



punjab geographer



A PEER REVIEWED AND REFEREED JOURNAL OF APG AND ISPER INDIA

VOLUME 15

ISSN- 0973-3485

OCTOBER 2019



LEVELS OF CHILDREN VULNERABILITY IN INDIA: A GEOGRAPHICAL ANALYSIS

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Abstract

The vulnerability of children in terms of physical and mental abuse, exploitation and discrimination is well recognized and prevalent across nations. Children as a group are vulnerable due to their age. Further, their vulnerability differ in different circumstances, such as poverty, homelessness, children without parents, living on streets and many more. In this context, the present paper is an attempt to trace the children vulnerability in social, economic and health aspects. The study is based on secondary sources of data. Social vulnerability is studied in terms of child marriage, out of school children and crime against them. Economic vulnerability has been measured in relation to - child labour, houseless children, slum dwelling children and BPL population. Vulnerability in health has been examined by six indicators namely infant mortality, under five year mortality, malnourished i.e. stunted, wasted and underweight children and disabled children. A composite index has been calculated to present a comprehensive picture of their vulnerability across states. It may help in order to have a targeted approach towards their rehabilitation.

Introduction

The term 'vulnerability' refers to inability to cope with the possibility of being harmed or unable to withstand the exposure to risk and stress. The term vulnerability has been used by scholars in different contexts but broadly it is used as physical vulnerability and social vulnerability. Physical vulnerability is the probability of exposure to risk associated with natural calamities or disasters. Social vulnerability on the other hand, refers to inability of people, organizations and societies to withstand adverse impacts from multiple stressors including social, economic and health to which they are exposed. It may be noted that all sections of society are not equally vulnerable to any type of risk. There are groups

who are more vulnerable to their peers. These vulnerable groups may vary from country to country due to their different social, economic and cultural perspectives. In Indian context, the vulnerable groups are associated with social inequalities such as poverty, poor health facilities, low socio-economic status, low educational level, poor public infrastructure and poor living standards (Cutter, 1996; Cutter et al., 2003; Lee, 2014; Sajjad and Jain, 2014). So, women, children, scheduled tribe and scheduled caste population, aged, disabled, poor migrants and people living with Human Immunodeficiency Viruses (HIV) and Acquired Immunodeficiency Syndrome (AIDS) etc. are considered as vulnerable (Chatterjee and Sheoran, 2007).

Children as a group are also considered vulnerable due to their age and are at risk of exploitation, abuse, violence and neglect. Subbarao and Coury (2004) defines 'vulnerable children' as those whose safety, wellbeing and development are threatened with major dangers including "lack of care and affection, adequate shelter, education, nutrition and psychological support". United Nations International Children's Emergency Fund (UNICEF) however, defines "vulnerable children as those who are abused, exploited and neglected". It further specifies that children without birth registration, children engaged as child labour, children who are married early i.e. before reaching adulthood, children affected by HIV/AIDS, children without parental care, substance and drug abuses, child beggars, trafficked and street and working children are all vulnerable children. There are reports from different geographical spaces related to child abuse, child trafficking, substance use, violence against children, child marriage, children poverty, child labour, children living in slums, hunger, malnutrition and deaths from preventable diseases etc. Hence, children face various forms of suffering and are subject to exploitation and discrimination which leads to greater vulnerability all through their life cycle. The exploitation and suffering of children increases significantly if they are poor, socially disadvantaged or live in economically and socially backward or remote areas.

There are 1.8 billion children (0-14 years of age) in the world, which accounts for 25.44 per cent of its total population. India is a home of 350 million children constituting 19 per cent of the world's children (CIA, 2017). World over 689 million children are living in multidimensional poverty and 31 per cent of these are living in India (Alkire et al., 2017). Similarly, about 152 million children are working as child labourer in the world, out of

which 10.1 million are in India. In India street and working children vary from 10 to 25 million. Such children in India are also at high risk for diseases and abuse. The level of vulnerability among children in terms of physical abuse, sexual offences, school dropouts and their living conditions such as slums making them vulnerable to various health hazards has been widely researched. Studies suggest that children working in unhygienic, hazardous and exploitative conditions get meager wages (Gupta, 2012; Goel et al., 2012; Satija and Datta, 2015). Similarly, the early married children are vulnerable to physical and sexual violence. They are more vulnerable to all types of health risks which cause higher rates of mortality in different age groups (Santhya et al., 2010; Lal, 2016).

Children are not a homogenous group and their different needs require different responses. Therefore, after recognizing multidimensional vulnerabilities experienced by children in different circumstances; the Government of India has adopted a new National Policy for Children in 2013. Through this policy resolution, the Government of India reiterates its commitment to safeguard the rights of all children especially those who are marginalized and disadvantaged. It also emphasizes that state shall take all necessary actions to ensure that childhood is protected from exploitation and moral and material abandonment. The state shall also affirm that survival, health, nutrition, development, education, protection and participation are the undeniable rights of every child and these are key priorities (GOI, 2013). In this context, the present paper attempts to study the spatial pattern of children vulnerability in India.

Objectives of the Study

The present paper aims to achieve the

following objectives:

- to study the spatial pattern of existing social, economic and health vulnerability of children in India;
- to highlight the levels of overall vulnerability among children in India.

Database and Methodology

The study is based on the secondary sources of data derived from Census of India, National Family Health Survey and National Crime Records Bureau. The data on child labour, disabled children, homeless and slum dwelling have been derived from Census of India (Census of India 2011, Workers by Age and Sex, Directorate of Census Operation, Government of India (GOI), New Delhi.) and Primary Census Abstract, 2011 (Primary Census Abstract Houseless Population and Slum, Registrar General and Census Commissioner, India). The data on survival i.e. infant mortality, under five year mortality, and malnourished children i.e. wasted, stunted and underweight children and estimates of child marriage have been taken from fourth round of National Family Health Survey for the year 2015-16 (International Institute for Population Science, National Family Health Survey NFHS-4 (2015-16), Mumbai, India). Data on crime against children have been obtained from National Crime Records Bureau for the year 2015 (Crimes in India, 2015, National Crime Records Bureau, Ministry of Home Affairs, New Delhi). The statistics pertaining to children education i.e. never enrolled, enrolled but not attended school and drop out from elementary school education have been obtained from All India Educational Survey, 2014 (All India Survey of Out of School Children 6 to 13 year's Age Group, Ministry of Human Resource Development, GOI, New Delhi). Similarly, data on poverty have been taken from planning commission reports on

poverty estimates for the year 2014 (Report of the Expert Group to Review the Methodology for Measurement of Poverty, Planning Commission, GOI, New Delhi).

In the present study, social vulnerability of children has been studied by taking three indicators namely (i) proportion of child marriage (under 15 years), (ii) proportion of out of school children (6 to 13 years) and (iii) crime against children (under 18 years). The economic vulnerability of children has been assessed by four indicators namely (i) proportion of child labour (5 to 14 years), (ii) houseless children (under 6 years), (iii) proportion of children living in slums (under 6 years) and (iv) BPL population. The vulnerability of children with respect to health has been studied by taking six indicators such as (i) infant mortality rate, (ii) under five year mortality rate, (iii) proportion of stunted children (under 5 years), (iv) proportion of wasted children (under 5 years), (v) proportion of underweight children (under 5 years) and (vi) disabled children (under 9 years).

With the help of these indicators, three different indices of social, economic and health vulnerability of children have been calculated by using ranking method. For this purpose, all indicators under each index have been ranked individually whereby lowest rank is given to the state with least value. After ranking all variables, the rank of each variable for each state is added and divided by total number of variables to arrive at vulnerability index. Further, the score of these 3 different indices are added to drive composite index of overall vulnerability. For example, Haryana ranked as 15th, 11th and 23rd respectively in child marriage, out of school children and crime against children, respectively. The sum of these ranks comes to 49 and dividing it by 3 we get 16.33 as social vulnerability index. Likewise, economic and health vulnerability index are

also computed. Further, coefficient of variation has been calculated to find out the inter-state variation in different variables of vulnerability among children.

