Human Deprivation Index: A Measure of Multidimensional Poverty

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INTRODUCTION

Most of the poverty studies are focusing on income concept only. Like that economic growth and development studies are also giving importance to the income concepts. But poverty is a multidimensional concept. Growth and development are also multi sector approaches. So that the study about these is also should be a multidimensional study. The human development and human deprivation studies have opened new perspectives on measuring and analysing poverty and development with the help of multidimensional concept. The present study, in this context will serve to enrich useful knowledge about human deprivation which analysis the poverty multi dimensionally.

DATA AND METHODOLOGY

Fifteen major Indian States have been selected for the analysis in this study and the study period covers from 1981 to 2001.

The present study is based on the data of the Planning Commission, Government of India, National Family Health Survey I & II, National Sample Surveys and Census of India.

The percentage of population living below poverty line (BPL) is based on the data of Planning Commission of India, Infant Morality Rate is based on Census of India 1997 data, and Economic Survey, Govt of India 2002-03 data, and Illiteracy is derived from the Literacy rate published by Tenth Five Year Plan 2002- 2007, Govt of India, and Census of India 1991and 2001.

For the construction of Human Deprivation Index equal weightage has given to the poverty, health and education variables. To find out year wise data interpolation and extrapolation statistical tool is used. For analysing the relationship between human deprivation index and poverty, health, and education multiple regression analysis is used.

POVERTY

Poverty is a complex and multidimensional socio-economical phenomenon in which a section of the people is unable to fulfill even their necessities of life. Poverty is a condition of severe deprivation in basic human needs. It is a state in which a family's income is too low to be unable to buy the quantities of food, shelter, clothing, and avail education and health facilities that are deemed necessary.

"Poverty is not just 'low income' and 'low consumption' but a multiple deprivation causing premature death, chronic undernourishment,

illiteracy, illness and social exclusion" (John M. Alexander 2005). It is the situation in that not having enough today in some dimensions of well being. "What is typically referred to as poverty, that is, whether households or individuals possess not enough resources or abilities to meet their current needs" (PRSP Source Book 2002).

According to World Bank, "poverty is hunger, poverty is lack of shelter. Poverty is being sick and not being able to see a doctor. Poverty is not being able to go to school, not knowing how to read, and not being able to speak properly. Poverty is not having a job, it is fear for the future, and it is living from hand to mouth. Poverty is losing a child to illness brought about by unclean water. Poverty is powerlessness, lack of freedom".

Poverty is the state of being deprived of the essentials of well-being such as adequate housing, food, sufficient income, employment, health and education. It is lack of goods and services necessary to maintain a minimum adequate standard of living which is mainly depends on income or expenditure, education and health conditions.

The poor are defined as those who lack command over basic consumption needs, including food and non-food components, such as

health, education, shelter, etc. According to the World Bank "Poverty is pronounced deprivation in well-being", where well-being can be measured by an individuals possessions of income, health, nutrition, education, assets, housing, and certain rights in a society such as freedom of speech" (WDR 2000/2001).

Poverty is multidimensional in nature. Poverty is associated not only with insufficient income or consumption but also with insufficient outcomes with respect to health, nutrition, and literacy and deficient social relations, insecurity, and low self-esteem and powerlessness. In some cases it is feasible to apply the tools that have been developed for monetary poverty measurement to nonmonetary indicators for well-being. Applying the tools of poverty measurement to nonmonetary indicator for a "given individual or household to a threshold or "poverty line" under which it can be said that the individual or household is not able to meet basic needs" (PRSP Source Book 2002).

POVERTY: A MULTI DIMENSIONAL CONCEPT

Since poverty is a multidimensional phenomenon, measurement of poverty must cover many dimensions. So far, the income and/or consumption indicator has received most attention. But, now the focus is shifted towards deprivation in different dimensions for example income,

health and education. Poverty is often defined in terms of income. But to describe its multi dimension, different sets of indicators are required. They may include poverty line, unemployment, life expectancy, morality and morbidity, literacy level, availability and access to health services, water and sanitation.

Poverty is analysed conventionally in terms of income, based on the assumption that the well-being is determined mostly by the income. But other social factors like education, health are also important determinants of poverty. To analyse the poverty in depth, there is a need to look beyond income and consumption expenditure. Income is an important indicator but there is a need to look beyond income poverty measure because poverty has many dimensions. Apart from low income, ill health, illiteracy has also worsened the living conditions of the poor.

According to UN World summit for Social Development in Copenhagen 1995, "overall poverty takes various forms, including lack of income and productive resources to ensure sustainable livelihoods, hunger and malnutrition, ill health, limited or lack of access to education and other basic services, increased morbidity and mortality from illness, homelessness and inadequate housing, unsafe environmental and social

discrimination and exclusion. It is also characterized by lack of participation in decision making and in civil, social and cultural life".

Even the poor has been identified with the help of income yardstick, manifestation of poverty has many facets. On the health aspects it reflects nutritional deficiencies and unhygienic living conditions which raise the susceptibility to disease to lead to a high incidence of mortality and low life expectancy. It also represents lack of education and skills which acts as a barrier to more production or higher wage employment. It also associated with unemployment and under-employment.

According to United Nations, absolute poverty is a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to social services. To get a complete idea of poverty, one has to thus to enlarge the canvas of study and talk in terms of deprivations and not merely income as it is in the deprivation of the lives that people can lead that poverty manifests itself.

The primacy in the income or expenditure definition of poverty has been actively challenged by such leading thinkers as Amartya Sen, who has advocated instead a definition of poverty based on the capacity

of the poor to improve their condition, and who considers health and education status as important for this as income.

Amartya Sen proposed that poverty analysis should focus on an individual's access to opportunities and factors such as health, nutrition and education that reflects an individual's basic capacity for effective function in a society.

Poverty is truly a multidimensional phenomenon. So, to assess its effect, an indicator covering its multi dimensions is needed. By thus, we can analyse the poverty very widely and deeply. Combining monetary and social indicators not only captures the multiple dimensions of deprivation, but may also shed light on its chronic or transient nature. Ultimate, one must recognize that poverty lines -however defined – will always represent an arbitrary cut-off point that alone, may not offer the best guide for policy making. More important than searching for the 'single best' poverty line is to explore the sensitivity of poverty estimates to the choices and assumptions behind the statistics, as well as the use of alternative lines and measures. What matters, after all, is to find robust measures that allow users to assess time trends in poverty, analyze its determinants and profile, and establish poverty rankings without having to accept the normative judgments that inevitably underlie any single measure.

Poverty is defined by poverty line, i.e. the minimum income needed to be able to satisfy minimum basic needs. But income is not the only kind of deprivation people may suffer. Although income deprivation may give rise to several other kind of deprivations, people may suffer acute deprivation in many aspects of life even if they posses adequate command over commodities. It is the low level of well-being which is important rather than low level of income. Thus poverty should be viewed as the deprivation of basic capabilities rather than merely as low level of income. Poverty encompasses not only material deprivation (measured by income or consumption) but also many other forms of deprivations in different aspects of life such as unemployment, ill health, lack of education, vulnerability, powerlessness, social exclusion and so on. Dimensions of poverty included not only income poverty, but many others, for example, health, education, nutrition, sanitation, housing, political freedom, gender equality, vulnerability. According to the human development concept poverty is reflecting the lack of choices and opportunities in the key areas of education, health and command over resources, as well as voice related to democratic process.

