SPATIAL DIMENSION OF EDUCATIONAL AND HEALTH CARE FACILITIES IN WESTERN UTTAR PRADESH

Dr. Sayed Waseem Ahmad Ashraf*

Surendra Kaur Rawal**

Sabbir Ahmed**

Abstract

Education and health are two important components which determine the status of a person and an integral part of a country's developmental process. Educational institutions are competent tools for higher educational status and literacy rate which is a good measure of human progress toward modernization. Health is considered as wealth of a community, which undoubtedly determines economic, social, cultural and political development of a region. The present paper attempts to study spatial dimension of educational and health care facilities in Western Uttar Pradesh and as to how far it is influencing the health of the habitants. The level of development has been measured with special reference to health and educational facilities which is playing a significant role in the overall progress of society. For this work, the data for the analysis have been obtained from the secondary sources. The objectives of the present research are to analyse disparities in spatial distribution of health and educational facilities as well as the relationship between the use of health and educational facilities in the study area. It is clear from the discussion that High level of Educational and Health Care Facilities are concentrated more in North Western and South Western region of study area than the North Eastern and South Eastern region. Finally, the paper intends to propose policy implications for regional planning at meso level.

Key words: Health, Health Care Facilities, Education, Spatial Distribution, Regional Imbalances.

* Associate Professor,

** Research Fellow, Department of Geography, Aligarh Muslim University, Aligarh, India

Introduction

One of the serious problem that world is facing today is the problem of regional imbalances. In India, regional imbalances exist at state level, district level and even block level also. Analysis of regional imbalances with reference to educational and health care facilities help administrators, policy makers and planners to identify regions of relative level of development in order to know the needs of varied regions and to eliminate regional imbalances for balanced development of any region (Ashraf et al, 2011).

Education and health are two important components which determine the status of a person and an integral part of a country's developmental process. Health is considered as wealth of a community, which undoubtedly determines economic, social, cultural and political development of a region. Development is not just economic and material but also includes development of an individual's personality, skills and efficiency so as to contribute benefits to the society and the nation (Kothari and Jhala, 2007).

Education is derived from the Latin word Educatum which means to draw out, to faster growth and to develop. According to Mahatma Gandhi, "By education, I mean an all- round drawing out of the best in the child and man body, mind and spirit" (Quoted in Agarwal, 1987). It is the most important single factor in achieving rapid economic development and in creating sound social order found on the value of freedom, social justice and equal opportunity (Arora, 1979). Educational Institutions are competent tools for higher educational status and literacy rate which is a good measure of human progress toward modernization (Siddiqui and Yadav, 2005).

Good health is not just indication of quality of life but key to economic growth and sustainable development. Health is generally defined as "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity (WHO, 1946 and 2006). Health development considered as a viable strategy for development planning to per suit as part of the effort to improve the quality of life of all the people (Misra, 1991). The availability of health services is only one of many contributions to health development (United Nations, 1984).

Not only the availability of education and health facilities is important for measuring the socio- economic development, but more important is the fact that how these facilities are distributed, whether these are well accessible by the people living in the area or not.

Objectives

The major objectives of the present paper are:

- To analyse the disparities in spatial distribution of health and educational facilities in the study area.
- To identify the relationship between the use of health and educational facilities in Western Uttar Pradesh and lastly
- To advise suggestive remarks for better access of educational and health care facilities in study area.

Study Area

Western Uttar Pradesh lies approximately between 26˚ 20' N and 30˚ 31' N latitudes and 77˚ 45' to 80˚ 22' E longitudes. It covers an area of 80,076 sq. kms and holds a population of about 61.60 millions. It contains twenty seven district, namely Saharanpur, Muzaffarnagar, Meerut, Baghpat, Bulandshahar, Ghaziabad, Gautam Budh Nagar, Aligarh, Hathras, Mathura, Agra, Firozabad, Mainpuri, Kanshiram Nagar, Etah, Bareilly, Badaun, Shahjahanpur, Pilibhit, Bijnor, Moradabad, Jyotiba Phule Nagar, Rampur, Farrukhabad, Kannauj, Etawah and Auraiya [Census of India, 2011] (Fig1). Western Uttar Pradesh which occupies the fertile north-western portion in Upper Ganga Plain, is the most developed and prosperous region of the state Uttar Pradesh. Nearly 71.30% population live in rural areas. Green revolution had a tremendous impact on agricultural development. Industrial distribution is uneven in the region. Literacy level is 70.17% as a whole and 79.15% male literacy and 59.92% female literacy**.** Western Uttar Pradesh is an economically potential but educationally backward region. Therefore it is imperative to chalk out a detailed plan with reference to education for the balanced socio-cultural development of the region. The analysis of regional disparities provide base for formulation of policies and plans aimed at developing a suitable operational strategy for minimizing and eliminating regional disparity. Such type of studies helps administrator policy makers and planners to identify regions of relative level of development in order to know the needs of varied regions.

