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Assam's Inter-District Socio-Economic Disparity In Health

Statistic

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ABSTRACT

The specific objective of the study is to evaluate the inter district imbalances in the level of development of health care system and to classify the districts in to different stages of development such as high level, medium level, developing and low level. The composite indicators are obtained with the help of two different methods. The district-wise data in respect of twenty eight indicators are used for twenty seven districts of the State. The district Kamrup is ranked first and the district Dhubri is ranked last. For reducing the socioeconomic disparities in health, potential targets have been estimated for low developed districts. These districts require improvements of various dimensions in some of the indicators for enhancing the level of overall socio-economic development.

1. INTRODUCTION

What are health disparities? Many people, because of where they live, their race, their education, or their income, don't have the opportunity to lead a healthy life and as a result they suffer from substantially more health problems than others. These differences in health are known as health disparities. Everyone benefits when health disparities are eliminated and health equity becomes a reality. It is time to refocus, reinforce and repeat the message that health disparities exist and that health equality benefits everyone. So, we have made an attempt to throw light on the developmental disparities in Health care sector in twenty-seven districts of Assam and to find the potential targets for the low developed districts which in turn may help in reducing the disparities amongst the districts of the state.

Development has been appropriately conceptualized as a process which improves the quality of life. Its impact cannot be captured fully by any single indicator. Hence there is need for building up of a composite index of development on some key factors, related to health of people, combined in an optimum manner. A better health care system can improve the health status of its population; reduce birth rate, death rate, infant mortality rate, child mortality rate and maternal mortality rate.

A deep analysis using the district level data on socio-economic indicators was made for the states Orissa [1992-1993], [3,4] Andhra Pradesh [1994], [5], Kerala [1994], [6] Uttar Pradesh, [1995], [7], Maharashtra [1996], [8], Karnataka [1997], [9], Tamil Nadu [2000], [11], Madhya Pradesh [2002], [13] and Assam [2004, 2010], [15,16]. In all, the study for evaluating the level of socio-economic development was conducted in two hundred twenty eight districts belonging to the states of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharastra, Orissa, Tamil Nadu and Uttar Pradesh and it was found that 73 districts were low developed which require special attention for undertaking future developmental programmes.

2. METHOD OF ANALYSIS

Development is a multi-dimensional continuous process. For this study, the districts have been taken as the unit of analysis. Twenty seven districts of the state of Assam are included in the study. Two methods have been separately used to rank the districts of the state, viz. Narain et. al. method and Michela et. al. method.

2.1 Narain et.al. Method

In this method, composite indices are found by a series of calculation given in [2], [3].

2.2 Michela et.al. Method

Theoretical frame work and methodology is followed from [16]. The aggregated values give the composite index of development to rank the districts.

A multivariate analysis should be done to investigate the overall structure of the indicators, assess the suitability of the data set and explain the methodological choices. The next step is normalization in which the indicators should be normalized to render them comparable.

$$Z_{ij} = \frac{X_j - \overline{X}_j}{S_j}$$

A correlation study is done to find the redundancy in the indicators, and the correlation co-efficient is given by:

$$r_{x,y} = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2}\sqrt{\sum(y - \bar{y})^2}}$$

We discard the indicators having high correlation co-efficient with other indicators and as such the number of indicators reduces.

Finally weighting and aggregation is done in which the indicators should be aggregated and weighted according to the underlying theoretical framework.

$$A_i = \sum_j z_j$$

The aggregated values give the composite index of development to rank the districts.

2.4 Socio–Economic distance and Fixation of Potential Target

Using the standardized variates, distance matrix is found. The best values among the model districts will be taken as potential target for a particular district for a given indicator [2], [3]. The study utilizes data on most of the health indicators for the year 2007-2008. A total of twenty one development indicators have been included in the study.

2.5 Developmental Indicators:

The composite indices of development for different districts have been obtained by using the data on the following indicators.