"Poverty as a public policy concern, whether at the global, national or community level is now widely considered to be a multidimensional

problem. Over the last few decades, new perspective on poverty has challenged the focus on income and consumption as defining condition of poor people. Studies of the problem of poor people and communities, and of the obstacles and opportunities to improving their situation, have led to an understanding of poverty as a complex set of deprivations" (Sakiko Fukuda- Parr 2006). For poverty studies, much of the focus has been on income aspects only. But to understand the persistent and severity of the poverty, other dimensions should also be analysed. A broader multi-dimensional and disciplinary perspective approach is needed to understand the complete severity of poverty. "People can be said to be in poverty when they are deprived of income and other resources needed to obtain the condition of life- the diets, material goods, amenities, standards and services, that enable them to play the roles, meet the obligations and participate in the relative and customs of their society" (Townsend.P.1987).

IMPORTANCE OF HUMAN DEPRIVATION ANALYSIS

Poverty is viewed not only in terms of lack of adequate income, but as a state of deprivation spanning to social, economic and political context of the people that prevent their effective participation as equals in the development process. Poverty is often defined in terms of a person's income. But to describe its multi-dimensions different sets of indicators

are required. These might include poverty line unemployment, life expectancy, mortality and morbidity, literacy level, availability and access to health services, water and sanitation. These indicators are inter-related. For example female education plays an important role in determining health status of the family. Educated women are more likely to earn more income, hear the health education messages, access better health services and adopt healthy and hygienic practices which can have beneficial outcomes for themselves and also far their children and family members. Per capita income does not always ensure enrichment in quality of life reflected in broader dimensions of well-being into in indicators on longevity, or, for that matter, environmental sustainability.

Even though income increase is considered as important goal of development, income alone is not the sum total of human life. National income may useful for many purposes, but may not be necessarily reveal the composition of income or the real beneficiaries. Per capita income does not always ensure enrichment in quality of life reflected in broader dimensions of well-being like in indicators on longevity, knowledge and decent standard of living.

Single dimension analysis especially the income poverty analysis which gives only a partial picture of many ways of don't explicit the seat situation and it is also obscured. "Some one can enjoy good health and

live quite long but be illiterate and thus cut-off from learning, from communication and from interactions with others. Another person may be literate and quite well educated but prone to premature death because of epidemiological characteristics or physical disposition. Yet a third may be excluded from participating in the important decision making processes affecting her life. The deprivation of none of them can be fully captured by the level of their income" (UNDP HDR 2007).

Poverty eradication first required better definition and measure of poverty. Measuring human poverty is not an easy task. Lot of indicators, variable and index are available. They are covering various dimensions of poverty and still a search for appropriate index is continuing. "One reason why the $1/day measure is relied upon for overall monitoring purposes is the need to look at one number rather than 49 different ones to make an overall assessment of progress. It is useful to have focused measures of critical areas of human well being such as child mortality or access to clean water. But it is difficult to decide which one to use in making an overall assessment about whether poverty overall is improving or deteriorating. A composite measure therefore is needed to make this overall assessment that can aggregate the different features of deprivation" (Sakiko Fukuda – Parr 2006).

HUMAN DEPRIVATION

Human deprivation is lack of human capabilities, opportunities, choices, values and access to basic needs such as food, shelter, cloth, health, education etc.,. Poverty is seen as deprivations in opportunities that can result in lesser accumulation of human capabilities, which are essential for leading a tolerable life. Human deprivation in capabilities results from lack of opportunities, i.e., from lack of access to services, assets and employment. "The two concepts of poverty and deprivation are tightly linked but there is general agreement that the concept of deprivation covers the various conditions, independent of income, experienced by people who are poor, while the concept of poverty refers to the lack of income and other resources which make those conditions inescapable or at least highly likely"(David Gordon.et.al 2003).

According to Townsend P. deprivation may be defined as a state of observable and demonstrable disadvantage relative to the local community or the under society or nation to which an individual, family or group belongs. The idea has come to be applied to conditions (that is, physical, emotional or social status or circumstances) rather than resources and to specific and not only general circumstances, and therefore can be distinguished from the concept of poverty. Deprivation

concept is broader than poverty concept. Deprivation concept analyse capabilities, opportunities, empowerment, and vulnerability etc. It gives a broader view than the poverty analysis.

Deprivation indices are broader measures because they reflect different aspects of living standards, including personal, physical and mental conditions, local and environmental facilities, social activities and customs.

Deprivation is the focus on the lack of goods, services or social relations or inadequate physical or social environment and resources needed for human life. It also looks the relative loss of avenues for using or enhancing capabilities. Deprivation takes many different forms in every known society. People can be said to be deprived if they lack the types of diet, clothing, housing, household facilities and fuel and environmental, educational, working and social conditions, activities and facilities which are customary, widely encouraged and approved, in the societies to which they belong. Deprivation is the situation where people cannot obtain the necessities for the life and poverty is the basic cause for that. Deprivation refers to peoples unmet needs, where as poverty refers to the lack of resources require to meet those needs.

HUMAN DEPRIVATION INDEX

Poverty has many dimensions they are, low income, poor health, lack of education, inadequate housing, unemployment, and social exclusion. Analysing the various dimensions of poverty is getting importance because it gives most clear picture about severity of poverty and also various factors such as low income, poor health and illiteracy interact with each other and prevent the poor from escaping from poverty. A change in the definition of the welfare indicator that results in a change in the ranking in the population will result in a different set of people being defined as poor, even if the poverty line remains the same. Yes this aspect often receives less attention from the analyst – despite the fact that the purpose of most poverty analysis is to identify the characteristics of the poor.

Assessing the poverty, with the help of income indicator is not the exclusive paradigm for poverty assessment and non-monetary components of poverty are also useful in assessing poverty. Most of the poverty estimates do not take into account of the non-market access to public services, such as health and education. To avoid this and to quantify the poverty, poverty estimates must take into consideration of social indicates such as health and education etc.

"The determination of a poverty line cannot be based on an arbitrary selection of a low level of income. Only scientific criteria independent of income can justify where the poverty line should be drawn. The multiplicity and severity of different types of deprivation can constitute those criteria. The key is therefore to define a threshold of income below which people are found to be thus deprived. The measure of multiple deprivations must be decided on the basis of evidence about each and every sphere of the range of social and individual activities people perform in fulfillment of individual and family needs and social obligations. The degree of material and social deprivation relative to income is the basis for ascertaining the threshold amount of income ordinarily required by household of different compositions to surmount poverty" (Townsend.P 1987).

Estimating deprivation with the help of poverty line alone couldn't explicit the complete impact of poverty. Apart from low income, ill health and illiteracy have also worsened the living conditions of the poor. So, deprivation estimation must include these also.

To analyse the different facets of poverty, an indicator must reflect its dimensions. Human deprivation index has been reflecting the different facets of poverty. Economic indicators focus primarily on income poverty

whereas human deprivation index provides a measure of the multidimensional nature of poverty.

Human deprivation index is a composite index based on the income, health and educational deprivations. For the analysis human deprivation index gives equal weightage for these three deprivations. There is lot of indicators for measuring these deprivations. For example, per capita income, percentage of population living below poverty line, unemployment, anaemia among children and mother, under-nourished children, infant mortality rate, maternal mortality rate, birth rate, death rate, immusation achievement, availability of health facilities, illiteracy, drop-out, student-teacher ratio, availability of educational facilities etc. But among these, very prominent, sensitive and effective indicators are selected for human deprivation index construction.