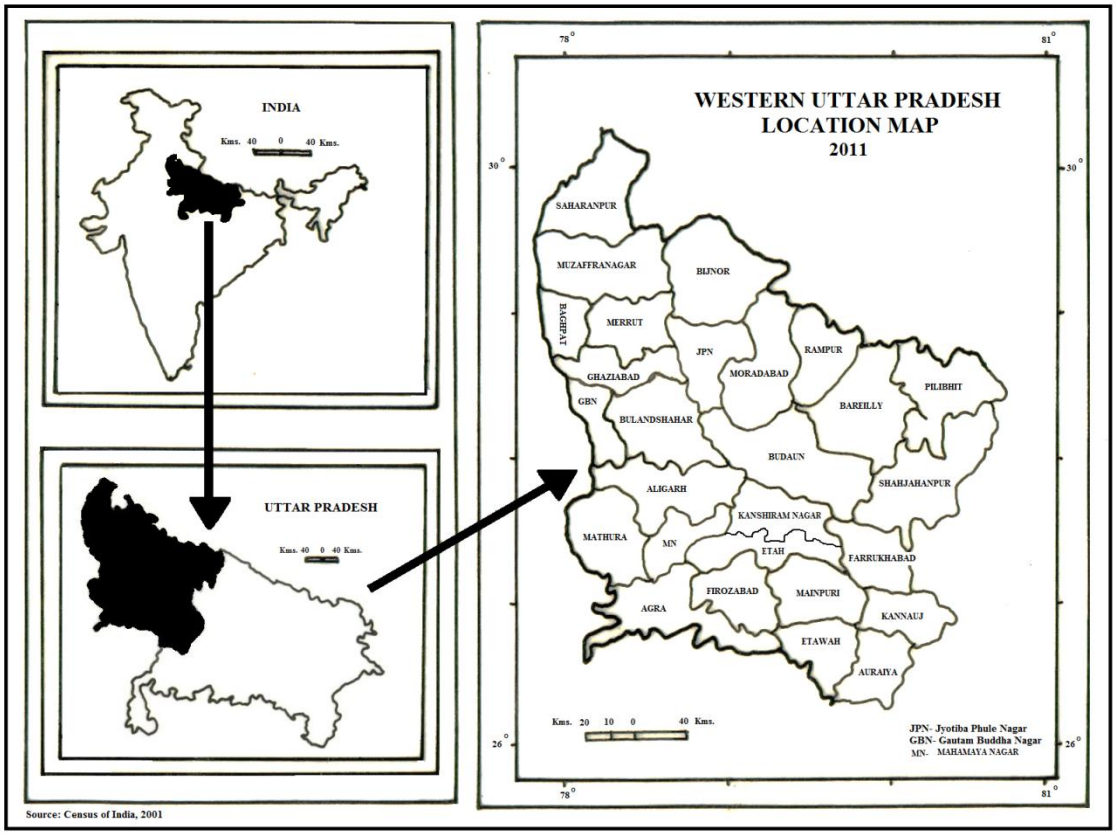

Fig. 1: Location Map of Western Uttar Pradesh

Data Base and Methodology

The present work on "Spatial Dimension of Educational and Health Care Facilities in Western Uttar Pradesh" is essentially based on secondary data collected from different published and unpublished sources at district level such as, Office of the statistical offices, Lucknow; Office of the Registrar General and Census Commissioner of India, New Delhi and Statistical site Sankhiyaki Patirka. All the statistics are meant for the year 2011.

Use of Indicators is highly common and important in statistical analysis of problem of almost all the major disciplines of knowledge. The accessibility of educational and health care facilities has been computed using following indicators on the basis of areal spread and population of each district.

Educational Facility

- No. of Schools per 100 sq. km. (X_1).

