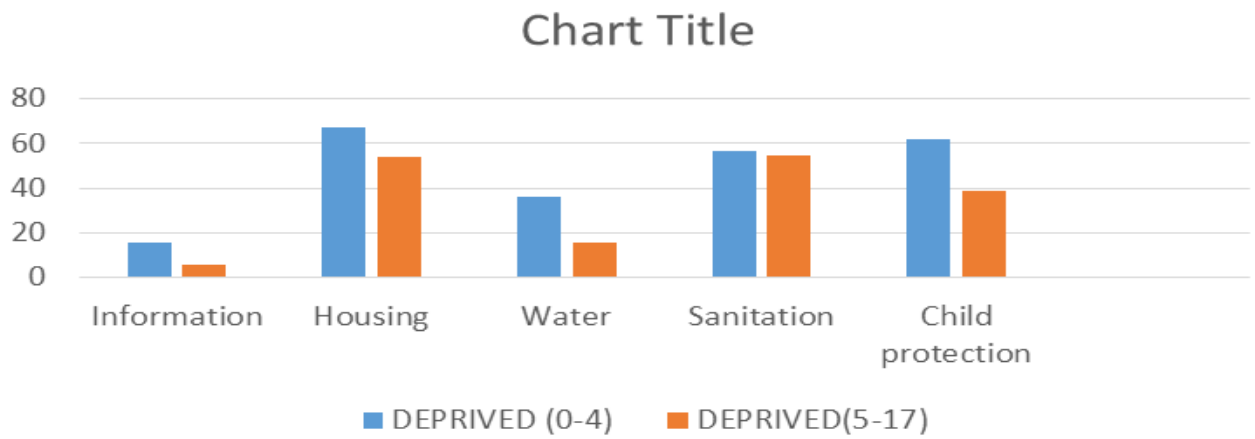

Figure-6. Overall comparison of deprivation level between two Age Groups

When we compare the overall results then it is clearly seen that if we take cut off three for both age groups then children below age of 5 are more deprived as compared to their elder group (5-17 years old children). At cutoff point three children below age of five are deprived whereas 25.84% for the elder children.

Result drives attention towards the issue that children below five are more deprived than elders. Some dimension deprivation effect simultaneously to other dimensions. Sanitation have significant effect on health .They inter correlation with each other .They have more overlapping as compared to age of child, mother age and size of family overlapping with health.

5.1. Analysis of Monetary Poverty and Non-Monetary Poverty (Deprived) for Both Age Groups Simultaneously:

Overlapping between poor and deprived is large, not at substantial level. Through which we drive results that for eliminating poverty we should focus on monetary and non-poverty separately. Income poverty have strong impact on deprivation Preece (2006) but cannot reduce until unless deprivations decreased Bourguignon and Chakravarty (2002). Overlapping analysis describe simultaneous effect of deprivations and poverty .Which is helpful in joint policy implicates. It is considered that the children who are poor are also deprived. [Brooks-Gunn and Duncan (1997)] but this analysis shows that poor children are deprived not in each case de Milliano and Plavgo (2014). Results of simultaneously deprived and poor children are represented in Venn diagram (**Figure: 7**)

