Multidimensional Child Poverty Measurement and its Mapping: Case of Balochistan, Pakistan

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Abstract

The progress of Pakistan remained poor in human development indicators, especially health, education, stunting, living standard, food security, malnutrition and unemployment. It is a very alarming condition for the Pakistan future that 44 percent of children under five years old are facing stunting. It is notable that poverty levels in Balochistan province of Pakistan are comparatively high. This study uses Multiple Indicator Cluster Survey (2010) data of Balochistan for estimation of multidimensional child poverty and deprivation in multiple dimensions using Multiple Overlapping Deprivation Analysis (MODA). The results show that 71% children under five years of age are deprived in nutrition, health, child development, housing and sanitation. A significant difference exists between rural (75%) and urban (57%) multidimensional children deprivation. The study results call for more investment in child poverty reduction programs by provencial and central governments. The focus should be on provision of economic opportunities, improvement in health facilities, strict action for compulsory education and actions for better nourishment to reduce child poverty.

Keywords: Child poverty; well-being; deprivation; MODA

JEL Classification: I31, I32, J13, R58

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1. Background

Pakistan is facing sustainable development deprivation and wellbeing issues. The official statistics show material poverty in Pakistan is 29.5% (ADB, 2017). A study by the government of Pakistan in 2016 coordinated by Oxford Poverty and Human Development Initiative and United Nations Development Programme, depicts that 19.7% population of Pakistan is multidimensional poor while in Punjab, Sindh, Khyber Pakhtoonkhwa (KP) and Balochistan 15.2%, 23.1%, 25%, 39% population is poor, respectively (Government of Pakistan, 2016). It is notable that poverty levels in Balochistan are comparatively high. No doubt overall poverty affects the child poverty. As per the economic conditions of Pakistan, the province Balochistan is also facing similar challenges in health, education, stunting, living standard, food security, malnutrition and unemployment. It is the largest by area and the smallest by population province in Pakistan. The Balochistan's economy is based on agriculture, livestock, fisheries and mineral resources like production of gas, coal, iron, sulphur, marble, limestone, etc. But lowest in the social welfare, education, health and living standard (Haq & Farooq, 2016).

Child poverty is an imperative problem for developing countries. Children grown up in poverty are assumed to be poor in their adulthood as poverty itself is considered a vicious cycle (Roelen, Gassmann, & de Neubourg, 2011; Minujin, 2012). However, investment in under-five children can lead to permanent effects in reduction of poverty and adult outcomes (Porter, 2013). Children are deprived if they face severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. Overall, the literature on child poverty emphasizes that household's income alone, although a good predictor of child poverty, does not express children's rights (Minujin, 2012; Roelen, Gassmann, & de Neubourg, 2011). The current practice points towards a need

to apply a child-centered multidimensional approach when measuring child poverty, recognizing that children's needs are age specific and multidimensional. Dimensions of multidimensional child poverty are different from overall multidimensional poverty. Child poverty indicators are proper nutrition, adequate health, child development and information on basic concepts, availability of proper housing, safe drinking water and hygienic sanitation facilities. The children of the today will be the wealth of tomorrow. It is the basic responsibility of government to provide facilities regarding education, healthcare, food and nutrition security and poverty reduction. Keeping in view the socioeconomic conditions of Balochistan which seems worst among all provences of Pakistanthe main objectives of this study are to estimate and map multidimensional deprivation of under five years of age children at divisional and overall levels. On the basis of robust analysis the results will be used to develop policies at the local and sub-regional level for the marginalized people of Balochistan.

2. Data and Methodology
2.1. Data

This study uses the Multiple Indicator Cluster Survey 2010 (MICS, 2010) data to assess the multidimensional child poverty in Balochistan. The MICS is an international household survey data that provides diverse information at the household and child level with the wide range of socioeconomic and sustainable development indicators. It is suitable for the analysis of child deprivation (Ferron & Chzhen, 2015). MICS, 2010 Balochistan is a divisional administrative based survey that provides the key social and Sustainable Development Goals (SDGs) indicators like education, health, clean drinking water, sanitation, energy, etc. This study uses data of 7,895 children under five from 5,390 households at the divisional administrative level (Quetta, Kalat, Sibi, Zhob, Nasirabad, Mekran) (see Table 1). Except MICS, 2010 no other data are suitable/available for estimation of child poverty of Baluchistan.

Table 1: Divisional base data distribution

Region	Number of children	Number of Households
Quetta	1,766	995
Kalat	1,664	1263
Sibi	1,144	862
Zhob	1,644	1059
Nasirabad	1,088	765
Mekran	589	446
Total	7,895	5390

2.2. Methodology

There are many approaches that can be used to measure the child poverty. The Monetary, Bristol and Alkire-Foster (year) important to cite here. The Monetary and Bristol approaches do not capture the depth and breadth of child poverty. Also, the head count can't decentralize into age, sex, and region or orphan-hood status. While Alkire and Foster approach is a new innovation to measure the multidimensional deprivation at the household and individual level. It is a dual cut-off approach. It is follows by the unidirectional and intersection or intermediate approaches. Unidirectional approach means counting the number of poor, those deprived in any given dimension and intersection or intermediate approach summarize the number of poor, those deprived in all dimensions or specified number of dimensions.