- No. of Schools per lakh of population (X_2).
- No. of Optional Education Centre per 100 sq. km. (X_3).
- No. of Optional Education Centre per lakh of population (X_4).
- No. of Colleges per 100 sq. km. (X_5)
- No. of Colleges per lakh of population (X_6).
- No. of Universities per 100 sq. km. (X_7).
- No. of Universities per lakh of population (X_8).
- No. of Vocational Education Institutions per 100 sq. km. (X_9).
- No. of Vocational Education Institutions per lakh of population (X_{10}).

Health Care Facilities

- No. of Hospitals and Dispensaries per 100 sq. km. (Y_1).
- No. of Hospitals and Dispensaries per lakh of population (Y_2).
- No. of Public and Primary Health Centre per 100 sq. km. (Y_3).
- No. of Public and Primary Health Centre per lakh of population (Y_4).
- No. of Family & Mother Child Welfare Centre and Sub Centre per 100 sq. km. (Y_5).
- No. of Family & Mother Child Welfare Centre and Sub Centre per lakh of population (Y_6).
- No. of Special Hospitals per 100 sq. km. (Y_7).
- No. of Special Hospitals per lakh of population (Y_8).
- No. of Beds per lakh of population (Y_9).
- No. of Doctors per lakh of population (Y_{10}).

Spatial dimension of the Educational and Health Care Facilities have been examined using z-score and composite z-score technique lastly Educational vis-a-vis Health Care Facilities regions have been worked out on the basis of categories made by composite z-score. Subsequently choropleth maps have been prepared to bring out the real contrast more effectively. A careful section of the class intervals to divide the categories drawn on the maps are based on the mean and standard deviation technique.

Discussion

Educational Facilities

Education plays significant role in all round development of the society and the country. The expansion of educational infrastructure leads to significant increase in enrolment of students at different stages of education which farther leads to higher educational status and increased Literacy rate.

Table 1: Z-Score of Indicators

Districts	Z-SCORE										COMPOSITE Z-SCORES
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	
Sharanpur	-0.90	-1.32	-0.47	-0.49	-0.69	-0.66	-0.33	-0.50	-0.20	-0.13	-0.57
Muzaffarnagar	0.26	0.03	-0.02	-0.03	-0.51	-0.61	-0.33	-0.50	0.89	1.23	0.04
Gautam Budh Nagar	-0.39	-1.07	2.91	2.56	0.43	-0.09	-0.33	-0.50	-0.04	-0.10	0.34
Ghaziabad	4.50	-0.90	-0.47	-0.49	0.37	-1.17	-0.33	-0.50	3.97	0.63	0.56
Baghpat	-0.26	-0.53	2.83	3.02	-0.18	-0.30	-0.33	-0.50	0.56	0.88	0.52
Meerut	0.42	-0.50	0.00	-0.11	-0.91	-1.06	3.53	3.85	0.18	0.01	0.54
Mathura	-0.58	-0.33	-0.47	-0.49	0.76	1.04	-0.33	-0.50	2.17	4.29	0.56
Aligarh	-0.35	-0.70	2.39	2.49	-1.02	-0.98	1.49	2.22	-0.10	-0.05	0.54
Bulandshahar	-0.37	-0.12	-0.42	-0.42	-0.49	-0.31	-0.33	-0.50	-0.21	0.00	-0.32
Badaun	-0.88	-0.73	-0.47	-0.49	-1.32	-1.06	-0.33	-0.50	-0.57	-0.57	-0.69
Agra	-0.68	-1.29	-0.15	-0.18	1.17	0.54	1.32	1.78	-0.51	-0.63	0.14
Mahamaya Nagar	-0.03	0.26	-0.47	-0.49	0.53	0.55	-0.33	-0.50	-0.59	-0.61	-0.17
Rampur	0.20	0.10	0.28	0.31	-1.43	-1.29	-0.33	-0.50	-0.33	-0.34	-0.33
Jyotiba Phule Nagar	0.52	1.30	-0.47	-0.49	-0.14	0.00	-0.33	-0.50	-0.46	-0.43	-0.10
Moradabad	-0.55	-1.43	-0.24	-0.30	-0.75	-0.94	2.36	2.64	-0.21	-0.35	0.02
Bijnor	-0.01	0.46	-0.47	-0.49	-0.71	-0.53	-0.33	-0.50	-0.16	0.08	-0.27
Pilibhit	-0.74	0.15	-0.24	-0.08	-1.14	-0.70	-0.33	-0.50	-0.57	-0.48	-0.46
Bareilly	-0.11	-0.57	-0.47	-0.49	0.80	0.28	1.28	1.74	0.34	0.43	0.32
Etawah	0.38	1.88	0.00	0.23	-0.41	0.00	-0.33	-0.50	-0.39	-0.20	0.06
Etah	0.28	1.45	-0.47	-0.49	2.13	2.68	-0.33	-0.50	-0.63	-0.68	0.34
Kanshiram Nagar	-0.10	0.73	-0.47	-0.49	-0.28	0.06	-0.33	-0.50	-0.51	-0.46	-0.23
Farrukhabad	0.25	0.63	-0.40	-0.40	0.49	0.48	-0.33	-0.50	-0.53	-0.57	-0.09
Firozabad	-0.45	-0.95	-0.47	-0.49	2.13	1.31	-0.33	-0.50	-0.10	-0.09	0.00
Mainpuri	0.29	1.82	-0.46	-0.47	0.91	1.57	-0.33	-0.50	-0.52	-0.44	0.19
Shahjahanpur	-0.82	-0.39	-0.47	-0.49	-1.37	-1.07	-0.33	-0.50	-0.58	-0.56	-0.66
Kannauj	-0.26	0.11	-0.47	-0.49	1.01	1.18	-0.33	-0.50	-0.60	-0.67	-0.10
Auraiya	0.38	1.91	-0.33	-0.27	0.59	1.15	-0.33	-0.50	-0.68	-0.78	0.11