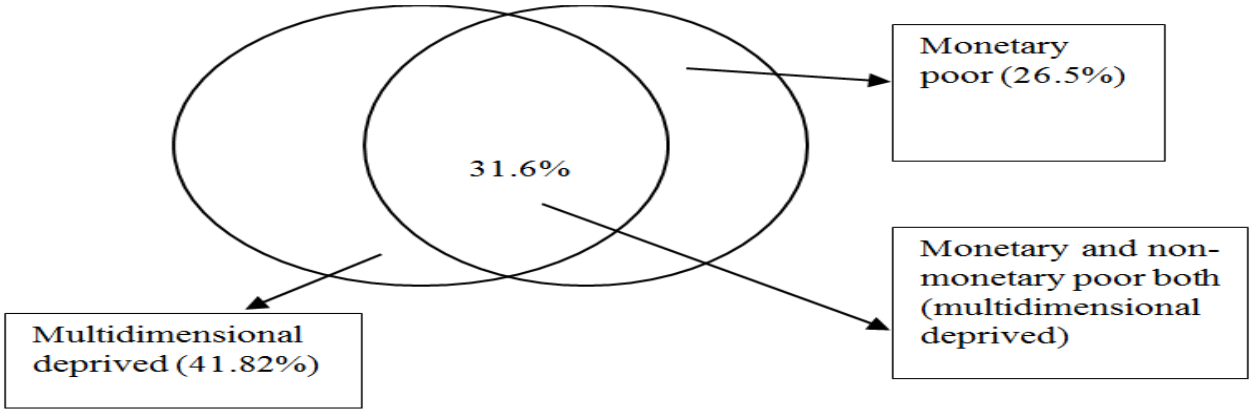

Figure-7. Analysis of Monetary Poverty and Non-Monetary Poverty (Deprived) for Both Age Groups by Venn diagram

6. DISCUSSION AND POLICY IMPLICATION

Utilizing children information collected through survey from Kot Momin, we find that income poverty has impact on deprivation. Many poor children are also deprived. We can say that by decreasing monetary poverty we can decrease deprivation level to some extent. But results show that both of the variables are not overlapping at substantial level. The study suggests that children deprivation level cannot be eliminated completely by only targeting monetary approach so there is need to focus on eradicating non-monetary deprivations also.

Overall, both monetary and non-monetary policies are important according to needs of children. In reference to suggestions by opportunities for children to work especially in developing countries must be available with some relaxations. It can increase their wages. By which they can fulfill economic needs. In other case by decreasing their hours of work because of this relaxation they may get time for education.

With reference to our findings regarding the relationship among the deprived children and non-monetary dimensions of child poverty there are some suggestions for the advancement in this research. By increasing the sample size this study will give better result. Apart from physical abuses there exists certain other aspects of which affects children like parents attention, environment of home that could be included further to cover all the aspects regarding the measurement of child deprivation. This study can be extended by incorporating new dimensions like cultural, leisure time activities or new indicators like in information we can add internet as new indicator. In this way study will give better results for policies regarding child poverty.

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Contributors/Acknowledgement: Both authors contributed equally to the conception and design of the study.

REFERENCES

Alkire, S. and J. Foster, 2007. Counting and multidimensional poverty. Counting and multidimensional poverty measures. OPHI Working Paper Series: 7.

Alkire, S. and J. Foster, 2011. Counting and multidimensional poverty measurement. Journal of Public Economics, 95(7-8): 476-487. *View at Google Scholar | View at Publisher*

Alkire, S. and J.M. Roche, 2011. Beyond headcount: Measures that reflect the breadth and components of child poverty. Available from https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/11800/Beyond_headcount.pdf?sequence=1.

Alkire, S. and J.M. Roche, 2013. How successful are countries in reducing multidimensional poverty? Insights from the Inter-Temporal Analyses of Twenty-Two Countries. OPHI Working Paper.

Alkire, S. and M.E. Santos, 2010. Acute multidimensional poverty: A new index for developing countries. United Nations Development Programme Human Development Report Office Background Paper, (2010/11).

Arif, G.M. and S. Farooq, 2012. Dynamics of rural poverty in Pakistan: Evidence from three waves of the panel survey. Islamabad: Pakistan Institute of Development Economics.

Bartram, J. and S. Cairncross, 2010. Hygiene, sanitation, and water: Forgotten foundations of health. PLoS Med, 7(11): e1000367. *View at Google Scholar | View at Publisher*

Becker, S., 1987. Social worker's attitudes to poverty and the poor (Doctoral Dissertation, University of Nottingham). Retrieved from http://eprints.nottingham.ac.uk/11223/1/378269.pdf.

Boltvinik, J., 1998. Poverty measurement methods: An overview. New York: SEPED Series on Poverty Reduction, UNDP.

Bourguignon, F. and S.R. Chakravarty, 2002. Multi-dimensional poverty orderings. Delta.