Results and Discussion

Social Vulnerability among Children

(i) Prevalence of Child Marriage (under 15 years)

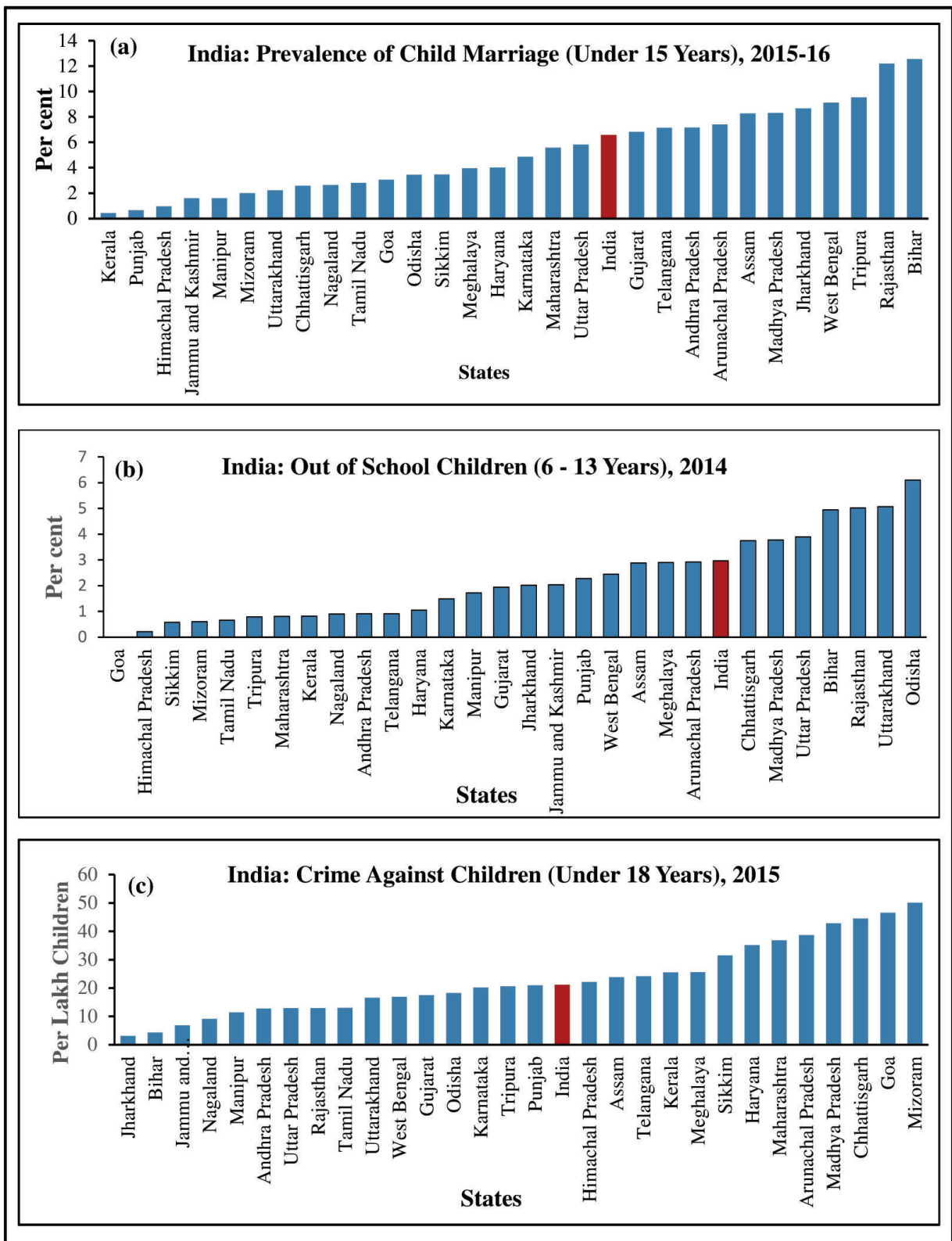
Child marriage is violation of human rights and it is widespread across India. The practice of child marriage has multiple negative impacts on physical, mental and emotional growth of children which make them further vulnerable to health, hygiene and other aspects of life. It has been observed that both boys and girls are affected by early marriage but girls are more affected and with greater intensity. Early

marriage not only limits knowledge, skill resources, mobility, autonomy and social support of young girls but they are also extremely vulnerable to physical and sexual violence (Singh and Anand, 2015; Lal, 2016). At all India level, prevalence of child marriage is 6.57 per cent. It varies widely across states from 0.42 per cent in Kerala to 12.54 per cent in Bihar. In Punjab, Himachal Pradesh, Jammu and Kashmir and Manipur its proportion is less than 2 per cent. Its proportion is 6.8 to 7.5 per cent in Gujarat, Telangana, Andhra Pradesh and Arunachal Pradesh. In Assam, Madhya Pradesh, Jharkhand, Tripura and West Bengal it ranges from 8 to 10 per cent and in Bihar and Rajasthan it is more than 12 per cent (Fig. 1a; Table 1).

Table 1
India: Indicators of Social Vulnerability among Children

States	Married Children (Per cent)	Out of School Children (Per cent)	Crime Rate (Per Lakh Children)
Kerala	0.42	0.82	25.5
Punjab	0.65	2.28	20.9
Himachal Pradesh	0.95	0.21	22.1
Jammu and Kashmir	1.59	2.04	06.8
Manipur	1.59	1.72	11.4
Mizoram	2.00	0.60	50.1
Uttarakhand	2.22	5.07	16.5
Chhattisgarh	2.57	3.75	44.5
Nagaland	2.63	0.90	09.1
Tamil Nadu	2.81	0.66	13.0
Goa	3.05	0.00	46.5
Odisha	3.44	6.10	18.2
Sikkim	3.47	0.58	31.5
Meghalaya	3.95	2.90	25.6
Haryana	4.00	1.05	35.1
Karnataka	4.86	1.49	20.2
Maharashtra	5.58	0.81	36.8
Uttar Pradesh	5.81	3.90	12.9
Gujarat	6.82	1.94	17.5
Telangana	7.13	0.91	24.1
Andhra Pradesh	7.16	0.91	12.7
Arunachal Pradesh	7.40	2.92	38.7
Assam	8.27	2.88	23.8
Madhya Pradesh	8.31	3.78	42.8
Jharkhand	8.66	2.02	03.1
West Bengal	9.11	2.45	16.9
Tripura	9.54	0.79	20.6
Rajasthan	12.19	5.02	12.9
Bihar	12.54	4.95	04.3
India	6.57	2.97	21.1
Coefficient of Variation	64.97	73.75	55.64

Source: Compiled by Authors



Source: Computed by Authors

Fig. 1

(ii) Out of School Children (6 to 13 years)

Education is the basic requirement for human development. It is well accepted fact that education enhances skill, increases employment opportunities and consequently income levels of individuals. The children who are deprived of education are vulnerable to multi-dimensional poverty. It is estimated that in India, 6.06 million children constituting 2.97 per cent of child population (6 to 13 years) are out of school, which is a matter of great concern (SRI, 2014). Across Indian states, there are inter-state variations in out of school children. The study shows that Goa has negligible proportion of out of school children whether drop out or not enrolled. There are states like Himachal Pradesh, Sikkim, Mizoram, Tamil Nadu, Tripura, Maharashtra, Kerala, Nagaland, Telangana and Andhra Pradesh which have less than 1 per cent of out of school children (Table 1). On the other hand, there are states namely, Chhattisgarh, Madhya Pradesh, Uttar Pradesh, Bihar, Rajasthan, Uttarakhand and Odisha having the proportion of out of school children more than the national average (Fig. 1b).