Source: Sankhiyaki Patrika, 2010-2011

To analyse spatial dimension of Educational facilities, Indicators selected are- No. of Schools comprises: Primary Schools, Senior Schools and Intermediate Schools; No. of Optional

Educational Centres; No. of Colleges comprises: Degree Colleges and Master Degree Colleges; No. of Universities and No. of Vocational Training Institute comprises: Industrial Training Institute, Polytechnique, Teachers Training Institute, Engineering Colleges and Medical Colleges.

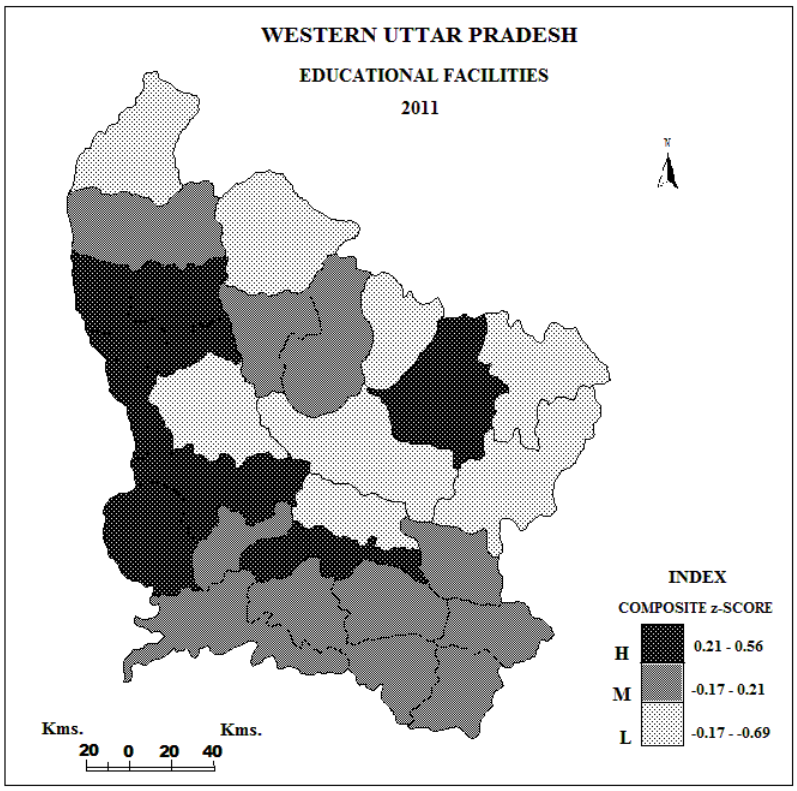

Fig.2

The district wise distribution of Educational Facilities (Table1) shows that the highest score is registered in Ghaziabad and Mathura i.e., 0.56 respectively while lowset in Badaun i.e., -0.69. For identification of above mentioned regions the composite z-score values of districts have been arranged in three categories high (above 0.21), medium (-0.17 - 0.21) and low (Below -0.17) computed by mean and standard deviation method. From fig.2 it is clear that concentration of Educational Facilities is higher in Southern region than Northern region and North Western region than North Eastern region as there are seven districts namely Baghpat, Meerut, Ghaziabad, Gautam Budh Nagar, Aligarh, Mathura and Etah which are coming under the category of High grade score while there is only one district of North Eastern region i.e., Bareilly which is coming under the category of High grade score. Same is the case with medium grade score as there are eight districts of South Western region namely Mahamaya Nagar, Agra,

Firozabad, Mainpuri, Farrukhabad, Etawah, Auraiya and Kannauj which are coming under the category of Medium grade score while there are only three districts of North Eastern region namely Muzaffarnagar, Jyotiba Phule Nagar and Moradabad which are coming under the category of Medium grade score. Low grade score of Educational Facilities is depicted in eight districts out of which five are in Eastern region namely Pilibhit, Shahjahanpur, Badaun, Bulandshahar and Kanshiram Nagar while remaining three are in North Eastern region namely Saharanpur, Bijnor and Rampur.

Health Care Facilities

