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An Analysis of Change in Temporal Dimension of Cause-Effect Relationship of Various Diseases: In Rural Haryana (2001- 2011)

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ABSTRACT: There is vast number of diseases which occurs throughout the year. The recurring of all these diseases has 'cause-effect' relationships which have been observed during different successive years. The present paper examines the temporal dimension of change in occurrence of some of selected disease in Haryana. On the basis of secondary data, the study indicates considerable changes, which has been taken place during the year 2001 to 2011. The finding of the study based on multi variate correlation indicates the changes, caused by various factors, affecting on occurrence of disease scenario in rural Haryana.

KEYWORDS: Cause-effect relationships, various diseases, temporal dimension, factor affecting changes, rural Haryana.

I. INTRODUCTION

Health is a true yardstick of human happiness. It is rightly said that a healthy mind is always contained in a healthy body. It is therefore, it becomes essential to keep the body free from any disease. Poverty and poor health status are positively correlated. Poverty leads to under and malnutrition, which in turn leads to attack of diseases. The vicious circle of poverty, which denotes low purchasing power, malnutrition, attack of disease, low working efficiency as a result of low level of income, constitute a circular chain relation without any beginning or end, otherwise known as a vicious circle.

Infectious diseases, which were once very dangerous to mankind, have shown the remarkable decline in Europe and other developing countries, due to steady improvements in medical science. On the other hand, the country like India and other developing countries have also shown a steady growth in increase in life span of the people and controlling the fatal diseases like tuberculosis, smallpox and growth in other viral infection diseases, like cancer. However the WHO, justify its function and amplified to include, "socially and economically productive life". As health is not a state, it is a process of continuous adjustment to changing demand of life and the meaning we give to our existence.

In this context, it has been observed that the contaminated physical environment in rural areas of Haryana has given rise to different diseases, during different successive periods. Though the department of public health, and the execution of various TSC (total sanitary campaign program) by the gram panchayat but all these efforts have not been so successful to get the desired results. As a result, the rate of spreading the various diseases has been expedited by the growth of unhygienic living conditions of the villagers in different parts of Haryana. It is because of improper and unplanned construction of surface and sub-surface drainage system by the state owned public health and the panchayati Raj institutions.

Apart from the sanitary unsatisfactory conditions of the villages; the assured irrigated areas, like middle and northern region of the state. The disease like cancer, has been experienced a tremendous growth in the cancer patients. It is because of application of high dose of chemical fertilizer and pesticides in the crops. In case of respiratory diseases, which is due to rising of contaminated air in the rural areas. In the rural areas the air-pollution, caused by growth of

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Killer and the pesticide, herbicides and the burning of residual crops remains in the farms have cumulatively, given rise to growth in respiratory diseases among the people, belonged to rural areas of Haryana.

In case of malaria, which is a wide spread disease of rural Haryana too. In this connection, it has been pointed out that the canal irrigated areas, and the areas where the waste water is not managed in an effective ways, as a result, the probability of growth of malaria found excessive within these wet areas. All these areas develop the physical environment favorable to spreading of malaria in a uncontrolled way. Similarly, the unhygienic living conditions have given rise to cholera, digestive diseases, T.B. etc. in the rural area of Haryana.

In order to establish cause-effect relationships, Misra (1970) has tried to correlate the general health of the Indians with the geo-economic environmental set-up of India and subsequently, Macnamara has carried out the study on geographical factor, which affect the occurrence of various diseases. In order to carry out this study, the author has used the multi-variate correlation, by selecting some of qualitative and quantitative parameters, which have affecting the different types of diseases in some of areas in some of developing countries. Similarly, Banerjee and Hazra (1974), carried out the study on cholera in west-Bengal in relation to its geo-ecological factors. At a micro-level, the author like Awasthi (1979) has carried out an exploratory study on “customs, needs and the practices in relation to health and diseases” in a village of Bundelkhand area of Jhansi district of Uttarparadesh. According to Awasthi the study has given an insight on various health issues, particularly among old age groups population.

In order to highlight the medical facilities and health infrastructure, kannakavalli (1981) has discussed the present status of health infrastructure and the state owned services in the Tamilnadu state. Lastly, the author has mentioned some of suggestions to ameliorate the health services, particularly in the rural areas. Similarly, Singh (2010) has examined the deteriorating environment in relation to health of the people in Delhi/NCR region of North West India.