Poverty has traditionally been measured using “means” indicators recently analysis poverty with “end” indicators is getting interest support and importance. Human deprivation index is one of such an index analysing poverty with the help of both means and end indicators such as poverty line, infant mortality rate and illiteracy rate. It is a composite index of three components, they are, percentage of population living below the poverty line i.e. head count index, which is used as a measure

of income deprivation, illiteracy which is used as a measure of educational deprivation and infant mortality rate is used as a measure of health deprivation.

The income approaches of poverty view the poverty as income or consumption deprivation. Income poverty, which measures people's deprivation in income or consumption related to some standard of poverty line. The poverty line specifies the society's minimum standard of living to which everybody should be entitled. A person is identified as poor if he or she cannot enjoy this minimum. When estimating monetary measured of poverty one may have a choice between using income or consumption as the indicator of well-being. Human well being not only includes consumption of goods and services but also the accessibility of people to the basic needs like health, education, water and sanitation, etc.,.

Human deprivation index is a composite index and it is used for measuring the multi-dimensions of deprivation. It also shows the limitations in distributing the fruits of development among people and achievements in three most important basic human needs viz., income, health and education. To represent the dimensions of human deprivation important variables are chosen from these aspects because income, health and education are important for human development.

According to the World Bank there are five core dimensions of poverty reflect the deprivation of human capabilities: economic (income, livelihoods, decent work), human (health, education), political (empowerment, rights, voice), socio-cultural (status, dignity) and protective (insecurity, risk, vulnerability). Among these deprivations income, health, education deprivations are taken for this analysis. Because, the data of these are the most sensitive, predominant, easily assessable and available for any kind of research and analysis. Income poverty is the main cause for ill health and illiteracy. Like that ill health and illiteracy leads to poverty. Low income, ill health, illiteracy are the key dimensions of poverty. Raising the income of the poor alone might not be enough to reduce poverty without improvements in the health and education of the poor. So, with income, health and education determines human development. Like that deprivation in income, health and education suffers people severely. Hence, these deprivations are getting priority in this analysis.

Human deprivation Index is more comprehensive for evaluating the deprivation even within sub-national level. It is an appropriate index for cross-country analysis also. Since, poverty is a multidimensional phenomenon, indicators which are used to analyse it, should also be multidimensional. Hence in assessing poverty, non-income aspects of

poverty, such as deprivations in health, education have also to be included.

Poor people cannot command or utilize resources. Income is the key for command over resources. Short fall in income leads to poverty deprivation. To measure income deprivation poverty line is used to compute the human deprivation in this analysis.

Healthy and educated people contribute more to economic growth. Health and education enables the people to improve and use their capabilities. Deprivation in health and education affects people very severely. That leads to poverty. Hence, health and education deprivations are taken for assessment in this analysis. “To be sure, infant and child mortality rate considerably more relevant for the poor than are some other society wide indicators – such as life expectancy. Which might have been selected, because of the tendency for mortality among the poor to be concentrated in the younger age groups” (Dwatkin.D.R 2000). Unlike the indicators on life expectancy that are relatively stable and slow moving, the infant and child mortality indicators are likely to be more sensitive to changes that have a bearing on the quality of life, particularly, to the health and longevity of people. These could be sudden adversities or non-availability of critical public health and life support services. They are, thus, more useful from the point of policy targeting and tracking changes

in health attainments of a population at more frequent intervals, particularly when the population is yet to complete its demographic transition. Education is one of the basic needs for human development and to escape from poverty. The deprivation of education in itself represents poverty and it is an integral pat of poverty. Hence including educational deprivation is imperative for the complete analysis of poverty

The present study proposes a composite index i.e., human deprivation index which is based on the deprivation in income, health and educational aspects. There are lots of indicators available for measuring human deprivation, but among these, very prominent and effective indicators have been taken for the construction of human deprivation index. Human deprivation index includes three equally - weighted indicators, they are poverty line, infant mortality rate, and illiteracy. In this study, for analysing human deprivation in India, State-wise human deprivation index have been constructed. Indicators on three aspects of deprivation have been considered for constructing the human deprivation index, they are income deprivation, health deprivation and education deprivation. In this analysis, Income deprivation is measured by population living below poverty line, health deprivation is measured by infant mortality rate and educational deprivation is measured by illiteracy rate. Based on the poverty line (percentage population living below the

poverty line), infant mortality rate (Number of infants dying under one year of age in a year per 1000 live births of the same year) and illiteracy rate (100- literacy rate), State-wise "Human Deprivation Index" is constructed for the year 1981, 1991 and 2001. These three indicators are given equal weightage for constructing "Human Deprivation Index" of Indian States. After constructing "Human Deprivation Index", the States are ranked according to their derivational index points. According to the rank, the number one state is first in human deprivation and can be said as worst in human development.

Human Deprivation Index (HDepI) t_1 =

$\frac{1}{3}$ (Poverty line) t_1 + $\frac{1}{3}$ (Infant Mortality Rate) t_1 + $\frac{1}{3}$ (illiteracy rate) t_1,

Where as, t1 is the year selected for the analysis.

Table No: 1

Human Deprivation Index of India for the year 1981

Sl.NO	States	BPL	IMR	Illiteracy	HDepI Value	HDepI Rank
1	Orissa	66.85	163	65.8	98.55	1
2	Madhya Pradesh	53.5	150	72.1	91.87	2
3	Rajasthan	35.42	141	75.6	84.01	3
4	Uttar Pradesh	47.72	130	72.8	83.51	4
5	Bihar	62	94	73.8	76.6	5
6	Assam	45.4	109	67.04	73.81	6
7	Maharastra	47.24	119	52.8	73.01	7
8	Haryana	23.81	126	63.9	71.24	8
9	West Bengal	56.68	95	59.1	70.26	9
10	Tamil Nadu	52.68	104	53.2	69.96	10
11	Gujrat	35.39	115	56.3	68.9	11
12	Punjab	17.15	127	59.1	67.75	12
13	Andhra Pradesh	32.03	91	70.1	64.38	13
14	Karnataka	41.47	81	61.5	61.32	14
15	Kerala	44.02	54	29.6	42.54	15
	INDIA	46.65	115	56.43	72.69	

From the above table it can be observed that in 1981 India's deprivation was very serious and severe. In 1981, India's human deprivation index was an alarming high 72.69 and this is mainly because of high infant mortality rate that means at that time health deprivation was severely affected the people. In 1981, Orissa was the most deprived State in India. Its deprivation index was 98.58 that was above India's index. But comparing with the next follower i.e. Madhya Pradesh, the illiteracy was better than that State. In that period above 72% of people were illiterate in Madhya Pradesh and Orissa had 65.80% of illiterate

people. But in income and health aspects Madhya Pradesh was least deprived than Orissa. At that time, in Orissa 66.85% of people were below the poverty line and the IMR for that State was 163 which was highest in the country, comparatively Madhya Pradesh had 91.87 human deprivation index and there was 53.50% people were below poverty line and the IMR was 150.

Rajasthan was in third place with 84.01 human deprivation index and the Uttar Pradesh State was at 4th place with 83.51 deprivation index, which was a little bit lower than Rajasthan's index. Bihar, a well known State for it's under development stood at 5th place with 76.60 index. In this aspect, comparing with Orissa, it was better State in these deprivational aspects. Surprisingly, its IMR was 94, which was below the national average.

