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ENVIRONMENTAL HEALTH STATUS IN FOUR LANE ROAD CONSTRUCTION AREA OF BILASPUR DISTRICT (H.P.) AND ITS ECONOMIC PERSPECTIVE

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ABSTRACT

The present study accesses environmental economic of households exposed to many environmental health problems associated with the construction of four lane work area in the Bilaspur District that disturb their economy either directly or indirectly. The development of highway is normally expected to improve economic and social welfare of the humans. At the same time, it can damage encompassing environment affecting people's health adversely. The highway construction damage sensitive eco-systems through soil erosion, modifications of drainage pattern and thereby groundwater, interfere with wild lives migration, loss of productive agricultural lands, resettlement of people, disruption of nearby sports, demographic changes and improved urbanization. The road construction projects result enormous emissions that begin from task of execution until completion. This pollution can have an adverse effect on human fitness and the financial stability. Highway venture has primary influences on two key dimensions of human development: profits and health. Especially the risks of polluted air, water, and soils to human health are considerable. The higher level of air pollutants cause coronary heart disorder, stroke, lung cancer and both continual and acute respiration diseases amongst the peoples inhabiting nearby highways.

The human populations of the selected sites were surveyed for prevalence of diverse diseases along with common sicknesses due to exposure to suspended particulates during 2015-2016, 2016-2017. This study revealed almost 87% households of the selected sites are struggling with common ailments and minimum with persistent respiratory and eye disorders. According to field survey 23.5% of household had eye disease, 45% respiratory disease, 18.5% skin infection and 13 % fever and irritation from particulate matters. For treating common disease per visit expenditure of 41.5% of households was Rs. 200-500; of 33.5% Rs.500-800 and of the remaining 25% Rs.800-1000. For treating chronic diseases total expenditure (visit price, drug cost and doctor consultancy fees) of a household is about Rs.10000 for eye disease, Rs.15000 for skin disease and Rs.20000 for respiratory disease. Eye diseases in the study area are increasing at the rate of 6.59% and respiratory diseases 7.42 % and households spend 33% of their income for treating common and chronic diseases. So it concluded that the maximum humans are stricken by commonplace disorders caused due highway construction and minimum are affected by persistent respiration diseases. Clearly, the loss of health because of environment degradation calls for policy interventions. The price-advantage ratio for any given coverage intervention will depend upon the country of the environment and sample of the disorder.

Keywords: Environmental Health, Economic perspective, Bilaspur, Highway

INTRODUCTION

The development of highway projects is generally intended to improve the economic and social welfare of the human beings. At the same time, it has detrimental impacts on the surroundings and people. The environmental impact of dual carriageway initiatives consist of harm to sensitive eco-systems, soil erosion, adjustments to drainage pattern and thereby ground water, interference with wild life motion, lack of effective agricultural lands, resettlement of humans, disruption of local financial activities, demographic modifications and accelerated urbanization. Infrastructure creation initiatives in trendy and road construction initiatives particularly are associated with a big amount of emissions that change from the start of venture execution till the demolition degree. This pollution can have an effect on human fitness and the monetary balance in a very excessive manner.

Highway mission has main influences on key dimensions of human development: income and health. Especially the risks of polluted air, water, and soils to human health are considerable and big. A better stage of air pollutants reasons large exposure of the human population to heart disease, stroke, lung most cancers, and both persistent and acute breathing illnesses. The World Health Organization reports that out of doors air pollution in towns and rural regions brought about 3.7million premature deaths internationally in

2012 (WHO 2014). Some 88% of those premature deaths passed off in low-and center-earnings nations. Occurrences of Asthma are rising dramatically in the course of evolved nations and environmental factors appear to be at the least partly to blame.

The Millennium Ecosystem Assessment Synthesis file warns that the erosion of ecosystems should lead to an increase in existing diseases consisting of malaria and cholera, in addition to a growing risk of latest sicknesses. According to the IPCC third evaluation record, the atmospheric temperature is anticipated to increase all through the century, implying higher health threats for human populations, especially in low-earning populations globally. Quantifying the influences of environmental degradation on human health is important for the development of properly-informed regulations and therefore, many valuation researches had been carried out worldwide in the past decades addressing environmental risks to public fitness.

Health expenses are taken into consideration to be incurred because of unfavorable results of air pollutants viz. loss in wages due to adverse effects on the health of workers and increased expenses on their heath care including of family members. In this publication we have examined health issues that affect the economy of humans immediately or circuitously due to construction of highways.