Brooks-Gunn, J. and G.J. Duncan, 1997. The effects of poverty on children. The future of children. 55-71. Retrieved from https://www.princeton.edu/futureofchildren/publications/docs/07_02_03.pdf.

Chzhen, Y. and L. Ferrone, 2015. Child poverty and deprivation in Bosnia and Herzegovina: National Multiple Overlapping Deprivation Analysis (N-MODA) (No. inwopa775).

Corak, M., 2006. Do poor children become poor adults? Lessons from a cross-country comparison of generational earnings mobility. In dynamics of inequality and poverty (143-188). Emerald Group Publishing Limited.

De La Cruz, H.G.B., G. Von Potobsky and L. Swepston, 1996. The international labor organization: The international standards system and basic human rights. Westview Pr.

De Milliano, M. and S. Handa, 2014. Child poverty and deprivation in Mali–the first national estimates. UNICEF Office of Research Working Paper, WP-2014, 20.

de Milliano, M. and I. Plavgo, 2014. CC-MODA-Cross country multiple overlapping deprivation analysis: Analysing child poverty and deprivation in Sub-Saharan Africa (No. inwopa767).

De Neubourg, C., J. Bradshaw, Y. Chzhen, G. Main, B. Martorano and L. Menchini, 2012. Child deprivation, multidimensional poverty and monetary poverty in Europe. Florence: UNICEF.

Decanq, K. and M.A. Lugo, 2009. Setting weights in multidimensional Indices of well-being and deprivation. Document de travail de l'OPHI, (18).

Dewilde, C., 2003. A life-course perspective on social exclusion and poverty. British Journal of Sociology, 54(1): 109-128. *View at Google Scholar*

Esping-Andersen, G. and J. Myles, 2009. Economic inequality and the welfare state.

Gordon, D., 2003. Child poverty in the developing world. Policy Press.

Jamal, H., 2009. Estimation of multidimensional poverty in Pakistan. Social Policy and Development Centre. Retrieved from http://www.spdc.org.pk/Data/Publication/PDF/RR-79.pdf.

Jayasuriya, R. and Q. Wodon, 2003. Measuring and explaining country efficiency in improving health and education indicators.

Maltzahn, R.V. and K. Durrheim, 2008. Is poverty multidimensional? A comparison of income and asset based measures in five Southern African countries. Social Indicators Research, 86(1): 149-162. *View at Google Scholar | View at Publisher*

Minujin, A., E. Delamonica, A. Davidziuk and E.D. Gonzalez, 2006. The definition of child poverty: A discussion of concepts and measurements. Environment and Urbanization, 18(2): 481-500. *View at Google Scholar | View at Publisher*

Plavgo, I. and Z. Wei, 2012. Cross-country MODA study: Multiple overlapping deprivation analysis (MODA). Technical Note. Office of Research Working Paper, 5.

Preece, D.J., 2006. Widening participation for social justice: Poverty and access to education. In Widening Access to Education as Social Justice (113-126). Springer Netherlands.

Ravallion, M., 2011. On multidimensional indices of poverty. Journal of Economic Inequality, 9(2): 235-248. *View at Google Scholar | View at Publisher*

Ravallion, M., 2012. Benchmarking global poverty reduction. World Bank Policy Research Working Paper, (6205).

Roche, J.M., 2013. Monitoring progress in child poverty reduction: Methodological insights and illustration to the case study of Bangladesh. Social Indicators Research, 112(2): 363-390. *View at Google Scholar | View at Publisher*

Rowntree, B.S., 1901. Poverty: A study of town life. Macmillan. Retrieved from https://archive.org/details/povertyastudyto00rowngoog.

Sen, A., 1999. Commodities and capabilities. OUP Catalogue.

Slovin, E., 1960. Slovin's formula for sampling technique. 2013. [Accessed February, 13].

Thorbecke, E., 2008. Multidimensional poverty: Conceptual and measurement issues. The many dimensions of poverty: 3-19. *View at Google Scholar | View at Publisher*

Unicef, 1989. Convention on the Rights of the Child.