Health is seen as part of the basic human capabilities and an integral part of welfare. It is an essential input for the development of human resources and the quality of life, so we can say that improved health is a part of total socio-economic development and is regarded as an index of social development. Thus planning for more equitable health-care services has become the growing concern of most of the states and nation.

Table 2: Z- Score of Indicators

Districts	Z-SCORE										COMPOSITE Z-SCORE
	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	
Sharanpur	-0.58	-0.77	-0.32	-0.47	-0.06	0.01	3.74	3.49	-0.35	0.82	0.55
MUN	-0.45	-0.77	0.85	1.31	0.08	-0.09	-0.06	-0.19	-0.52	-0.89	-0.07
GBN	0.09	-0.37	-0.29	-1.06	2.73	3.88	0.73	0.33	-1.04	2.23	0.72
Ghaziabad	3.22	-0.89	3.99	-1.03	3.56	-1.31	0.09	-0.76	-0.82	-1.58	0.45
Baghpat	-0.44	-0.67	0.39	0.69	1.03	1.94	-1.00	-1.00	-0.97	0.47	0.04
Meerut	2.88	1.99	0.84	0.16	0.45	-0.41	0.45	-0.03	2.33	0.92	0.96
Mathura	0.22	0.94	-0.74	-0.71	-0.77	-0.87	0.12	0.31	1.67	0.28	0.05
Aligarh	-0.55	-0.84	-0.46	-0.94	-0.25	-0.63	-0.66	-0.70	2.72	-1.49	-0.38
Bulandshaha	-	-	-	0.78	-	0.07	-	-	-	0.38	-0.16

r	0.28	0.01	0.01		0.31		1.00	1.00	0.17		
Badaun	-0.87	-0.76	-0.35	0.46	-0.62	-0.29	-0.27	-0.10	-0.47	-1.17	-0.44
Agra	-0.27	-0.64	-0.02	-0.42	-0.07	-0.55	-0.38	-0.49	2.03	-1.28	-0.21
M N	0.02	-1.02	0.02	0.58	-0.24	0.02	-0.38	-0.33	-0.40	-0.16	-0.19
Rampur	0.02	-0.09	0.07	0.10	-0.43	-0.90	0.06	-0.05	-0.43	0.19	-0.14
JPN	-0.85	-0.93	0.03	0.79	-0.29	0.06	0.67	0.81	0.06	0.08	0.04
Moradabad	-0.49	-1.13	0.76	0.20	0.22	-0.63	0.01	-0.30	-0.34	-1.66	-0.34
Bijnor	-0.76	-0.77	-0.38	-0.08	-0.44	-0.25	-0.18	-0.10	-0.64	-0.56	-0.42
Pilibhit	-0.25	0.97	-1.02	-0.69	-0.88	-0.28	-0.29	0.09	-0.10	0.64	-0.18
Bareilly	0.17	-0.13	-0.13	0.58	-0.14	0.66	-0.39	-0.50	0.08	-0.06	-0.23
Etawah	0.80	2.40	-1.38	-2.11	-0.56	0.08	1.16	1.81	0.04	-0.61	0.16
Etah	-0.61	-0.31	-0.28	0.63	-0.54	-0.06	0.53	0.89	-0.50	0.21	0.00
K N	-0.72	-0.50	-0.18	0.86	-0.34	0.44	-1.00	-1.00	-0.43	-0.56	-0.34
Farrukhabad	1.03	1.71	-0.23	0.00	-0.27	-0.12	-0.43	-0.41	0.48	1.40	0.32
Firozabad	-0.33	-0.67	0.82	1.13	-0.15	-0.59	0.06	-0.11	-0.43	-0.58	-0.08
Mainpuri	-0.33	0.38	-0.09	1.46	-0.60	0.06	-1.00	-1.00	-0.04	0.92	-0.02
Shahjahanpur	-0.18	0.71	-0.57	0.25	-0.81	-0.49	-0.73	-0.63	-0.50	-0.23	-0.32
Kannauj	0.12	0.65	0.40	1.79	-0.32	0.11	-0.40	-0.33	-0.34	1.70	0.34
Auraiya	0.23	1.36	-1.47	-2.33	-0.41	0.50	0.86	1.43	-0.89	0.52	-0.02