STUDY AREA

The Corridor road starts from km 73.200 at Kiratpur (31°11'2.21"N & 76°34'16.29"E) in District Ropar inside the State of Punjab and ends at km 134.500 near Bilaspur (31°58.44"N & 76°44'15.23"E) in Bilaspur District within the State of Himachal Pradesh. The road starts at an elevation of 289 m above MSL and ends at 521 m above MSL. It traverses through many settlements i.e. Kiratpur, Kainchi More, Swarghat and Nauni. Apart from these settlements the road additionally passes through a lot of small settlements in many locations. The district is located in Satluj valley in the outer hills and covers a place of 1,167 sq. Km. Its boundary touches Una, Hamirpur, Mandi and Solan districts. Satluj is the main river which passes through the middle of the district and divides it into nearly equal elements. A Stretch of 14 K.M. Distance has been taken for the existing observation. This four-lane road creation stretch has been taken among Auhar and Rishikesh of Bilapsur District. It also passes between seven villages i.e. Auhar, Palthin, Kalar, Rishikesh, Pater, BainaJatta, and Bhujhwani. The district is entirely hilly and located at an altitude ranging between 560 metres and 1,879 metres above the implied sea level. Bahadurpur Dhar attains a maximum top of one 879metres in this area. The area has many low hill tiers known as Dhars. These are Dhar Naina Devi, Dhar Kot, Dhar Tuini, Dhar Bandla, Dhar Jhinjiar, Dhar Ratanpur and Dhar Bahadurpur.

METHODOLOGY

A questionnaire based survey was undertaken to collect primary data of sample residents in the study area. Personal interviews of residents of different income groups were conducted in a well defined time table and their answers to the questions blanketed in questionnaires for the collection of primary records. Primary records are associated with health expenditure and income and livelihood of the households. For the reliability of the primary data, secondary data were obtained from nearby hospitals in the study area including CHs (community hospitals & primary health care center (PHC). Health facility information was also gathered during the study period. Simple calculation is done to calculate various elements in this paper.

RESULTS AND DISCUSSION

There is increasing recognition that connected environment and health impacts require economic evaluation so that you can acquire adequate attention in policy. In the subsequent

sections important packages of the valuation strategies that have been carried out to estimate social benefits associated with increased air and water quality in study area in addition to exchange in health economy aversion are reviewed. It is widely known that air and water pollutants are hazardous to human health. WHO also estimates that at least two million peoples died each year because of air pollutants. Air and water are the basic requirement for of human beings which are adversely affected during new road constructions.

During the construction of highway projects, the environmental health and economics of respondents have been affected adversely as both air and water qualities are deteriorated. Suspended Particulate Matters from the construction activities results in the illnesses from respiratory infections, eye inflammation, asthma, and fever. PM10 consists of alumina-silicate and different oxides of crustal factors and major resources along with fugitive dust from avenue production and demolition. Surface water sources or underground resources are contaminated in the course of the road creation manner. Microbe contamination of groundwater because of dumping of stable waste and sewage outfalls is the maximum severe danger. These threats lead to waterborne sicknesses cholera, diarrhea, and jaundice. Health prices are taken into consideration to be incurred due to damaging results of air and water pollutants on environmental fitness. Economics of environmental health modifications while air and water quality adversely changes in a creation regions.

The present study was undertaken for monetary analysis of environmental health of people's in Auhar, Palthin, Kalar, Rishikesh, Pater, Baina Jatta, and Bhujhwani of Bilaspur district wherein construction work of Kiratpur to Network Four Lane Highway Project was in progress. Bainajatta village has maximum (49%) length of highway whereas Kalar village has the least 7 % (Fig 1.1, 1.2).