(iii) Crime against Children (under 18 years)

Safety and security of children is integral to their well-being and children are to be protected from all forms of human abuse, neglect, violence, maltreatment and exploitation in all settings. Children are subjected to variety of exploitation, abuse and violence, which make them vulnerable to mental, physical and psychological risk (Kumar et al., 2012). In India, crime up to 18 years of age is considered as juvenile and due to non-availability of data on crime up to 14 years; crime rate has been calculated for children less than 18 year of age. At all India level, rate of cognizable crime against children is 21 per lakh children population during 2015. However, it varies from 3.1 per lakh children in Jharkhand

to 50.1 per lakh children in Mizoram. The coefficient of variation in crime against children among different states of India is 55.64 per cent (Table 1). The rate of crime against children in states like Jharkhand, Bihar, Jammu and Kashmir, Nagaland, Manipur, Andhra Pradesh, Uttar Pradesh, Rajasthan, Tamil Nadu, Karnataka and Punjab etc. is less than national average. While the states such as Himachal Pradesh, Assam, Meghalaya, Haryana, Maharashtra, Madhya Pradesh, Chhattisgarh, Goa and Mizoram etc. have witnessed the rate of crime against children more than the national average (Fig. 1c; Table 1).

Levels of Social Vulnerability among Children

The study reveals that lowest social vulnerability index is recorded by the state of Himachal Pradesh and Nagaland (7.33), while it is highest for Madhya Pradesh (24.33, Table 2). Fig. 2 shows that six states namely Kerala, Tamil Nadu, Jammu and Kashmir, Himachal Pradesh, Manipur and Nagaland have least level of socially vulnerable children. Seven states namely Gujarat, Goa, Maharashtra, Karnataka, Uttarakhand, Jharkhand and Tripura come under moderate level of social vulnerability of children, by recording composite index ranging between 13.1 to 16.0. Similarly, Haryana, Uttar Pradesh, Bihar, Chhattisgarh, Telangana, Odisha, West Bengal and Meghalaya have witnessed high level of social vulnerability among children having recorded composite index ranging between 16.1 to 19.0. While, the states of Assam, Arunachal Pradesh, Rajasthan and Madhya Pradesh by recording composite index more than 19.0 fall in this category where children are extremely vulnerable (Table 2). It may be noted that southern states have relatively low level of social vulnerability of children in comparison to rest of India (Fig. 2).

Table 2
India: Composite Index of Social Vulnerability among Children

States	Social Vulnerability Index	States	Social Vulnerability Index
Madhya Pradesh	24.33	Uttarakhand	14.67
Arunachal Pradesh	22.67	Karnataka	14.00
Rajasthan	20.67	Jharkhand	13.67
Assam	20.00	Goa	13.33
Chhattisgarh	19.00	Mizoram	13.00
Bihar	18.67	Sikkim	12.67
Meghalaya	18.33	Andhra Pradesh	12.33
West Bengal	18.33	Punjab	11.67
Odisha	17.67	Kerala	09.67
Haryana	16.33	Tamil Nadu	08.00
Telangana	16.33	Jammu and Kashmir	07.67
Uttar Pradesh	16.33	Manipur	07.67
Maharashtra	16.00	Himachal Pradesh	07.33
Tripura	16.00	Nagaland	07.33
Gujarat	15.00	-	-

Source: Compiled by Authors

Economic Vulnerability among Children

(i) Child Labour (5 to 14 years)

Child labour is driven by household vulnerabilities and it is associated with poverty. The poor, migrant children, children of migrant parents, children from ethnic minorities are more vulnerable and are at a greater risk of child labour (Aggarwal, 2004). The Census data 2011 reveals that in India about 10.1 million children (5 to 14 years) are engaged as child labour which constitutes 3.9 per cent of total population of children. However, across states, the proportion of child labour varies from 0.84 per cent in Kerala to 13.24 per cent in Nagaland with national average of 3.90 per cent (Table 3). In states like Kerala, Tripura, Haryana, Tamil Nadu, West Bengal, Mizoram, Maharashtra, Punjab, Uttarakhand, Bihar, Karnataka and Gujarat, the proportion of child labour is less than national average (Fig. 3a). Child labour varies between 4 to 5 per cent in Assam, Jammu and Kashmir, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Chhattisgarh, Goa, Jharkhand and Arunachal Pradesh. In Rajasthan, Manipur, Meghalaya and Sikkim it ranges between 5.17 to 8.41 per cent and in Himachal Pradesh and Nagaland child labour is more than 10 per cent

(Table 3).

(ii) Houseless Children (under 6 years)

The children living without shelter, without parents i.e. houseless and homeless are the most vulnerable among vulnerables. The analysis is limited to the children under 6 years of age due to non-availability of data about the children of more than 6 years of age. These children face various problems like deprivation of basic needs of health, nutrition, education and also are subject to exploitation (Dutta, 2018). The Census data 2011 reveals that in India, 2.70 lakh children accounting for 164 children per lakh of child population are living without shelter. There are spatial variations of children living without shelter across states. Houseless children are found to be lowest in Mizoram (11 per lakh) and the highest in Rajasthan (353 children per lakh population) with 69.91 per cent of coefficient of variation across states (Table 3). In states such as Mizoram, Kerala, Assam, Nagaland, Sikkim, Tripura, Tamil Nadu, Himachal Pradesh, West Bengal etc. the population of houseless children is below the national average of 164 children per lakh of children (Fig. 3b; Table 3).