Source: Sankhiyaki Patrika 2010-2011. Note: MUN- Muzaffarnagar, GBN- Gautam Budh Nagar, MN- Mahamaya Nagar, JPN- Jyotiba Bhule Nagar, KN- Kanshiram Nagar

To show the spatial Dimension of Health Care Facilities, Indicators selected are: No. of Hospitals and Dispensaries comprises: Hospitals and Dispensaries of Allopathic, Ayurvedic, Homeopathic and Unani; No. of Primary and Public Health Care Centre; No. of Family & Mother Child Welfare Centre and Sub Centre; No. of Special Hospitals comprises: Hospitals and Clinics of Tuberculosis, Leprosy and Communicable Diseases; No. of Beds comprises; Total No. of Beds in Allopathic, Ayurvedic, Homeopathic and Unani and Lastly No. of Doctors comprises: Total No. of Doctors in Allopathic, Ayurvedic, Homeopathic and Unani.

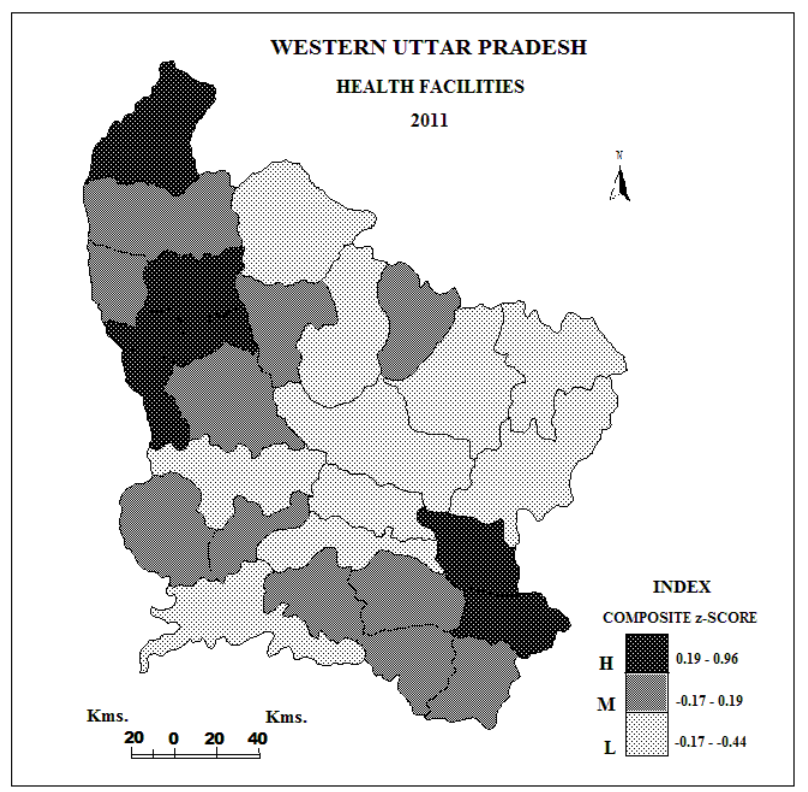

Fig.3

The district wise distribution of Health Care Facilities (Table2) shows that highest score is registered in Meerut and Lowest in Badaun i.e., 0.96 and -0.44 respectively. For identification of above mentioned regions the composite z-score values of districts have been arranged in three categories of high (above 0.19), medium (-0.17 – 0.19) and low (below-0.17) computed by mean and standard deviation. From Fig 3 it is clear that concentration of Health Care Facilities is higher in Northern region than Southern region and North Western region than North Eastern region**.** High grade score is found in four districts of North Western Region and two districts of Southern region i.e. Saharanpur, Meerut, Gautam Budh, Nagar and Ghaziabad of North Western