Assam followed in 6th position with 73.81 index. Then India's industrial State Maharastra was at 7th place, with 73.01 index, this was mainly because of the high infant mortality rate - 119. Surprisingly, Haryana was at next in 8th position. At all India level, Haryana was the State in which second least number of people live below the poverty line i.e., only 23.81% but due to the high IMR – 126 and illiteracy 63.90 its position was peaked to the 8th place. This shows that if a State or a

Country even better in income aspect won't have automatically better health and education situation.

West Bengal a well known State for land reforms stood at 9th place with 70.26 index and next that Tamil Nadu was at 10th place with 69.96 a very few better index secured that position below West Bengal. Even though it's high IMR -115, Gujrat was in 11th position with 68.90 points and it had only 35.39% of BPL people in 1981.

In 1981, Punjab was the better State in income aspects, because it had only 17.15% of BPL people, it was the least in all over India. But due to high IMR and Illiteracy its position was above Kerala, Karnataka and Andhra Pradesh. Punjab's IMR and illiteracy were above all India's average. Andhra Pradesh was at 13th place with 64.38 index, illiteracy rate (64.38) was high during that time.

Karnataka was the Second Best State with 61.30 index points and at 14th place. Even though it was at better position in overall deprivation position, it's illiteracy rate – 61.30 above India's illiteracy rate. Kerala was the least deprived State during that period with 42.54 index, which was at 15th place. The main reason for that was it had low IMR and illiteracy rate in the country. It's achievement in human development sphere is commendable and comparable with well developed countries,

that shows, why Kerala is least deprived State in India. This proves that apart from income, health and education also playing vital role in human development and deprivation. So, an adequate importance should be given to health and educational sectors which are also playing key role in a country's development.

Table No: 2

Human Deprivation Index of India for the year 1991

Sl.NO	States	BPL	IMR	Illiteracy	HDepI Value	HDepI Rank
1	Madhya Pradesh	43.88	133	55.8	77.56	1
2	Orissa	51.64	125	50.9	75.85	2
3	Uttar Pradesh	42.02	99	58.4	66.47	3
4	Bihar	56.34	75	61.5	64.28	4
5	Assam	40.78	92	47.1	59.96	5
6	Rajasthan	28.69	87	61.4	59.03	6
7	Karnataka	34.12	74	44	50.71	7
8	Maharastra	38.09	74	35.1	49.06	8
9	West Bengal	38.87	62	42.3	47.72	9
10	Gujrat	25.72	78	38.7	47.47	10
11	Andhra Pradesh	23.87	55	55.9	44.92	11
12	Tamil Nadu	37.86	54	37.3	43.05	12
13	Punjab	12.54	74	41.5	42.68	13
14	Haryana	24.27	52	44.2	40.16	14
15	Kerala	27.9	42	10.2	26.7	15
	INDIA	37.53	77	47.8	54.11	

From the above table it is noted that in 1991, Madhya Pradesh captured the first position in human deprivation because of the high infant mortality. It had 77.56 human development index points. On the other

hand, Orissa, due to some improvements in infant mortality reduction, attained second position with 75.85 deprivational index, but it had more below poverty line people (51.64) than Madhya Pradesh (43.88) index.

Due to low performances in health and educational sectors Uttar Pradesh moved to 3rd place with 66.47 points. Bihar, as usual, followed Uttar Pradesh at 4th place with 64.28 human development index. Due to its severe health deprivation – IMR- 92, Assam occupied 5th place with 59.96 points. Rajasthan because of its slight improvement in health and education, with 59.03 human deprivational points, it went to 6th position.

Due to its very slow progress in the development Karnataka climbed from the 14th position in 1981 to 7th position in 1991 with 50.71 points. Climbing in the human deprivation position is a bad sign of development. That means Karnataka during that period, comparing with other States, stagnated in over all socio-economic development. Maharastra was at 8th place with 49.06 points. West Bengal stood at the 9th position with its 47.72 points. After that Gujrat was at 10th place with 47.47 human deprivation index.

Andhra Pradesh was at 11th position with 44.92 points, due to its overall development, with near about 50% reduction in IMR from 104 in 1981 to 54 in 1991 and with 37.30 illiteracy rate, Tamil Nadu went to 12th

place with 43.05 human deprivation index. Punjab also performed well and went to 13th place with 42.68 points.

Even though an increase in poverty rate, Haryana, because of its remarkable achievement in health and education development its deprivation index went to 40.16 in 1991 from 71.24 in 1981. Because of it, in the human deprivation place, that State went from 8th place to 14th place. Haryana's IMR and illiteracy reduction during 1981 and 1991 was really laudable. IMR reduction was almost two third. In 1981, IMR was 126 where as in 1991 it reduced to 52. In 1991 also, as usual, Kerala stood at 15th place with 26.70 human deprivation index. Its illiteracy rate was 10.20 at that period; it was equal to developed country's record.

Table No: 3

Human Deprivation Index of India for the year 2001

Sl.NO	States	BPL	IMR	Illiteracy	HDepI Value	HDepI Rank
1	Orissa	46.7	98	36.69	60.46	1
2	Madhya Pradesh	35.87	97	35.89	56.25	2
3	Bihar	39.13	67	52.47	52.87	3
4	Uttar Pradesh	28.46	85	42.64	52.03	4
5	Assam	34.63	78	35.57	49.4	5
6	Rajasthan	12.57	83	38.97	44.85	6
7	Andhra Pradesh	14.07	66	38.89	39.65	7
8	West Bengal	24.35	53	30.78	36.04	8
9	Karnataka	16.94	58	32.96	35.97	9
10	Haryana	6.15	69	31.41	35.52	10
11	Gujrat	11.74	64	30.03	35.26	11
12	Tamil Nadu	17.84	53	26.53	32.46	12
13	Maharastra	22	49	22.73	31.24	13
14	Punjab	4.96	54	30.05	29.67	14
15	Kerala	10.1	16	9.08	11.73	15
	INDIA	23.25	71	34.62	42.96	

During 2001 also once again Orissa occupied the 1st position with 60.46 human deprivation index points. It was the highly deprived State in that period. It was an implication of prolonged underdevelopment. Except educational deprivation, it was the first State in income deprivation – BPL -46.70 and in health deprivation – IMR – 98. After that, Madhya Pradesh had most deprivation index- 56.25 and occupied the second place. Its IMR was an alarming 97.

Due to its high illiteracy rate – 52.47, Bihar stood at 3rd place with 52.87 human deprivation index. Its income deprivation was also very

high. It was the second State that having more number of below poverty people i.e. 39.13. Uttar Pradesh followed Bihar, in 4th position, even though it was one of the most deprived State in health and education due to its fair BPL rate it occupied that position with 52.03 index.

Assam retained its 5th position with 49.45 human deprivation points. Rajasthan, even though it had very impressive low BPL – 12.57, because of its high IMR – 83, it was at 6th position. Andhra Pradesh at 7th place with 39.65 human deprivation points, this was mainly due to slow decreasing rate of deprivation. Comparing with 1991, ironically, its IMR was increase in 2001. In 1991, IMR was 55 where as in 2001 it was 66 and its performance in health was disappointing.

West Bengal, during 2001 stepped up one position to 8th place with 36.04 points because of its high IMR and illiteracy rate. On the other hand, Karnataka performed well during that period and moved from its 7th position in 1991 to 9th position in 2001 with 35.97 deprivation index. But during the same period, Haryana, performed poorly in health deprivation aspects and climbed to 10th position with 35.52 points. During 1991, it had only 52 IMR but in 2001 the IMR was 69, a dismal increase.