This study uses the United Nations Children's Fund UNICEF's Multiple Overlapping Deprivation Analysis (MODA) methodology for the estimation of multidimensional child poverty in Balochistan (Ferron & Chzhen, 2015 & Bruckauf, 2014). The MODA methodology provides the comprehensive approach to the multidimensional aspects of child poverty and deprivation with multiple dimensions and indicators (Plavgo, et al. 2013). This comprehensive approach basically followed by the Alkire and Foster approach. Due to data unavailability and constraints, there are a few limitations of MODA approach. The primary weakness of MODA approach assigning weights to different dimensions and indicators. There is no well accepted scientific technique for assigning weights to each indicator and

dimension. MODA approach assumes equal importance of all indicators and dimensions for different age group children. The second weakness of MODA is overlapping deprivation. This is due to the absence of all indicator data for all children. Some indicators are used for under the age of 2 years and some are used for under the age of 3 up to 5 years. These gaps covered by the discrete single and overlapping analysis. Furthermore, decomposition analysis provides the complete[3] picture of child deprivation contribution into overall multidimensional poverty. The MODA has four main characteristics that distinguishes it from the most existing studies.

- First, it uses children as the unit of analysis rather household
- Second, the life-cycle approach is used to assess the separate age groups deprivation like early childhood, primary childhood and adult.
- Third, it uses a single approach (nutrition, health, education, child development, and living standard) with an overlapping analysis.
- Fourth, it uses whole-child oriented view with geographical and social aspects.

This section provides the detailed process of estimation of multidimensional child deprivation. The MODA is child deprivation analysis based method, meaning that any filed, domains, indicators of child well-being can be used. This study uses five dimensions including nutrition, health, child development, housing and water & sanitation with fifteen indicators for the estimation of multidimensional deprivation (see Table 2).

Table 2: Multidimensional Child Poverty Dimensions, Indicators and Threshold

Dimension	Indicator	Indicator Definition and Threshold
Nutrition	Underweight	Weight-for-age z-score < -2 under the age of 5 years (NCHS)
	Stunting	Height-for-age z-score < -2 under the age of 5 years (NCHS)
	Wasting	Weight-for-height z-score < -2 under the age of 5 years (NCHS)

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[3] The world "complete" used under the certain limitations of data; these are the country basis limitations as per the usage of available data.

Dimension	Indicator	Indicator Definition and Threshold
	Infant and Young Child Feeding	A child age of under 2 years currently had never breastfeeding
Health	Immunization against Measles or MMR	A child ever given Measles or MMR vaccination under the 5 years
	Immunization against Polio	A child ever given Polio vaccination under the 5 years
Child Development	Identification of alphabets	A child 3 to 5 years of age cannot identify at least 10 letters of the alphabet
	Identification of numbers	A child 3 to 5 years of age does not know name and recognise symbols of all numbers from 1 to 10
	Children's Toys	A child under 5 years of age does not play with purchased toys
	Children's Books	A child under 5 years of age does not have any children or picture book
	Early Childhood Education Programmes	A child 3 to 5 years of age does not attend an early childhood education programme
Housing	Overcrowding	A household has on average more than four people sleeping per room
	Cooking Fuel	Type of fuel used for cooking is kerosene, coal/lignite, charcoal, wood, straw/shrubs/grass, animal dung or agricultural crop residue
	Flooring	The main material of the dwelling floor is earth, sand or dung
Water and Sanitation	Safe Drinking Water	A child uses water from unprotected well, unprotected spring or surface water and/or the source of drinking water is not within a distance of 30 minutes' walk (round trip)
	Access to Toilet	A child has access to unimproved sanitation facilities such as pit latrine without slab/open pit, bucket or has no facility i.e. bush/field

2.2.1. Define deprivation and specify its dimensions

▪   Nutritional well-being is not just a basic human right. It is more important for the human capital development. Children under five years of age in the developing country are facing malnutrition, due to the lack of adequate food and poor health (Reinhard & Wijayaratne, 2002). Different indicators (Underweight, Stunting and Wasting) are used to assess the malnutrition in children under five years of age (Maken & Varte, 2012). This study uses anthropometric measurements, underweight (weight-for-age), stunting (height-for-age), wasting (weight-for-height) and infant and young child feeding for the evaluation of insufficient nutrition in children under five. The infant and young child feeding are also the most important role in the growth and development of children under five. This study uses the given Z-score of MICS by the United States National Centre for Health Statistics (NCHS) threshold guideline for the deprivation of underweight, stunting and wasting (Wang & Chen, 2012; Maken & Varte, 2012 & Reinhard & Wijayaratne, 2002). Z-score for underweight, stunting, wasting and young child feeding are presented in table 2.

▪   Another important sustainable development goal is to ensure healthy lives and promote well-being for all at all ages (UNDP, 2016). This study uses immunization against Measles and polio as indicator for the estimation of health dimension. Child development dimension includes child education and development activities (UNICEF, 2015). Housing dimension includes overcrowding, cooking fuel and flooring to assess the living standard of children under five. A child is deprived in water and sanitation if she has no access to safe drinking and have unhygienic facilities. (UNICEF, 2015).

▪   This study uses child as a unit of analysis with the combination of household and the child level datasets of MICS. The dimensions nutrition, health and child development are used from the child level dataset while housing, water and sanitation are used from the household level dataset. According to the MODA methodology, all the deprivation is equally important so equal weights are assigned to the each dimension (see Table 2).

- MODA also follows dual cut off approach that is explained above in method. The selection of any of these approaches stipulated well known information or judgment taking into consideration. To avoid this decision, MODA presents results at all possible cut-off points. This study follows the union and intermediate cut-off approaches for the identification of single and multidimensional deprivation. This study uses a union approach at the single dimension level analysis. A child will be considered multidimensionally deprived in the specific dimension if she experiences at least one deprivation in the specific domain indicator and intermediate approach at the aggregate level analysis: A child will be considered multidimensionally poor at overall if she experiences more than three dimensions deprived. Mostly, multidimensional studies uses 1/3 (.33) score as a cut-off at the overall estimation of multidimensional poverty and some developing countries suggest flexible cut-off at ½ (0.50) or ½.5 (0.40). This study suggests soft cut-off point at K>3 out of 5 dimensions (0.60) to assess the overall multidimensional poverty in Balochistan. Because Balochistan is more deprived in household income, employment, health, education and infrastructure as compared to the other provinces of Pakistan.