Nilofer Izhar, (2011) has discussed various dimensions of environment in relation to health, health care and planning and highlighted various contemporary issues on health, health policy and its implementation. Izhar also mentions some of spatial analysis techniques like GIS, spatial epidemiology, which can be proved conducive to analyze the health related problematic areas in some of infested areas.

Landon (2013) has tried to establish “cause-effect” relationship between environmental quality in relation to sustainable development. On the basis of an empirical study, the author has tried to correlate the contaminated environment and its impact on human health in relation to its sustainability.

Michael Elisabeth Dowling root (2017) has discussed the factors like rainfall, carcinogens and primary care physicians distributed unevenly even space. The authors have reorganized to cover the latest developments is disease ecology and health promotion across the globe. The authors accessibly introduce the core questions and perspective of health and medical geography and presents cutting edge techniques of mapping and space analysis. It explores the intersecting genetic, ecological behavioral, cultural and socio-economic processes that underlie pattern of health and disease in particular places. Including how new diseases and epidemics emerge. Geographic dimensions of health care access and service provision are addressed.

II. THE OBJECTIVES OF THE STUDY

The study is aimed at the following objectives, which are as follows:

1. To study the growth of diseases, between two points of periods in the rural areas.
2. To establish a ‘cause-effect’ relationships between the deteriorating environment and occurrence of disease.
3. To suggest to ameliorating the environmental conditions, as a preventive measures for disease.

III. STATEMENT OF THE PROBLEM

Despite government and the community efforts, the environmental conditions of the rural areas are far from satisfactory. The deteriorating sanitary conditions of the villages in Haryana, has given rise to various diseases in the rural areas. It is because of unsatisfactory sanitary conditions, which has given rise to develop virus producing environment in the rural areas. As a result the disease likes cancer, cholera. Diarrhea and dysentery have been creased

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with the passages of periods. It is therefore, it require an urgent need to execute the sanitary measures in a effective way, so that the contaminated water bovine disease may be curbed in the rural areas of Haryana.

IV. MATERIAL & METHODS

In order to draw the inferences from the two periods of points, a census data has been used for desired results. In this context, the secondary data has been used for finding the growth of diseases between 2001 and 2011. Similarly, the cause effect relationships have been analyzed by the multivariate correlation between some of selected environmental parameters, which affect various types of diseases in the rural areas of Haryana.

V. THE STUDY AREA

The study area is whole Haryana which was formed on November 1, 1996 by linguistic bifurcation of joint Punjab. However Haryana, being a primarily agrarian state, the 45 percent of the state population, still live in the rural areas. The total geographical area is 44212 km.sq. The rural population of Haryana is 2,11, 42980 person in 6955 village in the state Haryana, despite agrarian state the sanitary conditions of the state is far from satisfactory. Despite the rural environmental improvement program like, Nirmal Gram yojana, TSC (Total Sanitary Campaign) and the WASH, program the rural environmental conditions, has been shown a considerable improvement in the state. Due to steady deteriorating conditions, there are considerable numbers of fatal diseases which have been given rise to the areas of Haryana.

VI. RESULT & DISCUSSION

In order to review the impact of various diseases in rural Haryana, a census based death caused by various diseases has been worked out to get the desired results. In this context, following table shows the death figures of male and female, occurred during the decade of 2001 and 2011 in the rural areas of Haryana.

Table: - 1

Haryana: Cause wise death during the year 2001-2011

Sr. No.	Name of diseases	2001			2011		
		Male	Female	Total	Male	Female	Total
1.	Cholera	0	1	1	7	2	9
2.	Smallpox	0	0	0	0	0	0
3.	Malaria	7	6	13	67	34	101
4.	Measles	27	16	43	4	0	4
5.	Leprosy	0	3	3	11	5	16
6.	Tetanus	15	15	30	8	7	15

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7.	Cancer	1157	799	1956	1403	647	2050
8.	Diarrhea & dysentery	320	273	593	99	106	205
9.	Tuberculosis	1092	877	1669	1413	819	2232
10.	Pneumonia	295	251	546	198	89	287
11.	Digestive diseases	31	33	64	603	230	833
12.	Respiratory diseases	38	18	56	1032	467	1499
13.	Total	2982	2292	4974	4845	2406	7251

Source: Annual Health report of Haryana, 2001 & 2011

Table No. 2

Change in growth rate in Rural areas of Haryana (2001-2011)				
Sr. NO.	Name of Diseases	Male	Female	Total
1.	Cancer	+21.26	-12.76	+4.80
2.	Tuberculosis	+29.39	-6.61	+33.73
3.	Diarrhea & dysentery	-69.06	-61.17	-65.43
4.	Pneumonia	-32.88	-54.54	-47.43
5.	Digestive Diseases	+184.45	+185.84	+1279.68