Gujrat occupied 11th position with 35.26 deprivation points. Tamil Nadu followed it, and at 12th position with 32.46 index. This is mainly

because of reduction in the illiteracy rate. Maharastra, due to its achievement in the IMR reduction, went from 8th position in 1991 to 13th position in 2001 with 31.24 deprivation points.

Punjab, with the achievement in the poverty reduction occupied 14th position with 29.67 points. It was the State that had least percentage of BPL people i.e. 4.96 in 2001 which was equal to the same of the developed countries. As usual, Kerala was the least deprived State in the country. It was at the bottom of the table with 11.73 deprivation index and stood at 15th place. That's why Kerala is being compared with some of the developed countries in human development sphere.

INFLUENCE OF POVERTY LINE, INFANT MORTALITY AND ILLITERACY ON HUMAN DEPRIVATION INDEX – AN ANALYSIS

This section deals with the analysis of Human Deprivation and its relationship with poverty line, infant mortality and illiteracy. As indicated earlier, in this section, State-wise and all India analysis have been carried out. Multiple regression model has been used for the analysis.

The main aim of this analysis is to find the influence of the poverty, health and education on human deprivation. To find out that, multiple regression analysis has been carried out, for that, the percentage of population who are living below poverty line i.e. BPL, infant mortality

rate and illiteracy rate are taken as independent variables and human deprivation index is considered as the dependent variable.

The multiple regression model of the analysis is,

$$y = \alpha_1 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + e_1$$

in which

y is human deprivation index,

α_1 is constant,

x_1 is percentage of population living below poverty line,

x_2 is infant mortality rate, and

x_3 is illiteracy rate and

e_1 is error term

The error term e_1 is assumed to be normally distributed with zero mean, constant variance and uncorrelated with the explanatory variables.

Table No: 4. Human Deprivation Index, BPL, IMR, and Illiteracy of India from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	72.69	46.65	115	56.43
1982	70.78	45.57	111	55.57
1983	68.86	44.48	107	54.71
1984	67.02	43.61	104	53.85
1985	65.18	42.74	100	52.99
1986	63.33	41.87	96	52.13
1987	61.49	41.01	92	51.27
1988	59.65	40.14	88	50.41
1989	57.80	39.27	85	49.55
1990	55.96	38.40	81	48.69
1991	54.12	37.53	77	47.83
1992	53.21	36.75	76	46.48
1993	52.31	35.97	76	45.16
1994	51.12	34.33	75	43.85
1995	49.94	32.68	75	42.53
1996	48.75	31.04	74	41.21
1997	47.56	29.39	73	39.89
1998	46.37	27.75	73	38.57
1999	45.19	26.10	72	37.26
2000	44.07	24.68	72	35.94
2001	42.96	23.25	71	34.62

The regression equation of India is

$$y = 0.001 + 0.34x_1 + 0.33x_2 + 0.33x_3$$

At the all India level, the three variables brought the uniform influence on human deprivation index. A unit change in BPL brought about 0.34 percent change in human deprivation index. Like that a unit change in infant mortality and illiteracy brought about each 0.33 percent change in human deprivation index.

Table No: 5. Human Deprivation Index, BPL, IMR, and Illiteracy of Andhra Pradesh from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	64.38	32.03	91	70.10
1982	62.18	30.47	87	68.68
1983	59.99	28.91	84	67.26
1984	58.11	28.28	80	65.84
1985	56.22	27.65	77	64.42
1986	54.34	27.02	73	63.00
1987	52.46	26.39	69	61.58
1988	50.57	25.76	66	60.16
1989	48.69	25.13	62	58.74
1990	46.81	24.5	59	57.32
1991	44.92	23.87	55	55.90
1992	44.44	23.03	56	54.20
1993	43.96	22.19	57	52.50
1994	43.41	21.12	58	50.80
1995	42.85	20.05	59	49.10
1996	42.29	18.98	61	47.40
1997	41.73	17.91	62	45.69
1998	41.18	16.84	63	43.99
1999	40.62	15.77	64	42.29
2000	40.14	14.92	65	40.59
2001	39.65	14.07	66	38.89

The regression equation of Andhra Pradesh is

$$y = 0.269 + 0.39x_1 + 0.33x_2 + 0.30x_3$$

From this equation it is estimated that a unit change in below poverty brought about 0.39 percent change in human deprivation index. Like that, a unit change in infant mortality brought about 0.33 percent change in human deprivation index and also a unit change in Illiteracy brought about 0.30 percent change in human deprivation index.

Hence it is clear from this analysis that the influence of poverty was high on human deprivation in Andhra Pradesh.

Table No: 6. Human Deprivation Index, BPL, IMR, and Illiteracy of Assam from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	73.81	45.40	109	67.04
1982	71.76	42.94	107	65.05
1983	69.71	40.47	106	63.06
1984	68.49	40.51	104	61.07
1985	67.27	40.55	102	59.08
1986	66.06	40.59	101	57.09
1987	64.84	40.63	99	55.10
1988	63.62	40.66	97	53.11
1989	62.41	40.70	95	51.12
1990	61.19	40.74	94	49.13
1991	59.97	40.78	92	47.14
1992	59.12	40.82	91	45.95
1993	58.28	40.86	89	44.79
1994	57.17	40.07	88	43.64
1995	56.05	39.27	86	42.49
1996	54.94	38.48	85	41.34
1997	53.82	37.68	84	40.18
1998	52.70	36.89	82	39.03
1999	51.59	36.09	81	37.88
2000	50.49	35.36	79	36.72
2001	49.40	34.63	78	35.57

The regression equation of Assam is

$$y = 2.465 + 0.37x_1 + 0.29x_2 + 0.40x_3$$

It is obvious from the above equation that a unit change in illiteracy brought about 0.40 percent change in human deprivation index. A unit change in below poverty made 0.37 percent change in human deprivation index and a unit change in infant mortality brought about 0.29 percent change in human deprivation.

So, it is found that the influence of illiteracy was high on human deprivation in Assam.

Table No: 7. Human Deprivation Index, BPL, IMR, and Illiteracy of Bihar from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	76.60	62.00	94	73.80
1982	75.59	62.11	92	72.57
1983	74.59	62.22	90	71.34
1984	73.30	61.49	88	70.11
1985	72.01	60.75	86	68.88
1986	70.72	60.02	85	67.65
1987	69.43	59.28	83	66.42
1988	68.15	58.55	81	65.19
1989	66.86	57.81	79	63.96
1990	65.57	57.08	77	62.73
1991	64.28	56.34	75	61.50
1992	63.48	55.65	74	60.60
1993	62.68	54.96	73	59.69
1994	61.43	52.90	73	58.79
1995	60.18	50.84	72	57.89
1996	58.92	48.78	71	56.99
1997	57.67	46.72	70	56.08
1998	56.41	44.66	69	55.18
1999	55.16	42.60	69	54.28
2000	54.01	40.87	68	53.37
2001	52.87	39.13	67	52.47

The regression equation of Bihar is

$$y = -1.435 + 0.25x_1 + 0.12x_2 + 0.69x_3$$

It is observed from the above equation that a unit change in illiteracy brought about 0.69 percent change in human deprivation index. A unit change in below poverty brought 0.25 percent change in human deprivation index. And also, a unit change in infant mortality made 0.12 percent change in human deprivation index.