This study calculates headcount ratio for each indicator and dimension according to the threshold definition for deprivation (see Table 2). The headcount ratio means that the number of children deprived in the respective indicator or dimension as a share of the total number of children in the respective indicator or dimension. The following formula uses to estimate the headcount ratio:

$$h_{j,r} = \frac{q_{j,r}}{n_r} -------------(1)$$

$$q_{j,r} = \sum_{i=1}^{n_r} y_j -------------(2)$$

- Where

$h_{j,r}$ -Headcount ratio of deprived children in indicator j

q_j -Number of deprived children in indicator j

n_r -A number of the total children in the reference population r

y_j -Status of deprivation, according to the threshold (yes=1, otherwise zero), y_j=1 (deprived) if $x_j < z_j$ and y_j=0 (no deprived) if $x_j > z_j$.

x_j -Value of indicator j

z_j -Threshold of indicator j

It is no notable here that after the estimation of single indicator level than the similar formula is used at dimension level, after the assigning of threshold (yes=1, otherwise zero) as per the indicator status. After the single deprivation analysis, each dimension deprivation status count into the single variable like one child has deprived in nutrition, health and housing, it means that the counting total of child one is 1+1+1=3 and the second child has deprived into nutrition, health, child development, housing and water and sanitation than the counting total of second child is 1+1+1+1+1=5. The following formula is used for the deprivation counting:

$$D_i = \sum_{j=1}^{d} y_j \quad --------------(3)$$

Where

D_i -Total number of dimensions, where a child i is deprived with y_j=1 if a child is deprived in the dimension j; y_j=0 if a child is not deprived in dimension j. The multidimensional headcount deprivation measures the number of children deprived in the respective cutoff point. The multidimensional deprivation measures as:

- Assign deprivation status of each indicator according to threshold (see Table 2).

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- After assigning deprivation each indicator, if s/he deprived in any indicator also consider deprived in the respective dimension.

- In the second stage, summation of all the dimensional deprivation status into D_i as per the overlapping.

- This study uses K>3 is the cutoff point for the multidimensional deprivation. It means that if a child deprived in more than 3 dimensions that will be considered multidimensional deprived child.

This can be defined as follows:

$$y_k = 1 \; if \; D_i > K -----------(4)$$

$$y_k = 0 \; if \; D_i < K -----------(5)$$

For the estimation of multidimensional child headcount deprivation, the following formula is applied:

$$H = \frac{q_k}{n_a} ----------------(6)$$

$$q_k = \sum_{i=1}^{n} y_k ---------------(7)$$

Where

H -Multidimensional child deprivation headcount

q_k -Total number multidimensional deprived children

n_a -Total number of children

y_k -Deprivation status of children on the cutoff base

K -Cutoff point

To calculate the average intensity of multidimensional deprivation A measures the breath of child poverty[4].

$$A = \frac{\sum_{1}^{q_k} c_k}{q_k * d} ---------------(8)$$

Where

A -Average intensity of multidimensional deprivation

q_k -Number of children affected by at least k

d -Total number of dimensions

c_k -Number of deprivation each multidimensional deprived child, with $c_k = D_i * y_k$

The third component of multidimensional deprivation is adjusted headcount ratio or multidimensional child poverty. Multidimensional child poverty is the combination of headcount and average intensity of deprivation. This measure of poverty satisfies the property of "dimensional monotonicity"[5]. The multidimensional poverty measure as follows:

$$M_0 = H * A --------------(9)$$

Where

M_0 -Multidimensional child poverty (Adjusted headcount ratio)

H -Headcount of deprived children as per cut-off point

A -Average intensity of deprivation

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[4] A is what Alkire and Foster (2007) defines as "intensity of poverty (A)". Noted that A similar to Alkire's and Foster's but differs in one important way in MODA; instead of measuring the average intensity of deprivation among the multidimensional poverty, A measure for the whole population.
[5] Dimensional monotonicity suggests that in a situation where a multidimensional poor person increase his or her poverty by becoming deprived in a dimension on which (s) he was previously not deprived, overall poverty level increase.

Decomposition is the important step to understand the depth and the contribution of dimensions into multidimensional deprivation or adjusted headcount ratio (Mo). To understand the each dimension contribution into adjusted head count ratio as follows:

$$P_j = \frac{\sum_{i=1}^{n}(y_{j*}y_k)}{n_a * d * M_o} - - - - - - - - - - - - (10)$$

Where

P_j -Contribution of each dimension into the adjusted head count

$\sum_{i=1}^{n}(y_j * y_k)$ -Total number of children deprived in the respective dimension while also deprived multidimensional

n_a -Total number of children

d -Total number of dimensions

M_O -Adjusted head count ratio

3. Results

This section presents the comprehensive empirical results to understand the depth of multidimensional deprivation under the five years old children in the Balochistan province of Pakistan. The empirical results describe into four subsections;

- Single deprivation analysis
- Overlapping deprivation analysis
- Multidimensional deprivation analysis
- Decomposition analysis

3.1 Single deprivation analysis

The single deprivation analysis presents the empirical results by indicators and dimensions at regional, area and gender level.

Deprivation incidence by Indicators Balochistan, regional, gender and area level

Nutrition, health, child development, housing and sanitation domains indicators have key role in intra-household and region level child well-being. Overall, indicator wise deprivation under the age of 5 years children in Balochistan observed very high in the child development, safe drinking water, sanitation, education and immunization against MMR indicators. The majority of Balochistan children are deprived in early childhood educational programme (97%), children's books (93%), safe drinking water (88%), flooring (74%), cooking fuel (75%), identification of numeric numbers and alphabets (79%), respectively (see Figure 1).