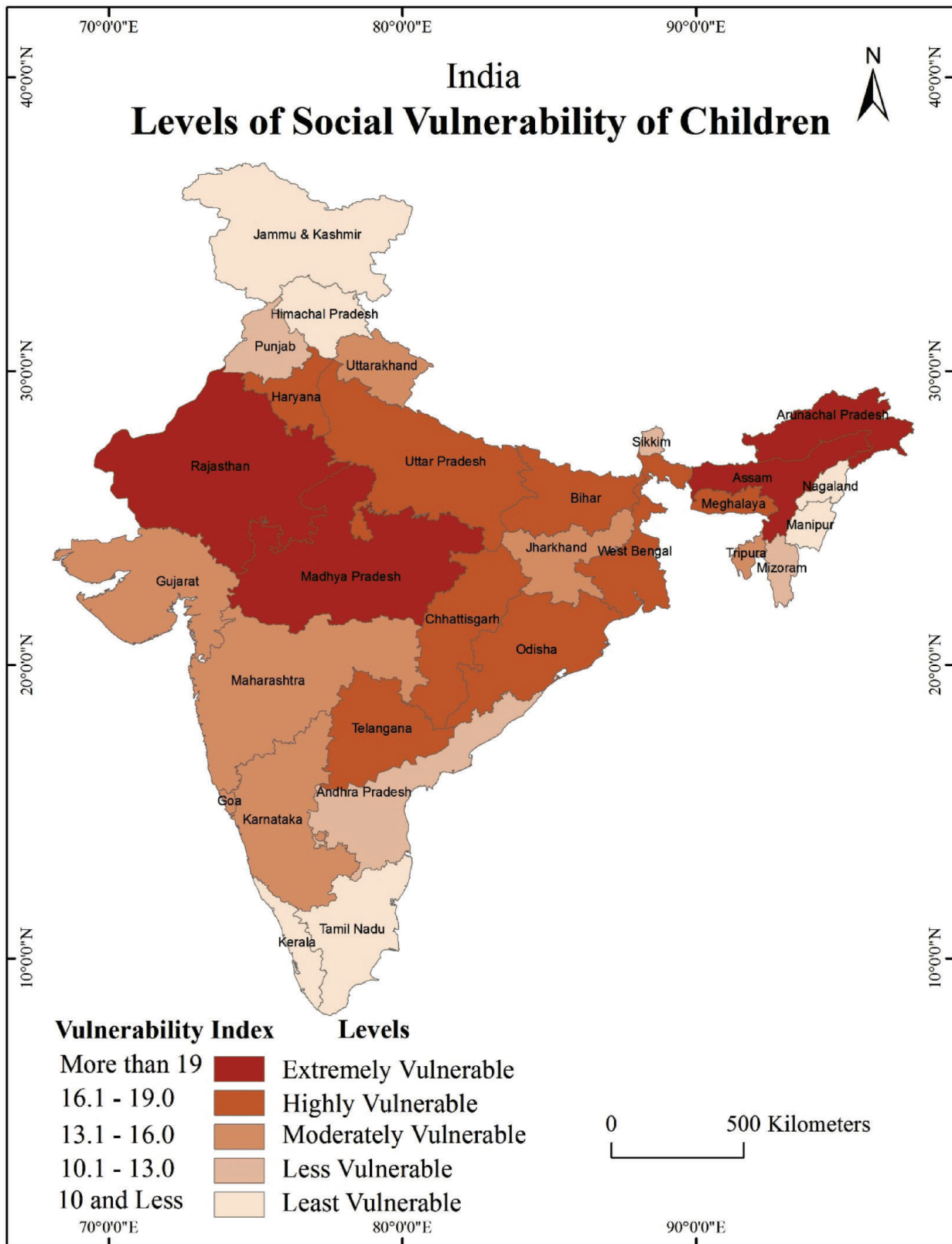


Fig. 2

Table 3
India: Indicators of Economic Vulnerability among Children

States	Child Labour (Per cent)	Houseless Children (Per Lakh)	Slum Children (Per cent)	BPL Population (Per cent)
Kerala	0.84	25	1.23	07.05
Tripura	1.95	78	15.92	14.05
Haryana	2.38	304	8.15	11.16
Tamil Nadu	2.42	81	17.51	11.28
West Bengal	3.16	90	23.79	19.98
Mizoram	3.31	11	13.88	20.40
Maharashtra	3.54	227	25.35	17.35
Punjab	3.57	290	15.59	08.26
Uttarakhand	3.74	112	18.13	11.26
Bihar	3.76	44	11.91	33.74
Karnataka	3.84	168	15.82	20.91
Gujarat	3.86	320	8.15	16.63
Odisha	3.97	86	25.29	32.59
Assam	4.05	39	4.93	31.98
Jammu and Kashmir	4.07	142	22.12	10.35
Madhya Pradesh	4.16	254	31.08	31.65
Uttar Pradesh	4.27	154	15.01	29.43
Andhra Pradesh	4.34	227	38.44	09.20
Chhattisgarh	4.57	122	34.49	39.93
Goa	4.61	239	3.58	05.09
Jharkhand	4.86	81	5.23	36.96
Arunachal Pradesh	4.86	100	5.58	34.67
Rajasthan	5.17	353	13.74	14.71
Manipur	5.63	127	0.00	36.89
Meghalaya	5.76	40	10.57	11.87
Sikkim	8.41	46	21.68	08.19
Himachal Pradesh	10.29	88	10.00	08.06
Nagaland	13.24	45	15.10	18.88
India	3.90	164	18.71	21.92
Coefficient of Variation	52.84	69.91	55.72	55.01

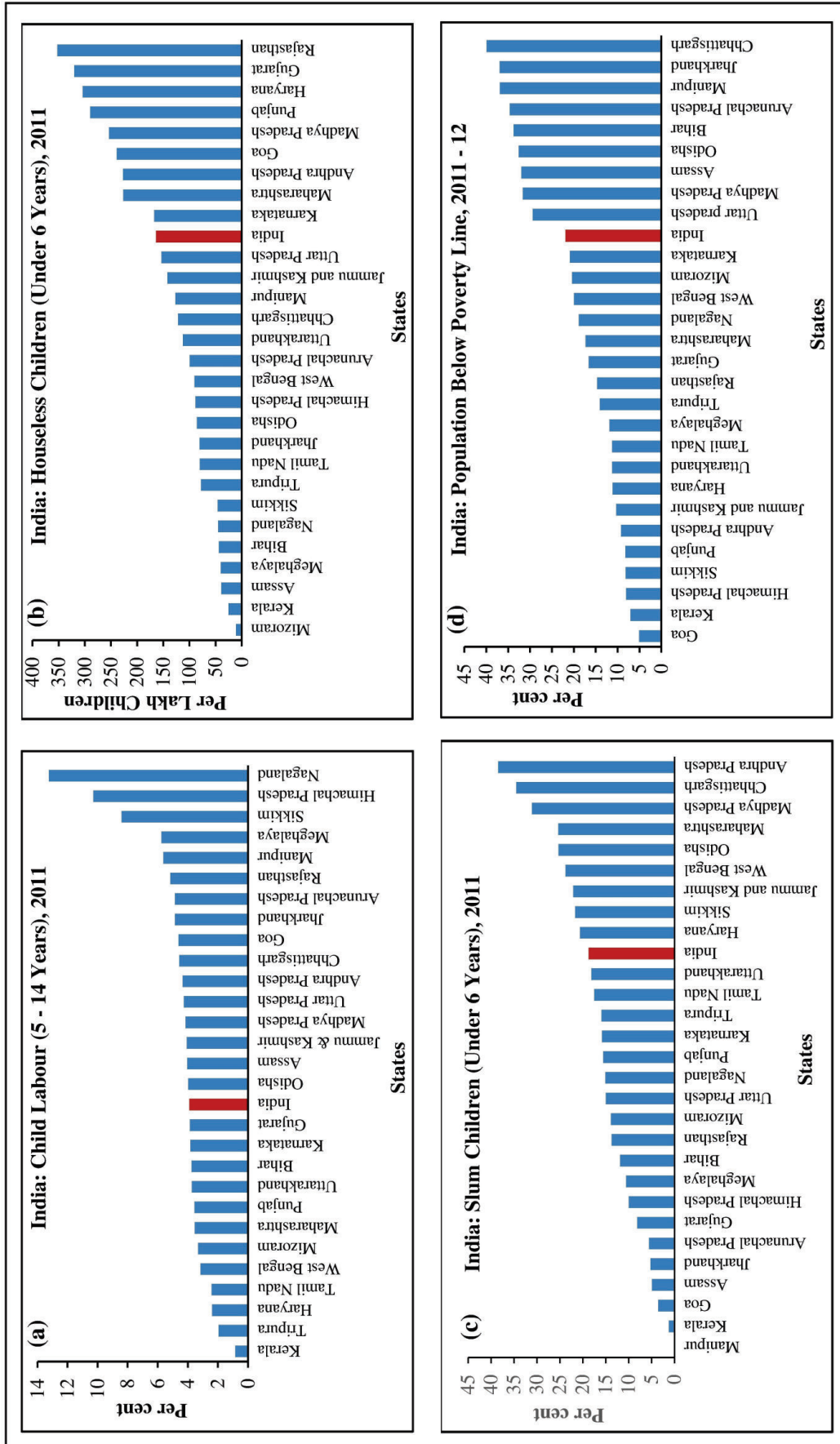
Source: Compiled by Authors

The number of houseless children ranges between 200 to 300 per lakh of children in Maharashtra, Andhra Pradesh, Goa, Madhya Pradesh and Punjab. In Haryana, Gujarat and Rajasthan more than 300 per lakh of children are houseless (Table 3).

(iii) Children Living in Slums (under 6 years)

The children living in slums have high risk of illness, malnutrition, child death, violence and abuse (Agarwal and Taneja,

2005). The Census data 2011 reveals that 43.19 million child population (under 6 years) in India lives in urban areas. Out of these, 8.08 million comprising 18.71 per cent of total urban children are living in slums. Large inter-state variations exist in slum dwelling children, ranging between 1.23 per cent in Kerala to the highest of 38.44 per cent in Andhra Pradesh, with national average of 18.71 per cent. Statistics reveal that less than 10 per cent children are living in slums in states like Kerala, Goa, Assam, Jharkhand, Arunachal Pradesh,



Gujarat and Himachal Pradesh (Table 3). Similarly, 15 to 20 per cent children are living in slums in Uttar Pradesh, Nagaland, Punjab, Karnataka, Tripura, Tamil Nadu and Uttarakhand. In Haryana, Sikkim, Jammu and Kashmir, West Bengal, Odisha, Maharashtra, Madhya Pradesh, Chhattisgarh and Andhra Pradesh, the proportion of slum dwelling children is more than the national average (Fig. 3c).