It is found that the influence of illiteracy was very high on human deprivation index whereas the influence of infant mortality was very low in Bihar.

Table No: 8. Human Deprivation Index, BPL, IMR, and Illiteracy of Gujrat from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	68.90	35.39	115	56.30
1982	66.64	34.09	111	54.54
1983	64.39	32.79	108	52.78
1984	62.28	31.91	104	51.02
1985	60.16	31.02	100	49.26
1986	58.05	30.14	97	47.50
1987	55.93	29.26	93	45.74
1988	53.82	28.37	89	43.98
1989	51.70	27.49	85	42.22
1990	49.59	26.60	82	40.46
1991	47.47	25.72	78	38.70
1992	46.47	24.97	77	37.83
1993	45.46	24.21	75	36.97
1994	44.14	22.52	74	36.10
1995	42.82	20.83	72	35.23
1996	41.50	19.14	71	34.37
1997	40.18	17.45	70	33.50
1998	38.86	15.76	68	32.63
1999	37.54	14.07	67	31.76
2000	36.40	12.91	65	30.90
2001	35.26	11.74	64	30.03

The regression equation of Gujarat is

$$y = -0.054 + 0.23x_1 + 0.08x_2 + 0.92x_3$$

From the above equation it is found that a unit change in illiteracy made 0.92 percent change in human deprivation index. A unit change in below poverty brought about 0.23 percent change in human deprivation index. But a unit change in infant mortality brought only a meager of 0.08 percent change in human deprivation index.

Hence, it is clear that the influence of illiteracy was very high on human deprivation where as the influence of infant mortality was meager.

Table No: 9. Human Deprivation Index, BPL, IMR, and Illiteracy of Haryana from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	71.24	23.81	126	63.90
1982	67.71	22.59	119	61.93
1983	64.18	21.37	111	59.96
1984	61.17	21.73	104	57.99
1985	58.17	22.10	96	56.02
1986	55.17	22.46	89	54.05
1987	52.17	22.82	82	52.08
1988	49.16	23.18	74	50.11
1989	46.16	23.55	67	48.14
1990	43.16	23.91	59	46.17
1991	40.16	24.27	52	44.20
1992	40.43	24.66	54	42.92
1993	40.70	25.05	55	41.64
1994	39.93	22.33	57	40.36
1995	39.17	19.61	59	39.08
1996	38.40	16.90	61	37.81
1997	37.63	14.18	62	36.53
1998	36.87	11.46	64	35.25
1999	36.10	8.74	66	33.97
2000	35.81	7.45	67	32.69
2001	35.52	6.15	69	31.41

The regression equation of Haryana is

$$y = (- 0.032) + 0.33x_1 + 0.33x_2 + 0.34x_3$$

From the above equation it is obvious that almost all the three factors had uniform influence on human deprivation index. Only illiteracy had more influence but it also a marginal only. A unit change in illiteracy made about 0.34 percent change on human deprivation index.

All the three variables were influenced the human deprivation index almost equally in Haryana.

Table No: 10. Human Deprivation Index, BPL, IMR, and Illiteracy of Karnataka from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	61.32	41.47	81	61.50
1982	59.97	39.86	80	59.75
1983	58.61	38.24	80	58.00
1984	57.63	37.73	79	56.25
1985	56.64	37.21	78	54.50
1986	55.65	36.70	78	52.75
1987	54.66	36.18	77	51.00
1988	53.67	35.67	76	49.25
1989	52.68	35.15	75	47.50
1990	51.70	34.64	75	45.75
1991	50.71	34.12	74	44.00
1992	49.65	33.64	72	42.90
1993	48.58	33.16	71	41.79
1994	46.95	30.97	69	40.69
1995	45.32	28.79	68	39.58
1996	43.69	26.60	66	38.48
1997	42.06	24.41	64	37.38
1998	40.43	22.23	63	36.27
1999	38.80	20.04	61	35.17
2000	37.38	18.49	60	34.06
2001	35.97	16.94	58	32.96

The regression equation of Karnataka is

$$y = 2.2 + 0.38x_1 + 0.28x_2 + 0.34x_3$$

It is noted that a unit change in below poverty made 0.38 percent change on human deprivation index, like that a unit change in illiteracy made 0.34 percent change on human deprivation index. A unit change in infant mortality brought 0.28 percent change in human deprivation index.

It is found that the influence of below poverty was high on human deprivation index where as the influence of infant mortality was minimum in Karnataka.

Table No: 11. Human Deprivation Index, BPL, IMR, and Illiteracy of Kerala for the period from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	42.54	44.02	54	29.60
1982	40.89	42.22	53	27.66
1983	39.25	40.42	52	25.72
1984	37.68	38.86	50	23.78
1985	36.11	37.29	49	21.84
1986	34.54	35.73	48	19.90
1987	32.97	34.16	47	17.96
1988	31.41	32.60	46	16.02
1989	29.84	31.03	44	14.08
1990	28.27	29.47	43	12.14
1991	26.70	27.90	42	10.20
1992	25.38	26.67	39	10.09
1993	24.07	25.43	37	9.98
1994	22.46	23.31	34	9.86
1995	20.85	21.19	32	9.75
1996	19.24	19.08	29	9.64
1997	17.63	16.96	26	9.53
1998	16.02	14.84	24	9.42
1999	14.41	12.72	21	9.30
2000	13.07	11.41	19	9.19
2001	11.73	10.10	16	9.08

The regression equation of Kerala is

$$y = 0.37 + 0.41x_1 + 0.28x_2 + 0.30x_3$$

From the above equation it is measured that a unit change in below poverty made 0.41 percent change on human deprivation index. A unit change in illiteracy brought about 0.30 percent change on human deprivation index and also a unit change in infant mortality made 0.28 percent change on human deprivation index.

It is found that the influence of below poverty was high on human deprivation index where as the influence of infant mortality was minimum in Kerala.

Table No: 12. Human Deprivation Index, BPL, IMR, and Illiteracy of Madhya Pradesh from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	91.87	53.50	150	72.10
1982	90.14	51.64	148	70.47
1983	88.41	49.78	147	68.84
1984	87.05	49.04	145	67.21
1985	85.70	48.31	143	65.58
1986	84.34	47.57	142	63.95
1987	82.98	46.83	140	62.32
1988	81.63	46.09	138	60.69
1989	80.27	45.36	136	59.06
1990	78.92	44.62	135	57.43
1991	77.56	43.88	133	55.80
1992	75.47	43.20	129	53.81
1993	73.38	42.52	126	51.82
1994	71.23	41.67	122	49.83
1995	69.09	40.82	119	47.84
1996	66.94	39.98	115	45.85
1997	64.79	39.13	111	43.85
1998	62.65	38.28	108	41.86
1999	60.50	37.43	104	39.87
2000	58.38	36.65	101	37.88
2001	56.25	35.87	97	35.89

The regression equation of Madhya Pradesh is

$$y = (-0.791) + 0.36x_1 + 0.34x_2 + 0.31x_3$$

From the above equation, it is observed that a unit change in below poverty brought about 0.36 percent change in human deprivation index and a unit change in infant mortality made 0.34 percent change in human deprivation index. A unit change in illiteracy brought about 0.31 percent change in human deprivation index.

So, it is clear that the influence of below poverty was high on human deprivation index where as the influence of illiteracy was minimum in Madhya Pradesh.