The incidence in the access to toilet, immunization against polio (35%), infant (42%) and young child feeding (33%) are also in the critical range. The children of Balochistan are better in nutrition (stunting, wasting and underweight) as compared to the other indicators (see Figure 1). Child health is the key challenge for the national and international organizations, local and provincial governments of developing countries. Pakistan ranks 23rd in the world for under five years of age deaths, almost half of children do not receive a full course of vaccination. In Pakistan, around 500,000 children missed vaccination due to inaccessibility (UNICEF, 2015). 90 percent deaths from diarrhea disease in the developing nation's occurred in children under 5 years of age. It can be reduced by improving the drinking water and sanitation services and better hygienic behaviors (WHO, 2005). PSLM 2014-15 reports that 13% households of Balochistan do not have a toilet facility same as like national level (Government of Pakistan, 2016). In Pakistan, 110 deaths of children under 5 year of age per day are due to the water and sanitation related diseases, around 36%

population of Pakistani live without access to sanitation and large number of Pakistanis do not have access to clean drinking water (UNICEF, 2015).

The intra-regional deprivation results show that the children under-five in the Sibi division are more deprived in underweight (38%) indicator as compared to the other divisions. The stunting situation has more worsened condition in the Mekran division, where 50% children under–five are facing stunting. About 38% infant and young children are deprived in feeding in Quetta division followed by Sibi and Zhob divisions with 36% and 37%, respectively (see Table 3). In overall Balochistan more than 50% children under-five are deprived in immunization in MMR and polio, identification of numeric numbers and alphabets, children's books, early childhood education, cooking fuel, safe drinking water and sanitation indicators. Almost one third of South Asian children who are out of school at the school going age live in Pakistan, in which 38.9% are girls and 30.2% are boys. Education is the 4th important goal of sustainable development isto ensure inclusive and equitable quality education and promote lifelong learning opportunities for the all (UNDP, 2016). The indicators wasting, access to toilet and overcrowding are better in the Mekran division as compared to the other divisions (see Table 3).

Table 3: Indicator wise deprivation by Division under 5 years of age children in Balochistan (%)

	Quetta	Kalat	Sibi	Zhob	Nasirabad	Mekran
	%	%	%	%	%	%
Underweight	17	21	38	13	28	14
Stunting	24	21	33	12	30	50
Wasting	13	12	15	7	11	3
Infant and Young Child Feeding	38	27	36	37	23	28
Immunization against MMR	80	79	89	88	77	55
Immunization against Polio	42	51	48	30	41	46
Identification of alphabets	85	78	82	83	77	57
Identification of numbers	85	80	79	84	71	69
Children's Toys	48	56	61	71	53	39

	Quetta	Kalat	Sibi	Zhob	Nasirabad	Mekran
Children's Books	96	93	97	96	94	65
Early Childhood Education Programmes	98	98	98	97	97	96
Overcrowding	22	7	15	13	6	2
Cooking Fuel	58	84	55	92	75	89
Flooring	61	76	70	87	81	66
Safe Drinking Water	91	88	83	81	93	95
Access to Toilet	30	28	41	51	41	15
N	1766	1664	1144	1644	1088	589

The indicator wise deprivation ranges among female is 41% to 47% and among male is 53% to 59% (see Figure 2). There is a significant gap between urban and rural Balochistan. Overall, the children living in the rural areas are more deprived than urban areas.

There is significant difference between children living in the rural and urban areas in access to toilet, safe drinking water, early childhood education, immunization, infant and young child feeding and malnutrition. It means that the child well-being problems are the serious concern for the rural areas of Balochistan (see Figure 3).

Deprivation incidence by dimension at a Balochistan, regional, gender and area level

The single dimension level analysis is the combination of indicator wise deprivation. A child considered to be deprived in each dimension if she is deprived in respective indicator. Overall, dimensional wise deprivation shows the pathetic situation in overall Balochistan, 46% children are deprived in nutrition, and 81% in health, 99% in child development, 89% in housing, and 93% in sanitation dimension (see Table 4).

Table 4: Dimension wise deprivation under 5 years of age children in Balochistan

	%	N
Nutrition	46	3620
Health	81	6405
Child Development	99	7804

Housing	89	7063
Sanitation	93	7368

The dimensional deprivation results show that the children under-five in the Mekran division are more deprived in nutrition (58%) followed by Sibi division in nutrition (56%) as compared to the other divisions. The health situation is better in the Mekran division as compared to other divisions, where 58% children under–five are facing health deprivation. Apart from Mekran, all other divisions' health situations are very bad (see Table 5).
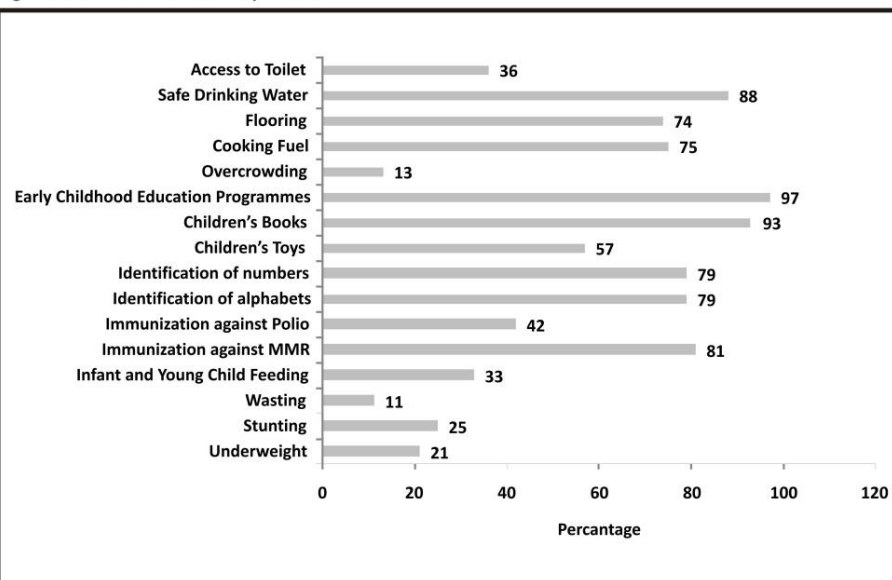
Fig 1: Overall indicator wise deprivation