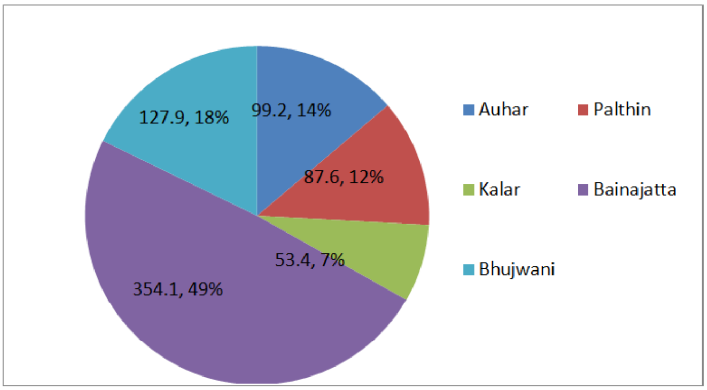

Fig. 1.1 showing the area wise distribution of study area

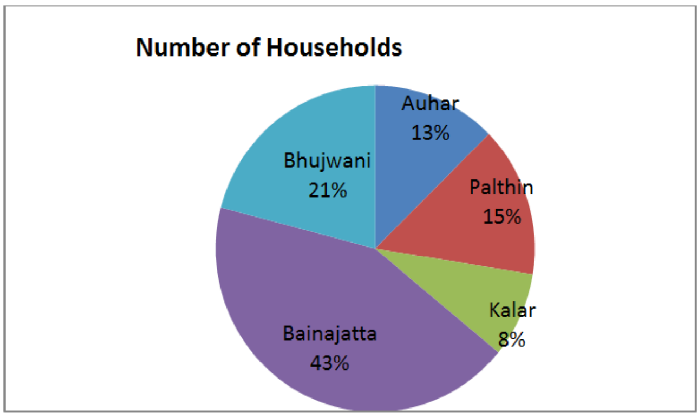

Fig. 1.2. Showing total distribution of households in study area

Auhar, Palthin, Kalar, Bainajata and Bujhwani villages have 94, 111, 63, 321, and 156 families. According to the proportion of total number of families, maximum number of families (43) were in Bainajatta village and minimum (13%) in Kalar village (Fig.1.2).

The classification of health service is based on the availability of the number of health facilities within the surrounding areas of villages. If no longer available inside the village, the distance wise code "a" for < 5 Km, "b" for five-10 Km, and "c" for 10+ km of the nearest location in which the health facilities are available. The health organization in particular contains CHs and PHs.

For the motive of analysis, forty families residing in seven villages are classified according to their annual income as low (>Rs. 27,000), middle (Rs.42000-3,00,000) and high (> Rs.300000) income groups (Fig. 1.3)

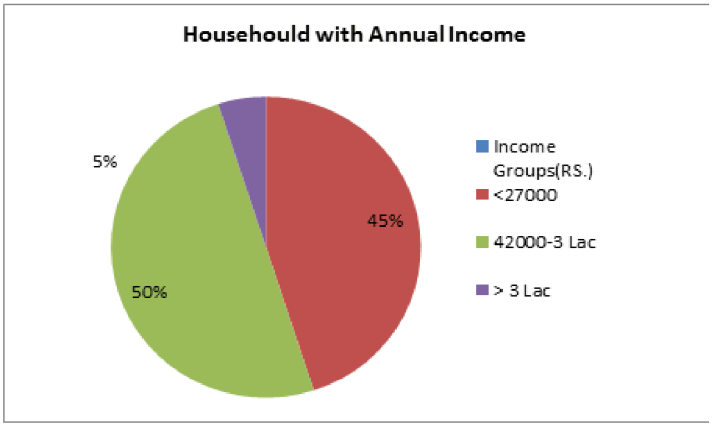

Fig 1.3. Showing households with annual income

50% of households belonged to the middle-income group, 45% to the low- income group and only 5% to the high income group. Among the respondents 52 men and 43 girls were in low income group;76 men and 68 females in middle-income group while only 6 males and 5 female respondents are in the high income group.