Table No: 13. Human Deprivation Index, BPL, IMR, and Illiteracy of Maharastra from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	73.01	47.24	119	52.80
1982	70.29	45.34	115	51.03
1983	67.57	43.44	110	49.26
1984	65.25	42.77	106	47.49
1985	62.94	42.10	101	45.72
1986	60.63	41.43	97	43.95
1987	58.32	40.77	92	42.18
1988	56.00	40.10	88	40.41
1989	53.69	39.43	83	38.64
1990	51.38	38.76	79	36.87
1991	49.06	38.09	74	35.10
1992	47.61	37.48	72	33.86
1993	46.16	36.86	69	32.63
1994	44.26	34.89	67	31.39
1995	42.36	32.91	64	30.15
1996	40.45	30.94	62	28.92
1997	38.55	28.97	59	27.68
1998	36.64	26.99	57	26.44
1999	34.74	25.02	54	25.20
2000	32.99	23.51	52	23.97
2001	31.24	22.00	49	22.73

The regression equation of Maharastra is

$$y = (-0.21) + 0.29x_1 + 0.24x_2 + 0.58x_3$$

From the above equation, it is noted that a unit change in illiteracy made 0.58 percent change on human deprivation index, like that a unit change in below poverty made 0.29 percent change on human deprivation index. A unit change in infant mortality brought 0.24 percent change in human deprivation index.

It is found that the influence of illiteracy was high on human deprivation index and the influence of infant mortality was low in Maharastra.

Table No: 14. Human Deprivation Index, BPL, IMR, and Illiteracy of Orissa from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	98.55	66.85	163	65.80
1982	96.53	66.07	159	64.31
1983	94.50	65.29	155	62.82
1984	92.17	63.58	152	61.33
1985	89.84	61.88	148	59.84
1986	87.51	60.17	144	58.35
1987	85.18	58.47	140	56.86
1988	82.84	56.76	136	55.37
1989	80.51	55.05	133	53.88
1990	78.18	53.35	129	52.39
1991	75.85	51.64	125	50.90
1992	73.96	50.10	122	49.48
1993	72.07	48.56	120	48.06
1994	70.62	48.33	117	46.64
1995	69.17	48.09	114	45.22
1996	67.72	47.86	112	43.80
1997	66.26	47.62	109	42.37
1998	64.81	47.39	106	40.95
1999	63.36	47.15	103	39.53
2000	61.91	46.93	101	38.11
2001	60.46	46.70	98	36.69

The regression equation of Orissa is

$$y = 0.104 + 0.39x_1 + 0.26x_2 + 0.46x_3$$

From the above equation it is evident that a unit change in illiteracy brought about 0.46 percent change on human deprivation index. A unit change in below poverty made 0.39 percent change on human deprivation index and a unit change in infant mortality brought about 0.26 percent change on human deprivation index.

It is found that in Orissa also the influence of illiteracy was high on human deprivation index and the influence of infant mortality was low.

Table No: 15. Human Deprivation Index, BPL, IMR, and Illiteracy of Punjab from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	67.75	17.15	127	59.10
1982	65.24	16.67	122	57.34
1983	62.72	16.18	116	55.58
1984	60.22	15.73	111	53.82
1985	57.71	15.27	106	52.06
1986	55.21	14.82	101	50.30
1987	52.70	14.36	95	48.54
1988	50.20	13.91	90	46.78
1989	47.69	13.45	85	45.02
1990	45.19	13.00	79	43.26
1991	42.68	12.54	74	41.50
1992	41.50	12.16	72	40.36
1993	40.33	11.77	70	39.21
1994	38.97	10.84	68	38.07
1995	37.61	9.90	66	36.92
1996	36.25	8.97	64	35.78
1997	34.89	8.03	62	34.63
1998	33.53	7.10	60	33.49
1999	32.17	6.16	58	32.34
2000	30.92	5.56	56	31.20
2001	29.67	4.96	54	30.05

The regression equation of Punjab is

$$y = (-1.329) + 0.25x_1 + 0.30x_2 + 0.45x_3$$

It is obvious from the above equation that a unit change in illiteracy brought about 0.45 percent change in human deprivation index. Like that, a unit change in infant mortality brought about 0.30 percent change in human deprivation and a unit change in below poverty made 0.25 percent change in human deprivation index.

Hence, it is clear that in Punjab also illiteracy was the predominant factor that influenced the human deprivation index and below poverty had least effect on human deprivation.

Table No: 16. Human Deprivation Index, BPL, IMR, and Illiteracy of Rajasthan from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	84.01	35.42	141	75.60
1982	81.57	34.94	136	74.18
1983	79.14	34.46	130	72.76
1984	76.63	33.74	125	71.34
1985	74.11	33.02	119	69.92
1986	71.60	32.30	114	68.50
1987	69.09	31.58	109	67.08
1988	66.57	30.85	103	65.66
1989	64.06	30.13	98	64.24
1990	61.54	29.41	92	62.82
1991	59.03	28.69	87	61.40
1992	57.94	28.05	87	59.16
1993	56.84	27.41	86	56.91
1994	55.29	25.39	86	54.67
1995	53.73	23.37	85	52.43
1996	52.18	21.35	85	50.19
1997	50.62	19.32	85	47.94
1998	49.07	17.30	84	45.70
1999	47.51	15.28	84	43.46
2000	46.18	13.93	83	41.21
2001	44.85	12.57	83	38.97

The regression equation of Rajasthan is

$$y = (-0.018) + 0.33x_1 + 0.33x_2 + 0.34x_3$$

From the above equation it is understandable that all the three factors almost uniformly influenced human deprivation index in Rajasthan. It is notable that illiteracy had a little more influence i.e. a unit change in illiteracy brought about 0.34 percent change on human deprivation index.

Table No: 17. Human Deprivation Index, BPL, IMR, and Illiteracy of Tamil Nadu from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	69.96	52.68	104	53.20
1982	67.59	52.17	99	51.61
1983	65.23	51.66	94	50.02
1984	62.46	49.94	89	48.43
1985	59.68	48.21	84	46.84
1986	56.91	46.49	79	45.25
1987	54.14	44.76	74	43.66
1988	51.37	43.04	69	42.07
1989	48.60	41.31	64	40.48
1990	45.83	39.59	59	38.89
1991	43.05	37.86	54	37.30
1992	42.19	36.45	54	36.22
1993	41.33	35.03	54	35.15
1994	40.16	32.71	54	34.07
1995	39.00	30.39	54	32.99
1996	37.83	28.08	54	31.92
1997	36.66	25.76	53	30.84
1998	35.50	23.44	53	29.76
1999	34.33	21.12	53	28.68
2000	33.40	19.48	53	27.61
2001	32.46	17.84	53	26.53

The regression equation of Tamil Nadu is

$$y = (-0.942) + 0.28x_1 + 0.32x_2 + 0.43x_3$$

From the above equation it is noted that a unit change in illiteracy brought about 0.43 percent change on human deprivation index. A unit change in infant mortality made 0.32 percent change on human deprivation and a unit change in below poverty brought about 0.28 percent change on human deprivation index.

Hence, it is notable that in Tamil Nadu also illiteracy was the predominant factor that influenced the human deprivation index and below poverty had least effect on human deprivation.