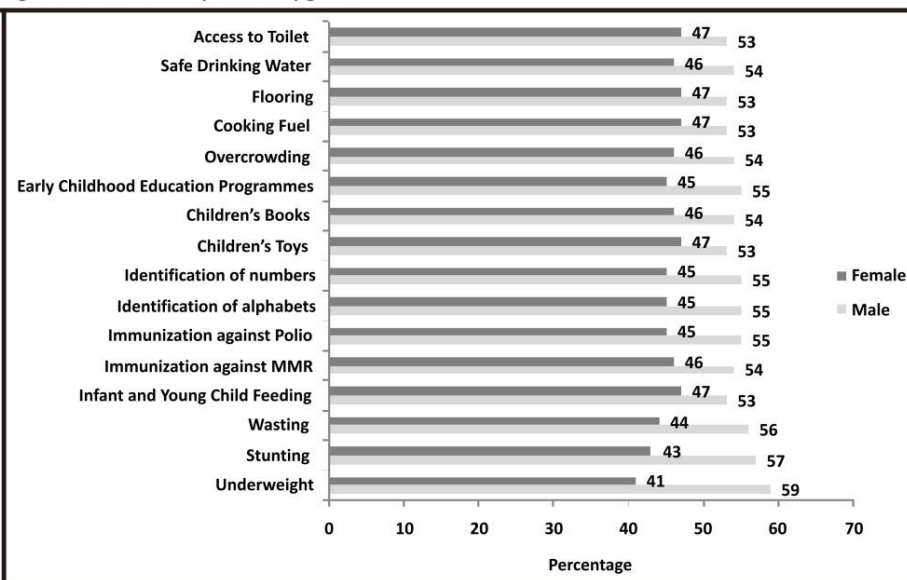| Indicator	Percentage
Access to Toilet	36
Safe Drinking Water	88
Flooring	74
Cooking Fuel	75
Overcrowding	13
Early Childhood Education Programmes	97
Children's Books	93
Children's Toys	57
Identification of numbers	79
Identification of alphabets	79
Immunization against Polio	42
Immunization against MMR	81
Infant and Young Child Feeding	33
Wasting	11
Stunting	25
Underweight	21

Fig 2: Indicators wise deprivation by gender

Indicator	Female	Male
Access to Toilet	47	53
Safe Drinking Water	46	54
Flooring	47	53
Cooking Fuel	47	53
Overcrowding	46	54
Early Childhood Education Programmes	45	55
Children's Books	46	54
Children's Toys	47	53
Identification of numbers	45	55
Identification of alphabets	45	55
Immunization against Polio	45	55
Immunization against MMR	46	54
Infant and Young Child Feeding	47	53
Wasting	44	56
Stunting	43	57
Underweight	41	59

Fig 3: Indicators wise deprivation by locality

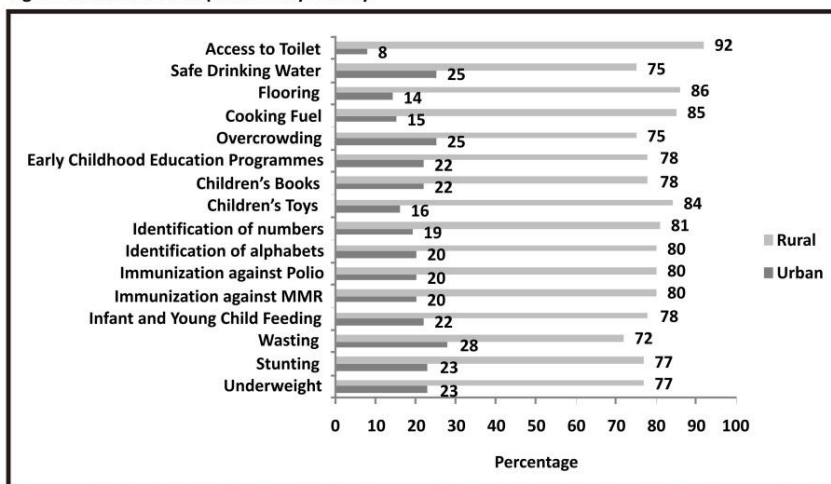| Indicator	Urban	Rural
Access to Toilet	8	92
Safe Drinking Water	25	75
Flooring	14	86
Cooking Fuel	15	85
Overcrowding	25	75
Early Childhood Education Programmes	22	78
Children's Books	22	78
Children's Toys	16	84
Identification of numbers	19	81
Identification of alphabets	20	80
Immunization against Polio	20	80
Immunization against MMR	20	80
Infant and Young Child Feeding	22	78
Wasting	28	72
Stunting	23	77
Underweight	23	77

Table 5: Dimension wise deprivation by region under the age of 5 years children in Balochistan

	Quetta	Kalat	Sibi	Zhob	Nasirabad	Mekran
	%	*%*	*%*	*%*	*%*	*%*
Nutrition	49	41	56	34	47	58
Health	81	80	90	88	77	58
Child Development	99	99	100	99	99	96
Housing	80	94	85	97	89	92
Sanitation	95	91	94	91	96	96
N	1766	1664	1144	1644	1088	589

The deprivation analysis of dimensional level among male and female children is same as the above mentioned indicator wise analysis. There is very little gap between the male and female distribution (see Figure 4). As per the indicator wise results, the dimensional deprivation results show ignificant difference between urban and rural deprivation. The dimension wise deprivation by area shows that there is 52% difference in nutrition, 60% in health, 54% in child development, 64% in housing and 52% difference in sanitation (see Figure 5). For decades in Balochistan, there was no progress in the education sector and the education of children under five years of age is drastically affected where around 75.7% children are not attending school with small gender disparity. Urban amd rural disparity also exists where 60.8% of urban as compared to 79.9% of rural under five are not going to pre or primary school (UNICEF, 2013).