region while Farrukhabad and Kannauj of Souther region. Eleven districts with Medium level of Health Care Facilities are found in North and North Western region and South and South Western region. Out of these eleven districts four districts namely Muzaffarnagar, Baghpat, Jyotiba Phule Nagar and Bulandshahar are found in North and North Western region while six districts namely Mathura, Mahamaya Nagar, Firozabad, Mainpuri, Etawah and Auraiya are found in South and South Western region and one district i.e. Rampur in Eastern region also fall under the category of Medium grade score. A notable region of Low grade score is found in six districts stretching from North to East i.e. Bijnor, Moradabad, Badaun, Bareilly, Pilibhit and Shahjahanpur while Aligarh, Kanshiram Nagar and Agra of Southern region also fall under the category of Low grade score.

Educational Facilities Vis-a-Vis Health Care Facilities

Human resource plays a significant role in bringing the state of all round development in a country, and the development of Human resource depends mainly on level of Educational and Health Care Facilities. In fact, these facilities create a way for economic growth and social welfare in a country. Health, education and economic development go hand in hand, even though the casual nexus between these are not yet undisputedly established. These levels show the economic prosperity of an area, that's why these two forms of the development of human resources have been considered.

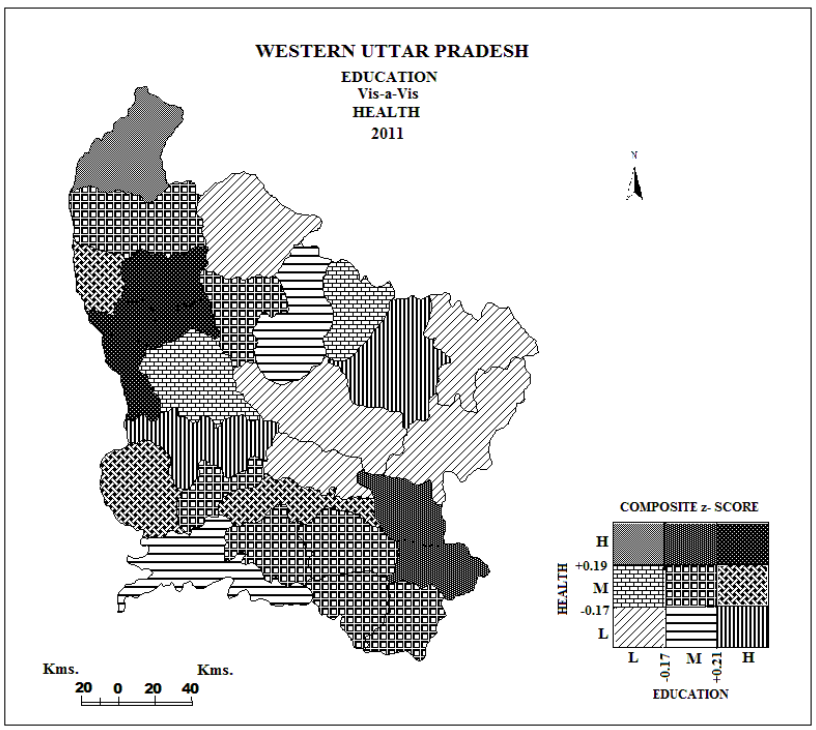

Fig.4

To show the educational and Health Facilities at a glance the Educational Facilities vis-a-vis Health Care Facilities map is prepared in which the overall assessment of Educational and Health Care facilities is based on the categories computed by the mean and standard deviation. The index of Educational vis-à-vis Health Care Facilities has been worked out to find out a more meaningful comparison. Fig.4 reveals that High and Medium grade score in spatial distribution of Educational and Health Care Facilities is observed in more than 50 per cent districts stretching North to South along North to West and West to South boundary of study area while Low and Medium grade score is observed in about 30 per cent districts stretching from North to East along the North East boundary of Study area.