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6.	Respiratory diseases	+2615.78	+2494.44	+2576.78
7.	Malaria	+857.14	+466.66	+676.92
8.	Measles	-85.18	-256	-90.69
9.	Tetanus	-99.53	-53.33	-50.00
10.	Cholera	+700	+100	+88.88
11.	Leprosy	+1100	+66.66	+433.33
12.	Smallpox	0	0	0

Source: Growth trend calculated by the researcher

In order to know the temporal dimension of the change in death rates occurred due to various diseases, caused by contaminated environment in the rural areas of Haryana. Keeping in view the tabulated figures of both the years, it has been observed that there is considerable growth has been experienced in cancer, T.B, digestive diseases, Respiratory diseases, malaria, cholera and leprosy in the rural areas of Haryana.

In this connection it has also been observed that there is considerable male-female variability in the growth of diseases. It is obvious from the tabulated figures, which indicates that the diseases like cancer, tuberculosis, diarrhea & dysentery, pneumonia indicate a -ve trend of growth among these diseases. On the other hand, the corresponding figures of these diseases, indicates a +ve trend of growth these diseases.

In case of +ve growth of the diseases, like diarrhea & dysentery, pneumonia, measles, tetanus indicate a -ve trends of these diseases, among the male and female both the sexes too. Maximum -ve growth has been experienced followed by diarrhea and dysentery, tetanus and pneumonia. All these diseases have Experience a -ve growth by the male and female during ten years of span of period.

In order to evaluate the impact of the environmental factors, affecting the recurring of different diseases of Haryana, a multi-variate correlation matrix has been worked out. In order to get the desired results, some of affecting variables have been selected to note the impact of environmental factors on recurring of diseases over the space presented by considering the following variables:

X¹ = Contaminated water

X² = Contaminated air

X³ = Physiography

X⁴ = Noise Pollution

X⁵ = Soil infected with overdose of chemical fertilizers

X⁶ = Industrial affluent chemical wastes

X⁷ = Poor living condition of the people- Slums, Squatting

X⁸ = Congested living conditions-higher man/land ratio

Keeping in view the tabulated multivariate correlation values of selected variable, which affect the probability of occurring of various diseases in Haryana. In this multi variate correlation matrix, we observe that contaminated water, soil infested with an overdose of chemical fertilizers, industrial effluents, of nearby industries, poor sanitary conditions

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of rural areas are some of dominating factors, which affect the probability of recurring of various diseases in the rural areas of Haryana. On the other hand, Physiography, poor living conditions of the people and congested living conditions or the high density, are some of the factors which do not so affect recurring of diseases in the rural areas of Haryana.

Suggestions: - Keeping in view the gravity of the problem of growth of different diseases during different successive periods in Haryana, there are some of suggestions, which can be proved conducive to ameliorate the probability of recurring of diseases in the rural areas. These suggestions are as follows.

- There should be continuous efforts to ameliorating the sanitary conditions of the rural areas.
- There should be judicious use of chemical fertilizers, and pesticides by the farmers.
- Health infrastructure should be increased in the rural areas.
- The 'Urbanism' should be promoted in the rural areas.
- There should be widely promotion of environmental education in the rural areas.
- The Panchayati Raj Institution can play a vital role to execute the (Health policy) in an effective way.
- The NGOs, working in Health services can keep to improve the health condition of the rural areas.

VII. CONCLUSION

On the basis of statistical figures of the death occurred in different successive periods indicate that there has been considerable growth which has been experience between the year 2001 to 2011. In this period due to some of factors of environment, the death rates has been increased by a considerable number of death, caused by contaminated water and air, by using of high dose of chemical fertilizers and pesticides, by the farmers in their farms/fields. As a result a rapid growth of various diseases has been experienced during the different successive periods.

The multi-variate correlation matrix, based on some of variables on environment, affecting the probability of recurring of various diseases, clearly indicate that the environmental factors, affecting at varied degree. On the occurring of various diseases in the rural areas of Haryana. Lastly, there are some of suggestions which may prove conducive to improve the physical environment in the rural areas, so that the probability of occurring of various diseases can be curbed at its source itself. Only then the rural areas of Haryana can be diseases free, and the living conditions of the people, may attain the sustainable in accordance with prevailing living conditions of the people belong to rural areas of Haryana.

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