Figure 4: Dimension wise deprivation by gender under the age of 5 years children in Balochistan
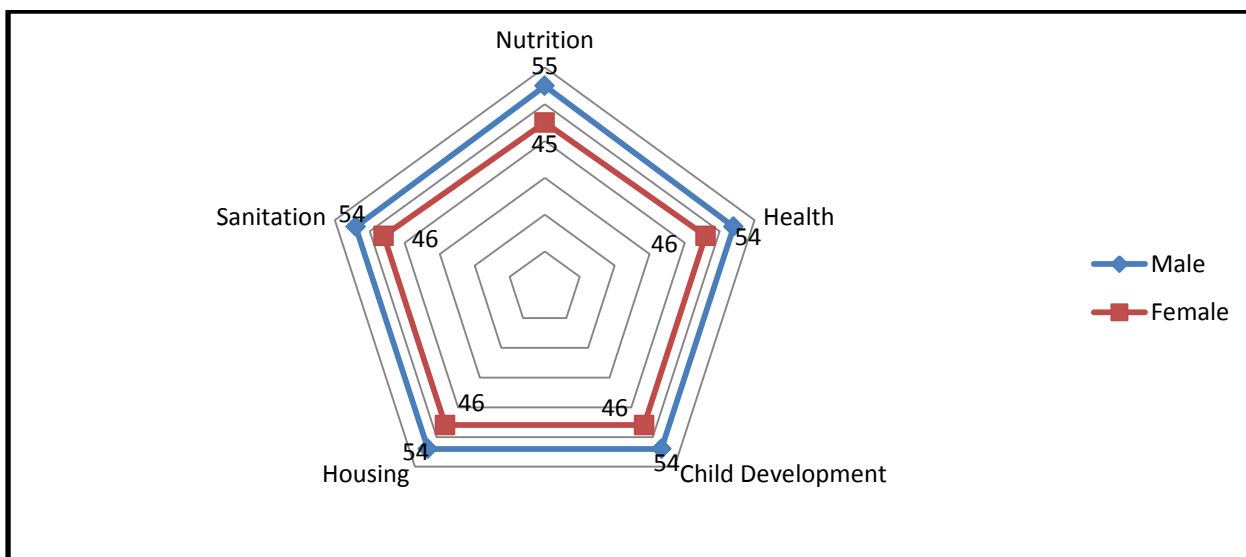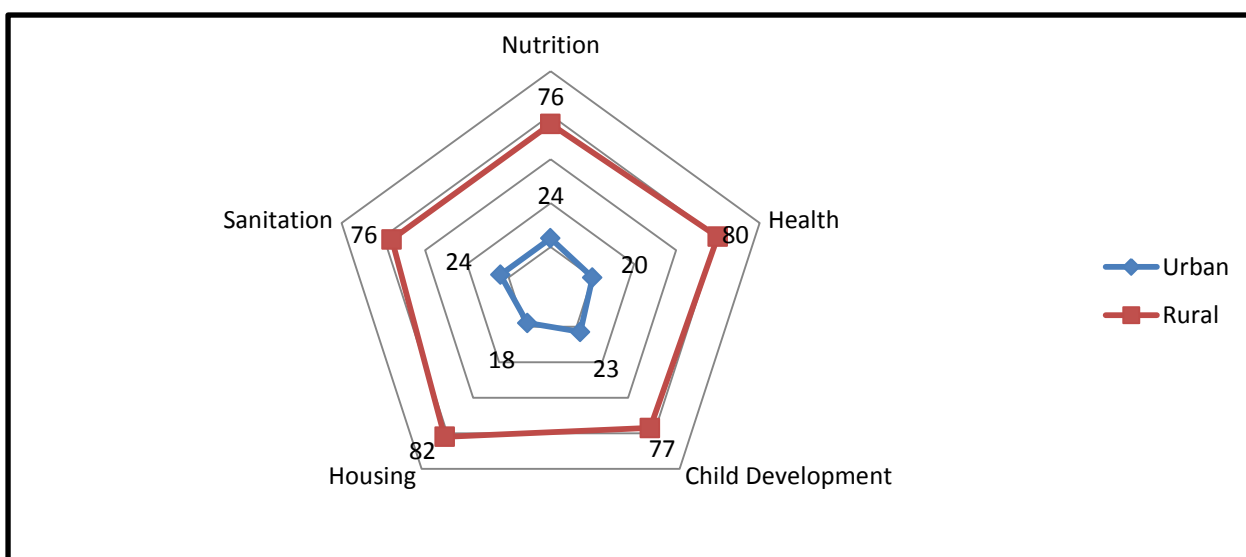
Figure 5: Dimension wise deprivation by locality under the age of 5 years children in Balochistan

3.2. Overlapping deprivation analysis

The overlap deprivation analysis is carried out to study the simultaneous deprivation. It means that at the same time how many children are facing the other sectorial deprivation. The overlap deprivation analysis observes that just only 0.1% children under-five are facing single dimension deprivation and 30.5% children under-five are facing five dimension deprivations. According to the cut-off point (K>3), 81% children facing deprivation in more than three dimensions (see Figure 6).