Fig.4 reveals that there are about 55 per cent of districts out of total districts which are acquiring the same grade for spatial distribution of Educational and Health Care Facilities. Out of 14 districts there are three districts namely Gautam Budh Nagar, Ghaziabad and Meerut which registered High grade score for Educational and Health Care Facilities and six districts namely Muzaffarnagar, Jyotiba Phule Nagar, Mahamaya Nagar, Firozabad, Mainpuri, Etawah and Auraiya which registered Medium grade score and five districts namely Bijnor, Badaun, Kanshiram Nagar, Sahajahanpur and Pilibhit which registered Low grade score for spatial distribution of Educational and Health Care Facilities.

Fig.4 reveals that there are about 44 per cent districts out of total districts which registered different grade score for spatial distribution of Educational and Health Care Facilities. Out of 12 districts there are three districts namely Baghpat, Mathura and Etah having High grade score for Educatioanal Facilities while Medium grade score for Health Care Facilities. Two districts one from Eastern region i.e., Bareilly and other from South Western region i.e., Aligarh having High grade score for Educational Facilities while Low grade score for Health Care Facilities , similar is the case of Kannauj and Farrukhabad where Medium grade score is for Educational Facilities and High grade socre is for Health Care Facilities. In this sequence there are still two districts namely Moradabad and Agra having Medium grade score for Educational Facilities while Low grade score for Health Care Facilities. Two more districts are there namely Rampur in East and Bulandshahar in South West having Low grade score for Educational Facilities while Medium grade score for Health Care Facilities further there is one more district

i.e., Saharanpur having Low grade score for Educational Facilities while High grade score for Health Care Facilities.

From the above mentioned regions the case of Aligarh and Bareilly is some what different as both of them are enjoying High level of Educational Facilities and on the other hand level of Health Care Facilities is Low. Similar is the case of Saharanpur where Educational Facilities are of Low level while Health Care Facilities are of High Level.

Conclusion

After going detailed discussion the conclusion which is drawn is that the pattern of distribution of Educational and Health Care Facilities is quite notable and their exists in adequacy in distribution of Educational and Health Care Facilities. As from Fig.2 and 3 it is clear that High level of Educational and Health Care Facilities are concentrated more in North Western and South Western region of study area than the North Eastern and South Eastern region. The above mentioned pattern could be associated with the nearness to Delhi. As most of the people of Upper and Lower Ganga Yamuna Doab give more preference to secondary and tertiary activities so they give more weightage to education particularly to High education which leads to higher Literacy rate and Higher Educational Status which ultimately results not only in large number of Educational Facilities but also good quality of Educational Facilities which further results in higher thinking and modernisation and this modernised man is bit more cautious about his health which make government and policy makers to develop not only the large number of Health Care Facilities but also Good quality of Health Care Facilities. Thus there is higher concentration of Educational and Health Care Facilities in North Western and South Western region than the North Eastern and South Eastern region. Further when both Educational and Health Care Facilities are compared then it is found that there are about 55 per cent districts having same pace of spatial distribution of Educational and Health Care Facilities while there are 44 per cent districts having different pace of spatial distribution of Educational and Health Care Facilities in the study area.

So at last we could conclude that the aim of development cannot be achieved without providing adequate Educational and Health Care Facilities Therefore, there is an urgent need for total reform to boost the Educational and Health Care Facilities which in turn leads to modernization and urbanization of the region.

Suggestions

Some suggestions can be made for removing such disparity and they are:

- Increasing awareness for education and good health among the people will result in optimum distribution of Educational and Health Care Facilities.
- Disparities prevail not merely because of geographical or natural reasons but planning process is also one of the important factor so rational thinking should drive the policy maker and administration to make a proportional allocation of Educational and Health Care Facilities along with other socio-economic facilities.
- Increased in the registration rate of students and bringing down the drop-out rate in primary schools will itself result in development of higher educational centres and awareness about the good health will automatically results in better and proportionate Health Care Facilities.

So a diagnostic planning should be prepared on quantitative and qualitative analysis towards the goal of attaining balanced regional development. If both the factors of human development i.e., Educational and Health Care Facilities increase, the economic condition and standard of life of the people will also increase.

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