Unicef, 2012. The state of the world's children 2012: Children in an urban world. eSocial Sciences. Retrieved from https://www.unicef.org/sowc/files/SOWC_2012-Main_Report_EN_21Dec2011.pdf.

White, S.W., K. Keonig and L. Scahill, 2006. Social skills development in children with autism spectrum disorders: A review of the intervention research. Journal of Autism and Developmental Disorders, 37(10): 1858-1868. *View at Google Scholar | View at Publisher*

WHO, 2003. Retrieved from http://www.who.int/water_sanitation_health/en/righttowater.pdf.

WHO, 2008. Retrieved from http://www.who.int/water_sanitation_health/water-quality/en/.

WHO, 2010. Retrieved from http://www.who.int/hia/housing/en/.

World Health Organization (WHO), 2004. Retrieved from http://apps.who.int/iris/handle/10665/42891.

BIBLIOGRAPHY

Ravallion, M., 2012. Poor, or just feeling poor? On using subjective data in measuring poverty.

Appendix-1. Selection of Indicators and Dimensions

Category	Dimensions	Source	Indicators
Survival	Food , Nutrition	CRC Art 24	Weight for height
			Times of food taking
	Water	CRC Art 24	Source of water
			Distance from water
	Health care	CRC Art 24	Immunization
			Skilled assistance at birth
	Shelter, house	CRC Art 27	Roof and floor material
			Overcrowding
	Environment	CRC Art 24	Access to improved sanitation
Development	Education	CRC Art 28	Compulsory school attendance
			Primary school attainment
	Information	CRC Art 13,17	Availability of information devices
			Mother literacy
	Violence at home	CRC Art 28	Physical abuse or yelling at home
	Social security	CRC Art 16,26,27	Negligence (left alone)
	Child labor		working condition
Participation	Birth registration, nationality	CRC Art 7,8	Having birth certificate
	Information	CRC Art 13,17	Availability of information devices

Appendix-2. Benchmarks of measuring child poverty:

Dimension	Indicator		Threshold
Nutrition	Overweight		Wasting/Weight for height ratio is more than 2 standard deviations from the recommended median (WHO standards).
	Feeding Time Interval		Exclusive child breast feeding 0-6 months Having 5 times foods in a day (6 months to 2 years) with at least one time milk. (minimum meal frequency) Having three times food above 5 – 17 years (WHO standards).
Health	Immunization		Children are not getting vaccination of BCG and DPT (1, 2, and 3) according to child health card mentioned time. (WHO standards).
	Skilled Birth Attendant		Child birth from Unskilled birth attendants other than medical doctors, nurse, health personals, medically trained attend (World Health Organization (WHO), 2004).
Housing	Overcrowding		More the 3 people per room.
	Roof & Floor Material		Roof and wall are not made of durable material to protect from climate effects (WHO, 2010).
Sanitation	Toilet		Having no indoor toilet in household.
Education	Compulsory school attendance		If a child doesn't go to school above 5 years of age. It is selected according to specific country's education system .In Pakistan it start from 5 years.(UNESCO standards)
	Primary School Attendance		If children is not entered in school at compulsory education date and does not reach at primary education level.(UNESCO standards)
Information	Information device		No information device such as (radio, television, phone, computer) at home.
Water	Source of water		"Not having improved water source such as (household connections, household hand pumps, protected wells, bore holes, rain water, public taps) for households drinking."(WHO, 2008)
	Distance from water source		"It takes more than thirty minutes for water collection". (WHO, 2003)
Child Protection	Domestic violence		Child below five years left alone more than hours. Child below three to five below left alone more than two hours
	Child labor	Working Condition of Child	Proportion of children aged 5 to 14 years involved in child labor activities at the time of survey.
		Number of Hours	• Children (5 to 11 years) in a week did at least one hour of economic or at least 28 hours of domestic activity • Children (12 to 14 years) in a week did 14 hours of economic activity or at least 42 hours of economic and domestic activity combined.