Figure 6: Child deprivation by number of dimensions
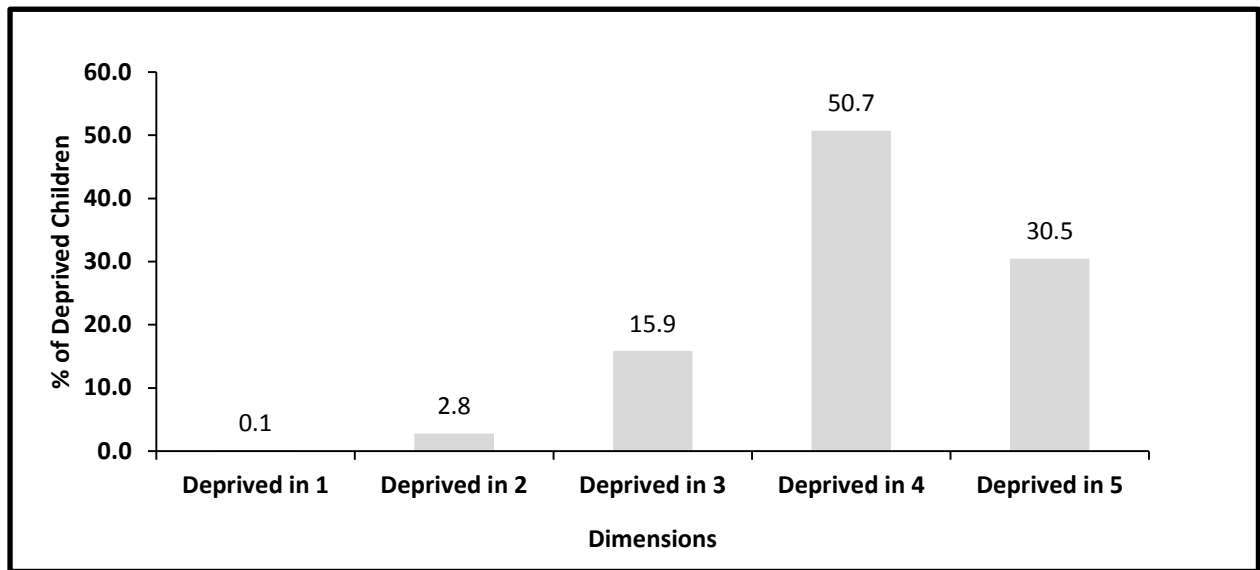
3.3. Multidimensional deprivation analysis

In the previous sections, study presented the single deprivation analysis by the indicator and dimension wise identification of number of deprived children. The multiple deprivation analysis gives detailed understanding at the respective cut-off point.

Table 6: Deprivation headcount, intensity and multidimensional child poverty by gender and locality

	Headcount (%)	Average Intensity (%)	Adjusted head count (M0) (%)
Balochistan	81.2	87.5	71.1
Male	81.2	87.7	71.2
Female	81.2	87.3	70.9
Urban	65.8	86.4	56.9
Rural	85.9	87.8	75.3

As per the selected cut-off, 71% children are facing multidimensional poverty/deprivation in overall Balochistan with male (71.2%) and female (70.9%) are deprived. The deprivation varies across urban (59.9%) and rural (75.3%) (See Table 6).

At the regional level, the deprivation headcount ratio as per the selected cut-off (K>3) more than 75% children under-five are deprived in more than three dimensions in overall Balochistan, the average intensity of the multidimensional deprivation ranges from 85% to 89% which shows worsened condition. The adjusted headcount ration between the regions varies from 67% to 77%. It means that almost 75% children across regions are facing a terrible and pathetic situation (see Map 1, 2 & 3).