(iv) Population below Poverty Line (BPL)

Poverty is the main cause which puts children at risk. It deprives children in access to food, clothing, shelter, education and health care, which consequently make them vulnerable to poor health, exploitation, early marriage, child labour, migration and displacement. In this study, total BPL population has been taken as an indicator to explain economic vulnerability of children, as children are part of total BPL population. During the year 2011, the Planning Commission of India has reported that 21.92 per cent population in India is living as BPL with large inter-state variations. The proportion of BPL population is lowest in Goa (5 per cent) and highest in Chhattisgarh (40 per cent). The

spatial pattern reveals that in Kerala, Himachal Pradesh, Sikkim, Punjab and Andhra Pradesh, the proportion of BPL population is less than 10 per cent (Table 3). In Gujarat, Maharashtra, Nagaland and West Bengal, BPL population ranges between 15 to 20 per cent. In states like Madhya Pradesh, Assam, Odisha, Bihar, Arunachal Pradesh, Manipur, Jharkhand and Chhattisgarh, the proportion of BPL population is more than 30 per cent (Table 3). On the whole, out of 28 states, 9 states of India witnessed BPL population more than the national average of 21.92 per cent (Fig. 3d).

Levels of Economic Vulnerability among Children

Table 4 reveals that Kerala state has recorded lowest (1.75 per cent) composite index of economic vulnerability of children while it is highest in case of Chhattisgarh (22.50 per cent). Fig. 4 shows that six states namely Kerala, Tamil Nadu, Goa, Mizoram, Tripura and Assam have least level of economically vulnerable children. On the other hand, the states of Rajasthan, Madhya Pradesh, Chhattisgarh, Telangana and Andhra Pradesh have recorded extreme level of economic vulnerability of children by recording index

Table 4
India: Composite Index of Economic Vulnerability among Children

States	Economic Vulnerability Index	States	Economic Vulnerability Index
Chhattisgarh	22.50	Sikkim	14.50
Madhya Pradesh	21.75	West Bengal	14.50
Rajasthan	18.75	Haryana	14.25
Andhra Pradesh	18.50	Punjab	13.25
Telangana	18.50	Uttarakhand	13.00
Odisha	17.75	Himachal Pradesh	12.50
Uttar Pradesh	17.25	Bihar	12.25
Maharashtra	17.00	Meghalaya	12.25
Manipur	17.00	Goa	11.75
Arunachal Pradesh	16.75	Assam	10.75
Karnataka	16.50	Tamil Nadu	10.25
Nagaland	16.00	Tripura	09.75
Jharkhand	15.75	Mizoram	09.25
Jammu and Kashmir	15.50	Kerala	01.75
Gujarat	15.00	-	-

Source: Compiled by Authors

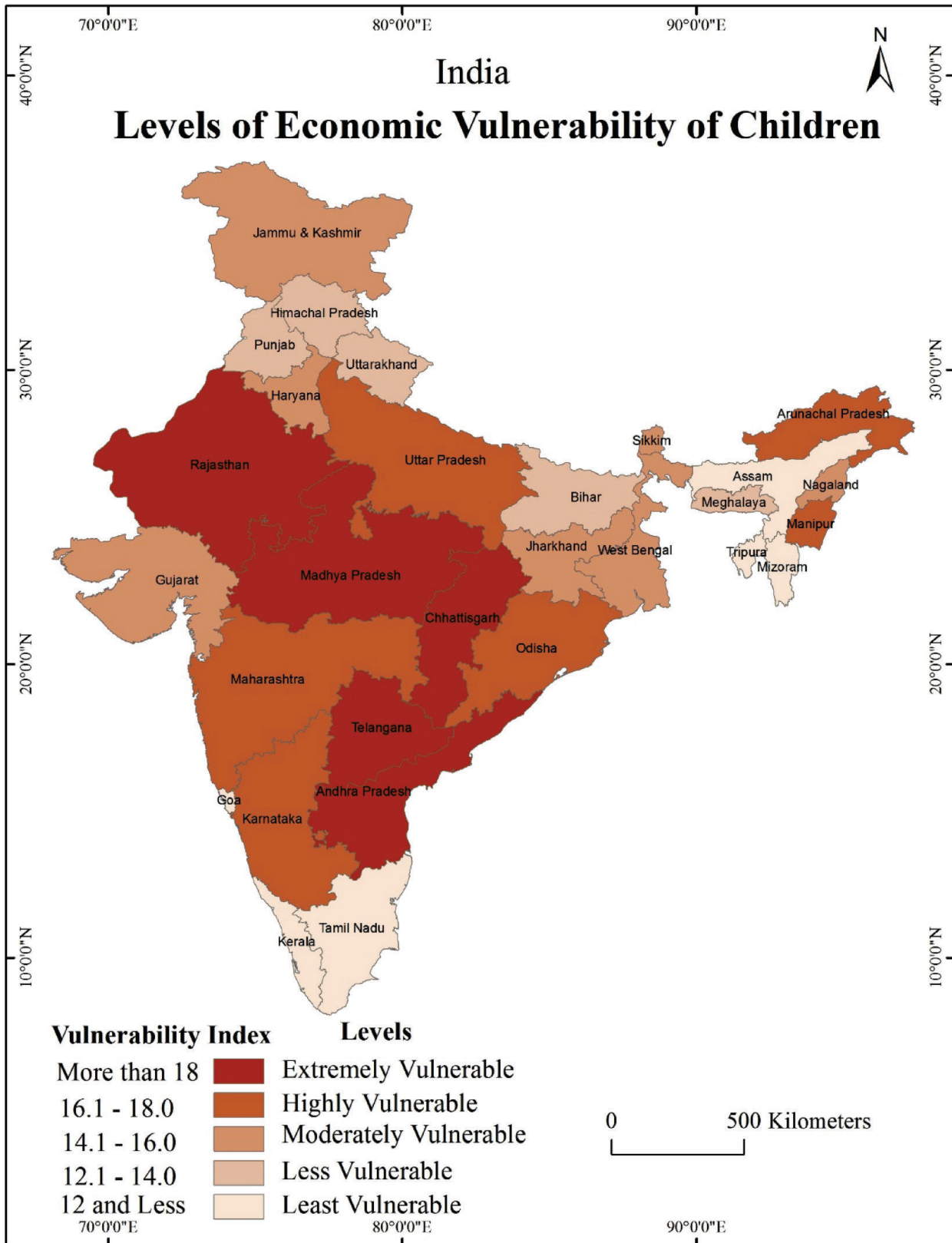


Fig. 4

value of more than 18.0 (Fig. 4). However, seven states namely Jammu and Kashmir, Haryana, Gujarat, Jharkhand, West Bengal, Sikkim and Nagaland fall under moderate level of economic vulnerability of children having composite index value ranging between 14.1 to 16.0 (Fig. 4). Further, the states like Uttar Pradesh, Maharashtra, Karnataka, Odisha, Arunachal Pradesh and Manipur show high level of economic vulnerability of children with composite index value ranging between 16.1 to 18.0 (Fig. 4).

Health Vulnerability among Children

(i) Infant Mortality Rate

Every child has a right to life, survival and development. Infant and child mortality are determined broadly by two factors: (i) the biological endowment of children at birth and (ii) the environment after birth. It may be noted that the society having high mortality and low survival of infants and children reflects their vulnerability in terms of either denial of health facilities or nutrition or living in unsafe, unhealthy environment (Lahariya and Paul, 2010). The Census data 2011 reveals that there are 42 million infants in India who constitute 11.29 per cent of children population. At all India level, the Infant Mortality Rate (IMR) is 41 per thousand live births. However, there are wide inter-state variations across states in IMR from 6 per thousand live births in Kerala to 64 per thousand live births in Uttar Pradesh (Table 5). Statistics reveals that in Kerala, Goa, Tamil Nadu, Manipur, Arunachal Pradesh and Maharashtra, the rate of infant mortality is less than 25 per thousand live births. Similarly, the states of Meghalaya, Sikkim, Telangana, Jammu and Kashmir, Haryana, Gujarat, Himachal Pradesh and Andhra Pradesh have recorded IMR ranging between 30 to 35 per thousand live births. However, in Jharkhand, Assam, Bihar, Madhya Pradesh, Chhattisgarh

and Uttar Pradesh, the rate of infant mortality is more than the national average (Fig. 5a).