1. Household with safe drinking water facility(%).
2. Household with electricity facility(%)
3. Household with LPG facility(%)

4. Household with pucca house facility(%)
5. Household with toilet facility(%)
6. Villages with ASHA(%)
7. Villages with doctor(%)
8. Villages with government hospital(%)
9. Children with at least one dose of Vit-A(%)
10. Children with Polio-0 immunization(%)
11. Children with Polio-3 immunization(%)
12. Children receiving colostrums(%)
13. Children with DPT-3 immunization(%)
14. Children who are measles immunized(%)
15. Children with vaccination card seen(%)
16. Children who are fully immunized(%)
17. Children who are BCG immunized(%)
18. Live birth(%)
19. Women treated in community based hospital(%)
20. Women with government health facility(%)
21. Women with private health facility(%)
22. Women with three or more antenatal check-ups(%)
23. Women with antenatal check-ups in the first trimester of pregnancy(%)
24. Women with full antenatal check-ups(%)
25. Women with at least one tetanus injection(%)
26. Women with 100+ IFA tablets(%)
27. Women with safe delivery(%)
28. Women who received any antenatal check-ups(%)

A total of twenty-eight indicators have been included in the analysis. These indicators may not form an all inclusive list but these are the major interacting components of health development.

2.6 Comparison of Ranks

We have used Spearman rank correlation co-efficient to test if there is any significant difference in the ranks obtained by the two methods [18].

3. RESULTS AND DISCUSSIONS

3.1 The Level of Development

The districts have been ranked on the basis of development indices. Table-1 presents the composite indices of development along with the ranks of different districts. It may be seen from the above table that out of 27 districts of the State, the district Kamrup is ranked first whereas the district Dhubri is ranked last in the overall health-care service.

Table 1: Ranks of the districts of Assam obtained from two methods.

S.No.	Districts	Rank (Narain et.al.)	Rank (Michela et.al.)
1.	Kokrajhar	24	24
2.	Dhubri	27	27
3.	Goalpara	23	23
4.	Bongaingaon	19	16
5.	Barpeta	13	15
6.	Kamrup	1	1
7.	Nalbari	4	2
8.	Darrang	12	14
9.	Morigaon	14	13
10.	Nagaon	15	11
11.	Sonitpur	9	12
12.	Lakhimpur	18	18
13.	Dhemaji	26	25
14.	Tinisukia	11	10
15.	Dibrugarh	3	4
16.	Sivsagar	6	6
17.	Jorhat	5	8
18.	Golaghat	10	9
19.	Karbi Anglong	7	5
20.	Dima-Hasao	25	22
21.	Cachar	16	19
22.	Karimganj	21	20
23.	Hailakandi	20	17
24.	Chirang	22	26
25.	Baksa	8	7
26.	Kamrup-Metro	2	3
27.	Udalguri	17	21

It is seen that, for most of the districts, ranks calculated by the two methods are almost same whereas for a few other districts, ranks calculated by the two methods are very much different.

3.2 Area and Population in Different Stages of Development

It would be quite interesting and useful to find out the relative share of area and population affected under different levels of development in the state, given in table-2

Table 2: Area and Population under Different Levels of Development

Sector of Economy	Level of Development	No. of Districts	Population(%)	Area(%)
Health	High (≤ 0.741)	4	15.6	17.0
	Medium (0.742-0.823)	8	30.0	43.9
	Developing (0.824-0.905)	10	42.2	29.1
	Low (≥0.906)	5	12.2	10.0

It is evident from the table that about 17.0% area consisting of about 15.6% population of the State fall in the districts which are high developed. About 10.0% area and 12.2% population fall in the districts which are low developed in the health care sector. The low developed districts which have been found in this study are Dhubri, Goalpara, Dhemaji, Dima-Hasao and Kokrajhar. List of model districts for these low developed districts is presented in Table-3.