Table No: 18. Human Deprivation Index, BPL, IMR, and Illiteracy of Uttar Pradesh from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	83.51	47.72	130	72.80
1982	81.89	47.40	127	71.36
1983	80.26	47.07	124	69.92
1984	78.54	46.44	121	68.48
1985	76.82	45.81	118	67.04
1986	75.09	45.18	115	65.60
1987	73.37	44.55	111	64.16
1988	71.64	43.91	108	62.72
1989	69.92	43.28	105	61.28
1990	68.20	42.65	102	59.84
1991	66.47	42.02	99	58.40
1992	65.29	41.44	98	56.82
1993	64.10	40.85	96	55.25
1994	62.57	39.23	95	53.67
1995	61.04	37.62	93	52.10
1996	59.51	36.00	92	50.52
1997	57.98	34.38	91	48.94
1998	56.44	32.77	89	47.37
1999	54.91	31.15	88	45.79
2000	53.47	29.81	86	44.22
2001	52.03	28.46	85	42.64

The regression equation of Uttar Pradesh is

$$y = 1.041 + 0.26x_1 + 0.30x_2 + 0.44x_3$$

From the above equation it is evident that a unit change in illiteracy brought about 0.44 percent change in human deprivation index. Like that a unit change in human deprivation index and a unit change in below poverty made 0.26 percent change in human deprivation index.

Hence, it is found that in Uttar Pradesh also illiteracy was the predominant factor that influenced the human deprivation index and below poverty had least effect on human deprivation.

Table No: 19. Human Deprivation Index, BPL, IMR, and Illiteracy of West Bengal from 1981 to 2001

Year	Human Deprivation Index	BPL	IMR	ILLITERACY
1981	70.26	56.68	95	59.10
1982	68.30	55.77	92	57.42
1983	66.33	54.85	88	55.74
1984	64.00	52.85	85	54.06
1985	61.68	50.86	82	52.38
1986	59.35	48.86	79	50.70
1987	57.03	46.86	75	49.02
1988	54.70	44.86	72	47.34
1989	52.38	42.87	69	45.66
1990	50.05	40.87	65	43.98
1991	47.72	38.87	62	42.30
1992	46.50	37.27	61	41.15
1993	45.29	35.66	60	40.00
1994	44.12	34.22	59	38.84
1995	42.96	32.78	58	37.69
1996	41.79	31.34	58	36.54
1997	40.63	29.90	57	35.39
1998	39.47	28.46	56	34.24
1999	38.30	27.02	55	33.08
2000	37.17	25.69	54	31.93
2001	36.04	24.35	53	30.78

The regression equation of West Bengal is

$$y = (-0.264) + 0.31x_1 + 0.32x_2 + 0.38x_3$$

From the above equation it is noted that a unit change in illiteracy brought about 0.38 percent change on human deprivation index. A unit change in infant mortality made 0.32 percent change on human deprivation and also a unit change in below poverty brought about 0.31 percent change on human deprivation index.

Hence it is found that the influence of illiteracy was more and the influence of below poverty was least on human deprivation index in West Bengal.

SUMMARY OF FINDINGS

It is found from the human deprivation analysis that Orissa was the most deprived State and Madhya Pradesh followed it at the second position. Bihar, Uttar Pradesh and Assam were occupied the third, fourth and fifth places in human deprivation in India. On the other side, Kerala was the least deprived State and Punjab, Maharastra, Tamil Nadu and Gujrat were followed in the least deprived ranking in India. Andhra Pradesh was lagging and dimishing in the human development prospects that's why its position was in the increasing path in the human deprivation ranking.

While considering percentage of population living below poverty line, infant mortality rate and illiteracy rate as independent variables and human deprivation index as dependent variable the results were

At the all India level, the three variables brought almost the uniform influence on human deprivation index. The influence of poverty was high on human deprivation in Andhra Pradesh. In Assam the influence of illiteracy was high on human deprivation.

In Bihar, the influence of illiteracy was very high on human deprivation index whereas the influence of infant mortality was very low in Bihar. The influence of illiteracy was very high on human deprivation where as the influence of infant mortality was meager in Gujrat. All the three variables were influenced the human deprivation index almost

equally in Haryana. The influence of below poverty was high on human deprivation index where as the influence of infant mortality was minimum in Karnataka.

In Kerala also the influence of below poverty was high on human deprivation index where as the influence of infant mortality was minimum. The influence of below poverty was high on human deprivation index whereas the influence of illiteracy was minimum in Madhya Pradesh. The influence of illiteracy was high on human deprivation index and the influence of infant mortality was low in Maharastra. In Orissa also the influence of illiteracy was high on human deprivation index and the influence of infant mortality was low.

In Punjab also illiteracy was the predominant factor that influenced the human deprivation index and below poverty had least effect on human deprivation. All the three factors almost uniformly influenced human deprivation index in Rajasthan.

In Tamil Nadu also illiteracy was the predominant factor that influenced the human deprivation index and below poverty had least effect on human deprivation. In Uttar Pradesh also illiteracy was the predominant factor that influenced the human deprivation index and below poverty had least effect on human deprivation. The influence of illiteracy was more and the influence of below poverty was least on human deprivation index in West Bengal.

POLICY IMPLICATION

To overcome the human deprivation some of the States should take the require welfare measures. The States like Orissa, Madhya Pradesh, Bihar and Uttar Pradesh have to take severe steps to tackle the poverty problem. Likewise, the States like Andhra Pradesh had not adequate attention in socio-economic aspects in the last ten years. It should concentrate in the poverty reduction aspects to solve this problem. Gujrat and West Bengal maintained their position in the last three decades. Punjab and Tamil Nadu got considerable improvement during this period. These States should give adequate attention to reduce human deprivation so as to occupy the top rank in human development.

By observing the influence of the independent variables like poverty, infant mortality and illiteracy each State had different influence on human deprivation. It is suggested that the influence on poverty was high in the States like Andhra Pradesh, Karnataka, Kerala, and Madhya Pradesh. So the concerned States should concentrate on poverty eradication programmes like National Rural Employment Guarantee Programme, Integrated Rural Development Programme and Jawahar Rozhar Yojana etc.

Besides that the States like Assam, Bihar, Gujrat, Maharastra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal had the

highest influence on literacy. Based on this observation, these States should concentrate on eradication of illiteracy to elevate the human development.

Among the variables under discussion, poverty and literacy brought about considerable changes to reduce human deprivation in comparing with infant mortality. The Central and the State Governments in India should concentrate on eradication of poverty and illiteracy. Even though the effects of infant mortality were low on human deprivation, it is highly correlated with poverty. Hence, the Governments should take necessary steps on the health improvements of the public.

The State and Central Governments should increase the expenditure on health and education that can eradicate poverty and reduce deprivation.

This study found that there was wide disparity among the States. Inequality was the main reason for that disparity in development. Hence, the Governments should take necessary steps to alleviate these inequalities.

CONCLUSION

Poverty alleviation is the primary task of all developing countries. Defining and measuring poverty is the basic need for that. Measuring poverty is not an easy task. Income is widely used for poverty measurement. But poverty has many faces and effects. Since poverty has many dimensions finding an indicator which covers all the aspects of poverty is an uphill task. In this study, an indicator – human deprivation index has been proposed which covers not only income deprivation but health and education deprivations also. Poverty, health, education, consumption expenditure, human development and human deprivation are having interrelationship with each other and are integral part of socio – economic and developmental issues. Hence, human deprivation index would be a useful indicator for economists, academicians, researchers and policy makers who are involved in poverty eradication.

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