(ii) Under-five Year Mortality Rate

Under-five year mortality rate (U-5MR) is the death of children before reaching the age of five years per thousand of children population. The Census data 2011 shows that there are 138.86 million children under 5 years of age in India, constituting 37 per cent of child population under 14 years of age and U-5MR is 50 per cent. However, U-5MR varies from 7 in Kerala to 78 per thousand in Uttar Pradesh. Spatial pattern of U-5MR shows that in Kerala, Goa, Manipur, Tamil Nadu and Maharashtra, it is less than 30 (Table 5). On the other hand, in Rajasthan, Jharkhand, Assam, Bihar, Chhattisgarh, Madhya Pradesh and Uttar Pradesh U-5MR is more than the national average (Fig. 5b). However, U-5MR ranges between 40 to 50 in states like Meghalaya, Haryana, Andhra Pradesh, Gujarat, Mizoram, Uttarakhand and Odisha.

(iii) Malnourished Children

Children health may not be understood only by infant mortality rate and U-5MR as malnutrition is also strongly associated with mortality and morbidity. The inadequate nutrition in childhood hinders long-term physical development, reduces the development of cognitive skills, affects negatively schooling attainment and several outcomes later in life, including productivity, mortality and the likelihood of developing chronic diseases (Tarozzi and Mahajan, 2007; Rajeshwari, 2010). Malnourished children are measured by anthropogenic indicators like:

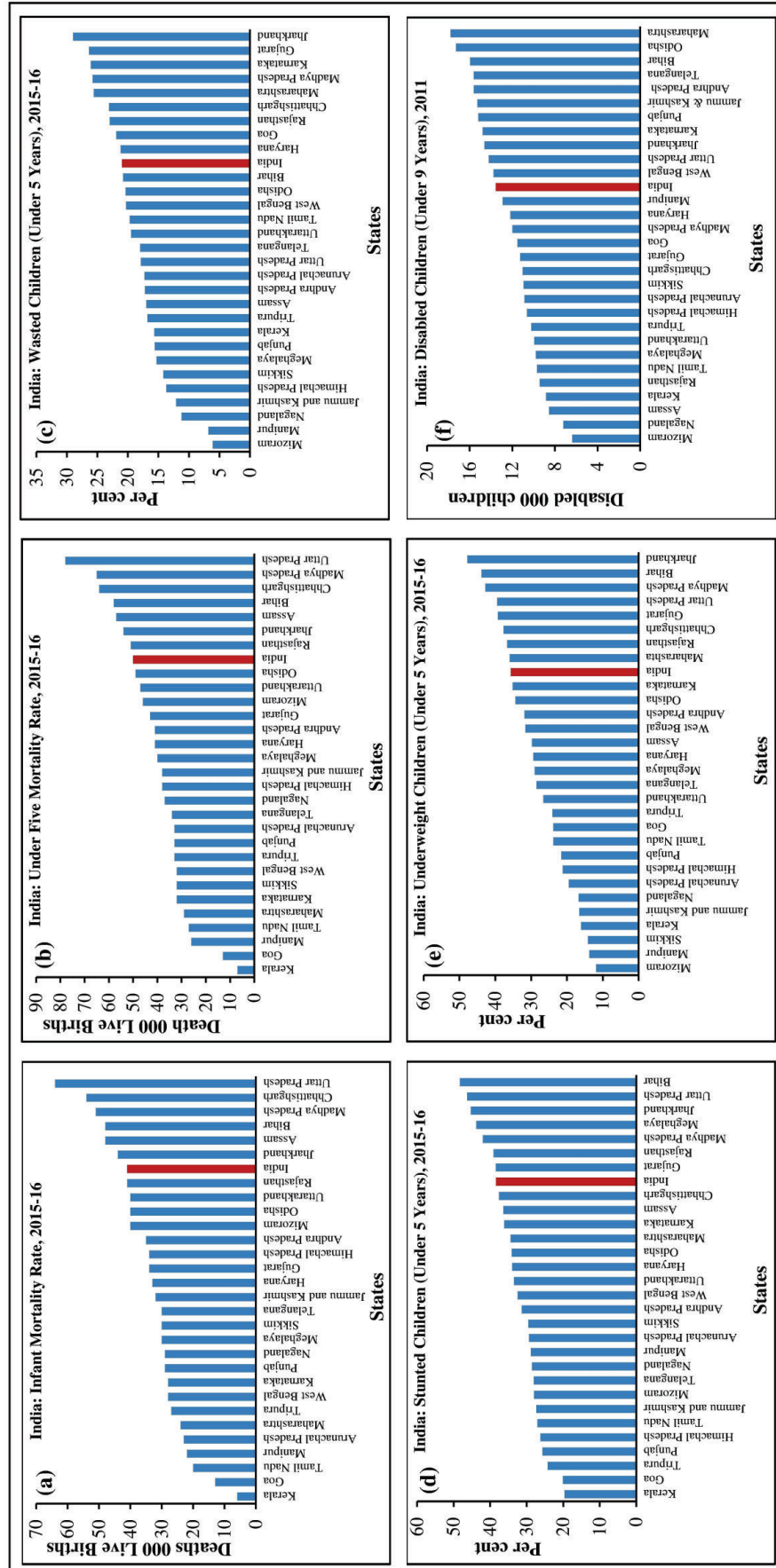
(a) Wasted Children (under 5 years)

Low weight-for-height is known as wasting. At all India level, 21 per cent children are wasted. The proportion of wasted children varies across states. Wasting is recorded as

Table 5
India: Indicators of Health Vulnerability among Children

States	Infant Mortality Rate (Per 000 live births)	Under Five Years Mortality Rate (Per 000 under 5 year children)	Wasted Children (Per cent)	Stunted Children (Per cent)	Underweight Children (Per cent)	Disabled Children (Per 000)
Kerala	06	07	15.7	19.7	16.1	08.83
Goa	13	13	21.9	20.1	23.8	11.52
Tamil Nadu	20	27	19.7	27.1	23.8	09.70
Manipur	22	26	6.80	28.9	13.8	12.91
Arunachal Pradesh	23	33	17.3	29.4	19.5	10.87
Maharashtra	24	29	25.6	34.4	36.0	17.80
Tripura	27	33	16.8	24.3	24.1	10.22
West Bengal	28	32	20.3	32.5	31.6	13.77
Karnataka	28	32	26.1	36.2	35.2	14.78
Punjab	29	33	15.6	25.7	21.6	15.18
Nagaland	29	37	11.2	28.6	16.8	07.22
Meghalaya	30	40	15.3	43.0	29.0	09.79
Sikkim	30	32	14.2	29.6	14.2	10.95
Telangana	30	34	18.0	28.1	28.5	15.62
Jammu and Kashmir	32	38	12.1	27.4	16.6	15.27
Haryana	33	41	21.2	34.0	29.4	12.18
Gujarat	34	43	26.4	38.5	39.3	11.28
Himachal Pradesh	34	38	13.7	26.3	21.2	10.63
Andhra Pradesh	35	41	17.2	31.4	31.9	15.62
Mizoram	40	46	6.10	28.0	11.9	06.40
Odisha	40	49	20.4	34.1	34.4	17.28
Uttarakhand	40	47	19.5	33.5	26.6	09.95
Rajasthan	41	51	23.0	39.1	36.7	09.44
Jharkhand	44	54	29.0	45.3	47.8	14.63
Assam	48	57	17.0	36.4	29.8	08.55
Bihar	48	58	20.8	48.3	43.9	15.96
Madhya Pradesh	51	65	25.8	42.0	42.8	11.99
Chhattisgarh	54	64	23.1	37.6	37.7	11.04
Uttar Pradesh	64	78	17.9	46.3	39.5	14.21
India	41	50	21.0	38.4	35.7	13.54
Coefficient of Variation	35.92	36.68	29.55	22.31	34.23	24.29

Source: Compiled by Authors



Source: Computed by Authors

Fig. 5

lowest in Mizoram (6.1 per cent) and highest in Jharkhand (29 per cent). There are states such as Manipur, Nagaland, Jammu and Kashmir, Himachal Pradesh, Punjab, Kerala, Andhra Pradesh, Uttarakhand, Tamil Nadu, West Bengal etc. where the proportion of wasted children is less than national average of 21 per cent (Fig. 5c). It may be noted that in Haryana, Goa, Rajasthan and Chhattisgarh, the proportion of wasted children ranges between 21 to 25 per cent. However, in case of Maharashtra, Madhya Pradesh, Karnataka, Gujarat and Jharkhand, the situation calls for concern as more than 25 per cent children are wasted (Table 5).