Table 3: Model districts for low developed districts

S.No.	Low-Developed Districts	Model Districts
1.	Dhubri	Kokrajhar, Goalpara, Lakhimpur, Bongaingoan, Barpeta, Darrang, Lakhimpur
2.	Goalpara	Bongaingaon, Darrang, Lakhimpur
3.	Dhemaji	Darrang, Goalpara, Barpeta
4.	Dima-Hasao	Goalpara, Bongaingaon, Lakhimpur
5.	Kokrajhar	

The districts Lakhimpur, Darrang, Goalpara, Barpeta and Bongaingaon are found to be model districts for most of the low developed districts

3.3 Potential Targets of Indicators for Low Developed Districts

It would be useful to examine the extent of improvements required in different indicators of the low developed districts for enhancing the level of development. The best values of the indicators of better developed districts will be taken as potential targets for the low developed districts. The extent of improvement needed in various indicators of the low developed districts is given below:

1. Dhubri

This district is low developed in health sector. There are limited numbers of children who are properly immunized. Steps should be taken for the betterment of women health and also to increase the government hospital facility for women. The district needs strengthening of health related infrastructural facilities and establishment of other government-based hospitals.

2. Goalpara

Percentage of live birth is very low. Number of households with the facility of safe drinking water should be increased as a large number of people get affected from germs through impure water consumption. The possibility of constructing government based hospitals may be explored more and the developmental programmes should be undertaken for encouraging the people of rural areas to get their children immunized.

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3. Dhemaji

The district is lagging behind in heath care service. In general, less number of villages in the district has the facility of government hospitals. Steps should be taken to provide facilities for children to get fully immunized. More number of doctors should be engaged in rural areas. Health welfare developmental programmes may be enhanced so that the public in general and people belonging to the weaker sections of the society in particular may get benefit of developmental activities.

4. Dima-Hasao

The district is also low developed. There is limited number of children who are BCG immunized. Increased percentage of household should get the safe drinking water facility. The district needs strengthening of health service related infrastructural facilities and establishment of government-based hospitals.

5. Kokrajhar

The district is backward in health service sector. Limited percentage of women gets proper health facility. Very less number of children is Polio-0 immunized. Percentages of villages with safe drinking water should be increased. Also more number of doctors should get themselves involved in rural and backward parts of the districts.

On detailed examination of the level of development, it is found that the entire area of the district is not backward. Some parts of the district are low developed whereas other parts are well developed or average developed. Therefore, for giving area-wise specific recommendations, it would be desirable to examine and evaluate the level of development at a lower level say taluka or block level. This will give an idea regarding the low developed part of the district where major improvements are needed in the developmental indicators. Infrastructural facilities might be created in these areas and location specific technology might be implemented.

4. CONCLUSIONS

The broad conclusions emerging from the study are as follow:

1. Two ranking methods, viz. Narain *et.al.* and Michela *et.al.* are used to rank the districts of Assam on the basis of health care service. It is observed that both the methods gave almost the same ranking. A rank-test is carried out and it is observed that there is no significant difference between the two methods.
2. With respect to overall health service development, the districts of Kamrup, Kamrup-Metro, Dibrugarh and Nalbariare found to be better developed as compared to the remaining districts of the state. Similarly, the districts of Dhubri, Goalpara, Dhemaji, Dima-Hasao and Kokrajhar are low developed. The level of development in the rest of the districts is of average order but most of these districts are having the tendency to make improvements in the pattern of development.
3. Better developed districts are found to be thickly populated as compared to low and middle developed districts.
4. This study shows a slightly different health care developmental scenario than the previous studies. The districts are newly divided with an objective of better administrative support to the people but study reveals the opposite especially in case of health care service in the state of Assam.
5. In the newly formed districts and the districts from which they are carved, it is seen that there is a little change to the ranks obtained from the previous results. The newly formed districts form different administrative blocks after the division, hence the different ranks may indicate performance of new administrative regime. Moreover, the newly formed districts mostly occupy the rural area, which may be partially responsible for poor ranking.
6. In order to reduce the disparities, district level studies or setting the objective in the district level may not be a wise idea. So, looking for the potential areas for development in taluka or block level may be of great importance and emphasis on over all developmental indices will be of good use to reduce the developmental disparities.

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