3.4   Decomposition analysis

The decomposition is the important step to understand the depth and contribution of each dimension in multidimensional deprivation. According to the decomposition results nutrition contributes 12% while all other four dimensions contribute almost equal (see Figure 7).
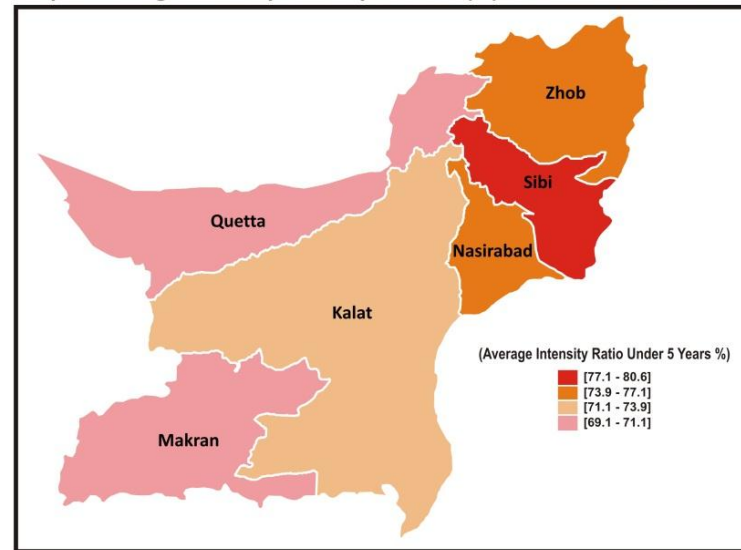
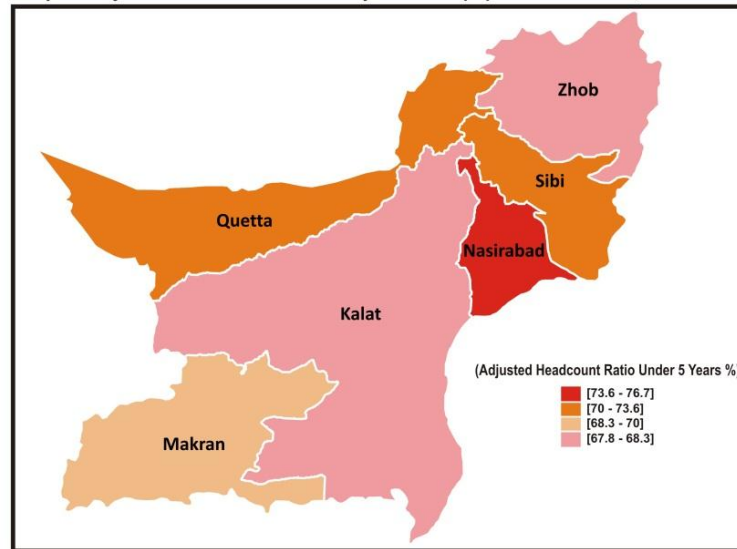**Figure 7: Decomposition by dimensions in M_o (71.1% in Balochistan)**
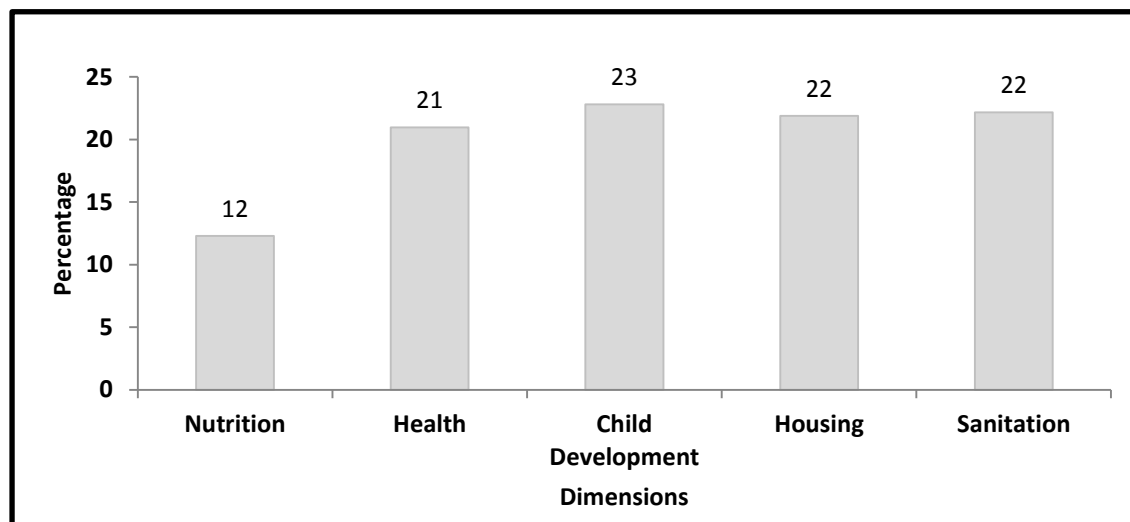
Map 1: Headcount Ratio by Division (%) in Balochistan, Pakistan
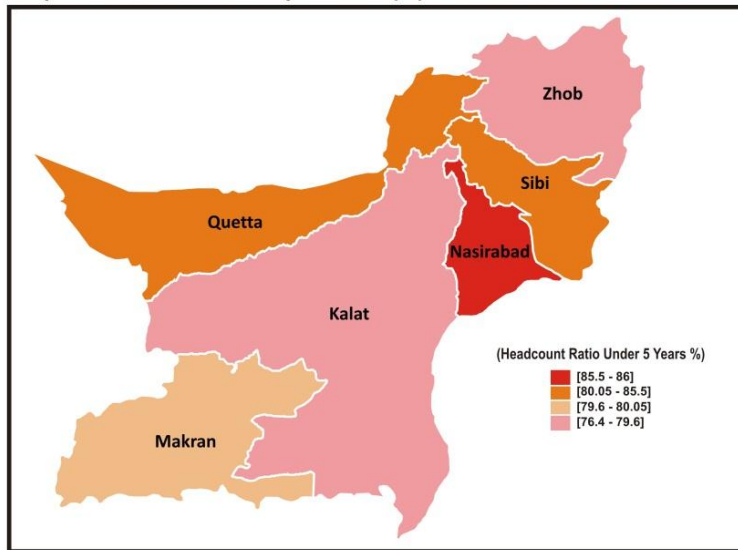
Map 2: Average Intensity Ratio by Division (%) in Balochistan, Pakistan

Map 3: Adjusted Headcount Ratio by Division (%) in Balochistan, Pakistan

4. Conclusions and Recommendations

On average, 71% children under five years of age are deprived in nutrition, health, child development, housing and sanitation. Whereas 46% in nutrition, 81% in health, 99% in child development, 89% in housing and 93% in sanitation are deprived. Almost half of the population of children (51%) of Balochistan is deprived in four out of five dimensions. As per the decomposition of multidimensional deprivation in nutrition contributes 12% while other four dimensions almost equally contribute to overall multidimensional deprivation. A significant difference exists between the rural and urban multidimensional deprivation where 75% of rural children under five years of age deprived as compared to the 57% from urban.

It is fact that there are many challenges for Pakistan's economic development at national and regional levels. A large number of Pakistanis are facing poverty, food insecurity, unemployment, illiteracy, health issues, unavailability of clean drinking water, housing problems, the unavailability of proper sanitation, etc. Similar challenges are being faced by the people of Balochistan. The study results call for more investment in child poverty reduction sectors. It is the responsibility of government institutions, policy makers, community level organizations, political parties and non-profit organizations to formulate development policies at the regional, area and community levels. Therefore, the federal and provincial governments, should focus on the provision of economic opportunities, health, education, nutrition to enhance the regional and area level living standards. However, rural areas need more focus than urban. The CPEC is one of the beacons from which it is expected that more trade, employment, health and education opportunities will be available for local population. Small business men and farm owners can promote their businesses and farm products. If the benefits are transferred towards local population, it will directlly have an impact on living standards of local population and reduction in child poverty as well.

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