(b) Stunted Children (under 5 years)

Low height-for-age is known as stunting. At national level, 38.4 per cent children are stunted which indicates long term malnutrition among Indian children. The proportion of stunted children is lowest in Kerala (19.7 per cent) and highest in Bihar (48.3 per cent). Table 5 reveals that in Kerala, Goa, Tripura, Punjab, Himachal Pradesh, Tamil Nadu and Jammu and Kashmir, proportion of stunted children is less than 28 per cent. Similarly, 30 to 35 per cent children are stunted in Andhra Pradesh, West Bengal, Uttarakhand, Haryana, Odisha and Maharashtra. However, in Gujarat, Rajasthan, Madhya Pradesh, Meghalaya, Jharkhand, Uttar Pradesh and Bihar, the proportion of stunted children is more than national average of 38.4 per cent (Fig. 5d).

(c) Underweight Children (under 5 years)

Low weight-for-age is known as underweight. Estimates reveal that 35.7 per cent children in India are underweight. However, the proportion of underweight children is lowest in Mizoram (11.9 per cent), while it is highest in Jharkhand (47.8 per cent). In Mizoram, Manipur, Sikkim, Kerala, Jammu

and Kashmir, Nagaland and Arunachal Pradesh, underweight children are less than 20 per cent (Table 5). In case of Maharashtra, Rajasthan, Chhattisgarh, Gujarat, Uttar Pradesh, Madhya Pradesh, Bihar and Jharkhand, proportion of underweight children is more than national average of 35.7 per cent (Fig. 5e). Whereas proportion of underweight children ranges between 25 to 35 per cent in Uttarakhand, Telangana, Meghalaya, Haryana, Assam, West Bengal, Andhra Pradesh and Odisha.

(iv) Disabled Children (under 9 years)

Disability is defined as a physical or mental condition that limits a person's movement, senses or activities. Children with disabilities experience discrimination and social exclusion in every aspect of their lives. Children with disabilities are disproportionately vulnerable to violence, exploitation and abuse. The Census data 2011 reveals that 3.24 million children in India are disabled accounting for 14 disabled children per thousand of child population. The lowest rate of disabled children is found in Mizoram (6.40), while the highest is in Maharashtra (17.80). Table 5 reveals that apart from Mizoram, the rate of disabled children is less than 10.00 per thousand in Nagaland, Assam, Kerala, Rajasthan, Tamil Nadu, Meghalaya and Uttarakhand. Similarly, the rate of disabled children ranges from 10.00 to 12.00 per thousand in Tripura, Himachal Pradesh, Arunachal Pradesh, Sikkim, Chhattisgarh, Gujarat, Goa and Madhya Pradesh. The study shows that in West Bengal, Uttar Pradesh, Jharkhand, Karnataka, Punjab, Jammu and Kashmir, Andhra Pradesh, Bihar, Telangana, Odisha and Maharashtra, the rate of disabled children is more than national average of 13.54 (Fig. 5f).

Table 6
India: Composite Index of Health Vulnerability among Children

States	Health Vulnerability Index	States	Health Vulnerability Index
Bihar	25.83	West Bengal	14.33
Jharkhand	25.67	Meghalaya	13.83
Madhya Pradesh	24.83	Jammu and Kashmir	11.67
Uttar Pradesh	24.33	Punjab	10.67
Chhattisgarh	23.00	Himachal Pradesh	10.00
Odisha	21.17	Arunachal Pradesh	09.83
Gujarat	21.00	Goa	09.00
Rajasthan	20.17	Sikkim	09.00
Andhra Pradesh	17.83	Mizoram	08.50
Karnataka	17.50	Tripura	08.33
Maharashtra	17.50	Tamil Nadu	07.67
Haryana	17.33	Nagaland	07.50
Assam	17.00	Manipur	06.67
Uttarakhand	16.00	Kerala	03.33
Telangana	14.83	-	-

Source: Compiled by Authors

Table 7
India: Composite Index of Children Vulnerability

States	Composite Index	States	Composite Index
Madhya Pradesh	70.92	West Bengal	47.17
Chhattisgarh	64.50	Meghalaya	44.42
Rajasthan	59.58	Uttarakhand	43.67
Uttar Pradesh	57.92	Sikkim	36.17
Bihar	56.75	Punjab	35.58
Odisha	56.58	Jammu and Kashmir	34.83
Jharkhand	55.08	Goa	34.08
Gujarat	51.00	Tripura	34.08
Maharashtra	50.50	Manipur	31.33
Telangana	49.67	Nagaland	30.83
Arunachal Pradesh	49.25	Mizoram	30.75
Andhra Pradesh	48.67	Himachal Pradesh	29.83
Karnataka	48.00	Tamil Nadu	25.92
Haryana	47.92	Kerala	14.75
Assam	47.75	-	-

Source: Compiled by Authors

Levels of Health Vulnerability among Children

The health vulnerability index shows that children in Kerala state are least vulnerable, while in Bihar, the index of children vulnerability is highest (Table 6). It is interesting to note that only four states like Kerala, Tamil Nadu, Manipur and Nagaland have recorded least level of vulnerability of children in health (Fig. 6). In the same way, there are four states namely, Meghalaya, West Bengal, Uttarakhand and Telangana which have recorded moderate level of health

vulnerability among children with composite index value ranging between 12.1 to 16.0 (Table 6). However, a contiguous belt comprising states of Rajasthan, Gujarat, Odisha, Chhattisgarh, Uttar Pradesh, Madhya Pradesh, Jharkhand and Bihar exhibits extreme level of health vulnerability of children (Fig. 6).

Levels of Children Vulnerability

A comprehensive picture of vulnerable children has been prepared by combining all three indices of vulnerability i.e. social, economic and health to arrive at composite

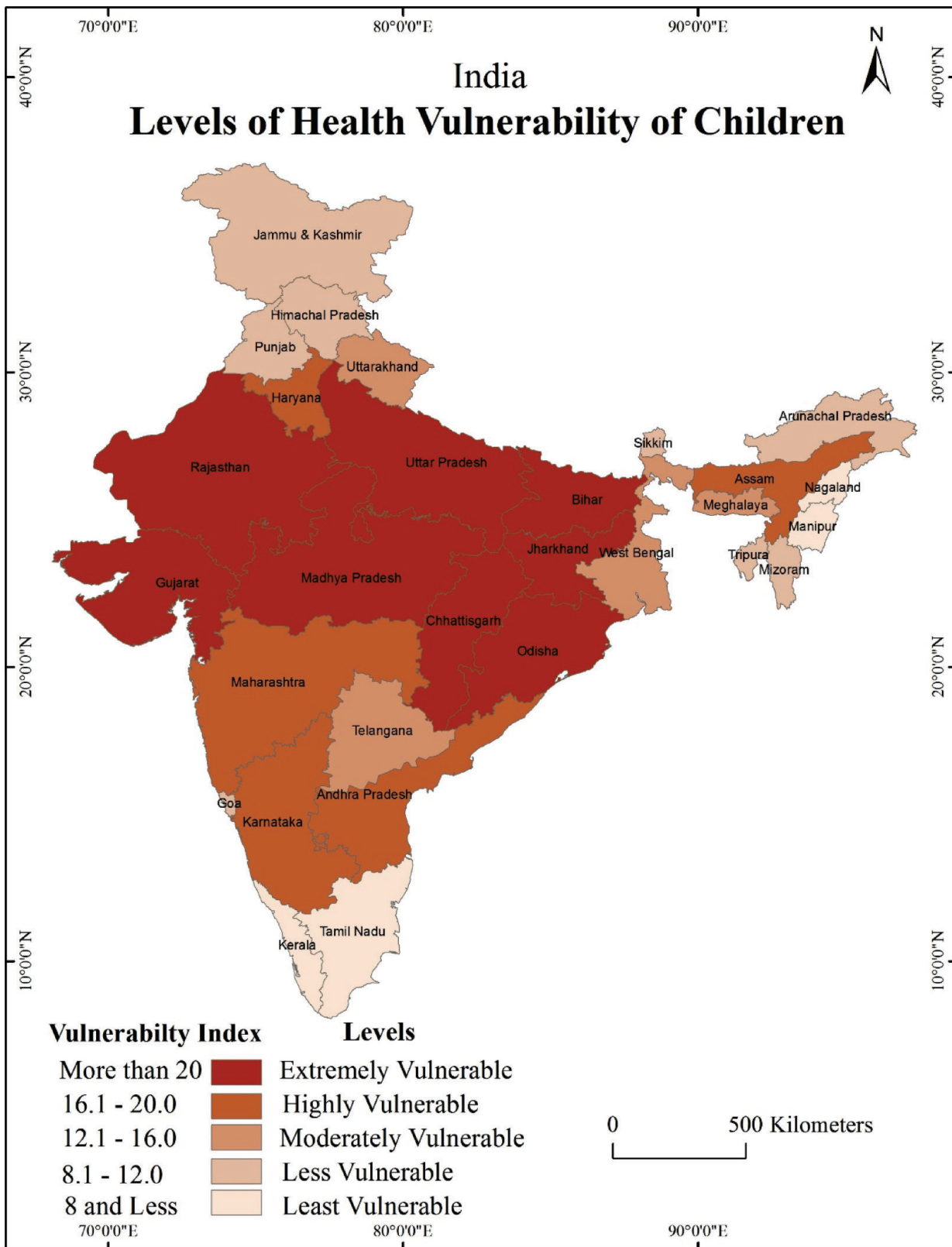


Fig. 6

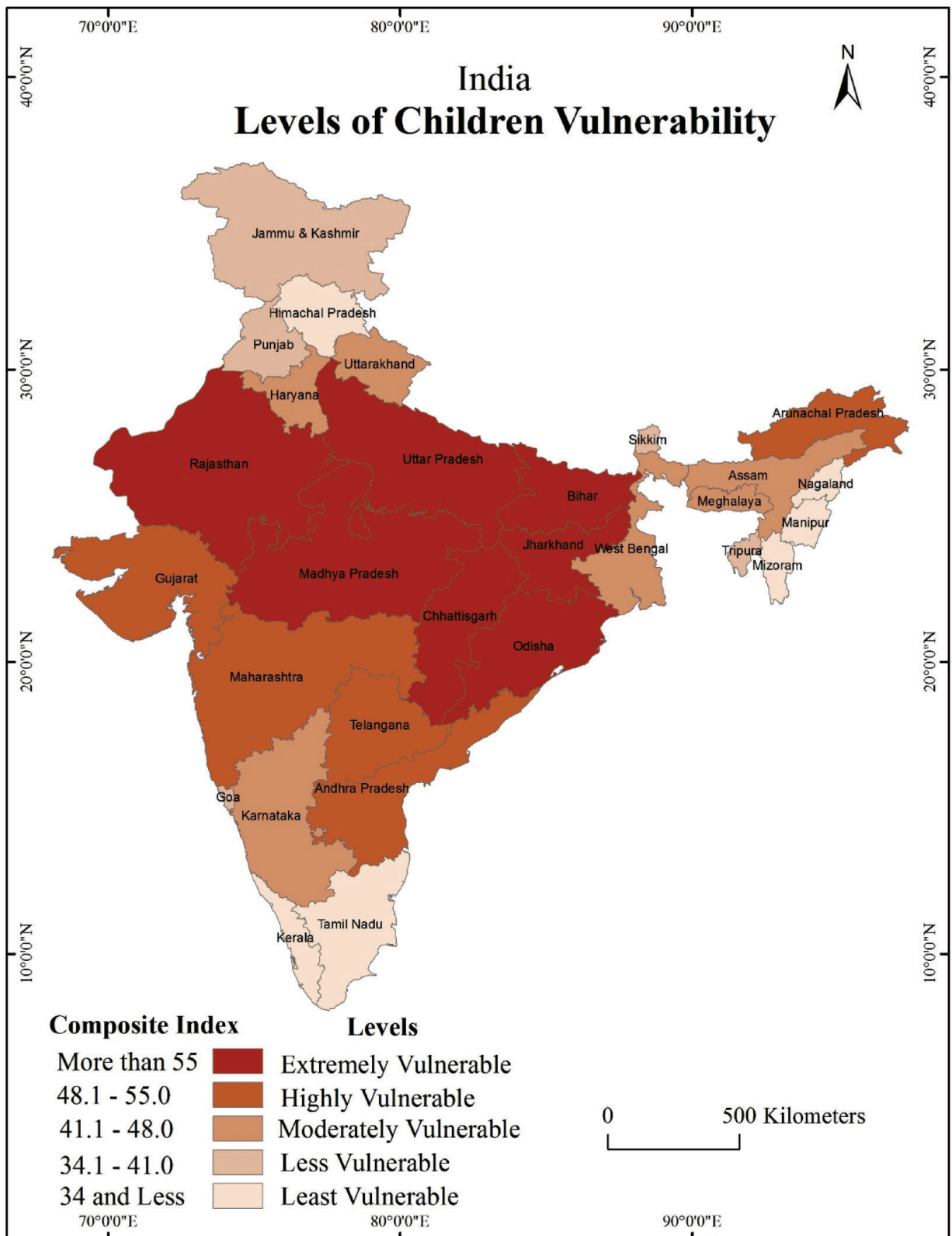


Fig. 7

index. The lowest (14.75) and highest (70.92) composite scores recorded by Kerala and Madhya Pradesh suggest highest and lowest levels of children vulnerability in these states (Table 7). On account of spatial pattern of vulnerable children, it has been observed that six states namely Kerala, Tamil Nadu, Himachal Pradesh, Mizoram, Nagaland and Manipur have least levels in vulnerability of children (Fig. 7). On the other hand, the states of Rajasthan, Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh, Jharkhand and Odisha by recording composite index more than 55.0 comprising a contiguous belt are categorized as areas of extreme vulnerability of children (Fig. 7). Similarly, high level of children vulnerability is witnessed by the states of Gujarat, Maharashtra, Telangana, Andhra Pradesh and Arunachal Pradesh by recording composite index ranging between 48.1 and 55.0. By recording composite index values ranging from 41.1 to 48.0 the states of Uttarakhand, Haryana, West Bengal, Meghalaya, Assam and Karnataka have witnessed moderate level of vulnerability among children (Fig. 7). It may be noted that the central Indian states with larger population of children are having extreme level of children vulnerability which is a cause of concern.

Conclusions

The study highlights the levels and spatial pattern of social, economic and health vulnerability among children in India. Social vulnerability in terms of child marriage, out of school children and crime against children reveals that Kerala, Tamil Nadu, Jammu and Kashmir, Himachal Pradesh, Manipur and Nagaland states have lower levels. While, states of Rajasthan, Madhya Pradesh, Arunachal Pradesh and Assam are very high in the ranks of these three indicators. Economic vulnerability of children measured on account

of child labour, houseless children, slum dwelling children and BPL population reveals that Kerala, Tamil Nadu, Goa, Mizoram, Tripura and Assam states are better placed. While, the states of Rajasthan, Madhya Pradesh, Chhattisgarh, Andhra Pradesh and Telangana are placed at lower level in these indicators. In terms of health indicators, the children of four states namely Kerala, Tamil Nadu, Manipur and Nagaland are in a better position than other states of India. On the other hand, in states of Rajasthan, Gujarat, Uttar Pradesh, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh and Odisha, the health status of children is pathetic. The overall composite index shows that Kerala is the state where the wellbeing of children is highest and in Madhya Pradesh, children vulnerability is at its worst. Finally, the study reveals that two southern states of Kerala and Tamil Nadu; three northeastern states of Mizoram, Nagaland and Manipur and Himachal Pradesh in north are better placed in term of wellbeing of children in India. Conversely, in seven states, namely Rajasthan, Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh, Jharkhand and Odisha, the children are passing through extremely high vulnerable situation.

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