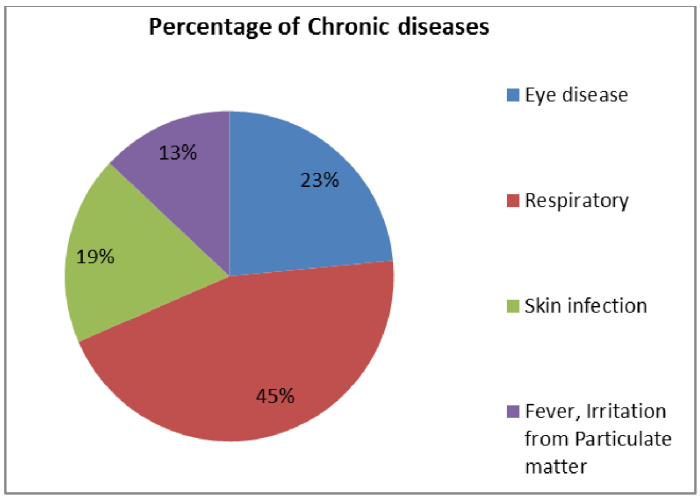

Fig 1.4. Showing percentage of chronic diseases

The diseases affecting people in the study area are classified into common and chronic diseases. Among 200 persons surveyed in the 40 sample households, 87% of the study area is affected by common diseases, whereas 13% have not given any definite response regarding common diseases in the study area These diseases were due to particulate matter (Dusts & Fumes), silica from abrasive blasting, masonry work, road work, grinding & chipping concrete, fumes from Welding, torch-cutting, Grinding dust metals associated with abrasive blasting, Insulation material (asbestos and man-made mineral fiber), Asphalt fumes and diesel fumes causes eye diseases, skin problem, respiratory diseases and fever. Whereas Rainer Fehr (1999) reported emission of benzene, N02, CO and noise, and vibrations in the City Bypass Road of Ecuador causing health hazards to people. The chronic diseases include serious eye diseases (23.5%), respiratory problems (45%) including lung cancer, skin infections (18.5 %), and the remaining 13% suffer from fever etc. (Fig.1.4). These diseases last long and require continuous treatment. According to OSHA (Occupational Safety and health occupation), silica is a major constituent particle contributing to chronic diseases. Silicosis in silica causes Lung Cancer, Chronic obstructive pulmonary disease (COPD) – dust-related, autoimmune disorders – Rheumatoid arthritis – Scleroderma. It may increase susceptibility to TB. The per visit expenditure of families for treating diseases is given in Table 1.1. Annually 41% of households spend Rs.6000; 33% spend Rs.9600 and 25% spend Rs.12000 for treating common diseases.

Table.1.1 showing expenditure of households for treating disease

S. No.	Expenditure per Visit (RS.)	Distance covered for in km.	Percentage of respondents
1	200 -500	10	41.5%
2	500-800	15	33.5%
3	800-1000	20	25%
	Total		100%

For the remedy of chronic disorders, respondents covered almost 100 km and expenditure incurred for treating ranged from Rs. 10,000- Rs. 20,000 (Table1.2).

Table1.2 Expenditure for treating chronic disease

S. No.	Type of diseases	Total expenditure of households Inc. (Visit price, Drug cost)	Average Expenditure
1	Eye disease	10000	1000
2	Skin disease	15000	1500
3	Respiratory disease	20000	2000

Annually households spend 22% in their income on eye disease, 33% on skin sickness and 44% on respiratory disease. Overall households spend 33% in their income on treating chronic illnesses.

There was a massive increase in the number of patients all through the years 2016-2017 who were afflicted by eye diseases and breathing sickness (Table 1.3).

Table 1.3 Classification of disease report (2016 & 2017) Yearly classification of disease report for the year(r/o Bilaspur)

S. No.	Name of the institution	Total No. Patient of eye diseases		Total No. of patients of respiratory diseases	
	Year	**2016**	**2017**	**2016**	**2017**
1	RH Bilaspur	11025	12852	26384	30189
2	CH Ghumarwin	13233	14766	19122	21042
3	CH Jhandutta	663	717	3892	6078
4	PHCs Rishikesh	285	430	54	79
	Total	25206	28765	49452	57388
	% Increase		12.37%		13.82%

Environmental degradation poses hazard to human fitness worldwide. Harmful consequences of this degradation to human health are already being felt and will grow significantly worse due to the fact surroundings and health is intimately connected.

However, fitness effects are tough to quantify in the financial terms. The rapid economic development and population boom bring about continuing environmental degradation. Air pollutants are a prime environmental danger to fitness and are estimated to cause about two million untimely deaths internationally every year. A reduction in air pollutants lessens the global burden of diseases from respiratory infections, coronary heart ailment, and lung cancers.

MITIGATION MEASURES

The mitigation measures in Four lane highway include providing of kits (inhalers and other device's) to the residents to minimize exposure to S.P.M; regular supply of water tankers to calm down dust at some points of transportation and periodic health camps to households.

The suspension of operations on a project in case wind velocity exceed 20 miles/ hour or wind delivers dirt beyond the property line in spite of implementation of all viable dust controlling measures. Provide alternative route at construction sites, if needed, for uninterrupted traffic flow. Onsite dust piles or different stockpiled should be blanketed to reduce wind-blown dust emissions.

CONCLUSION

The present examination revealed that the flawed construction of highway adversely affects health and economy of local residents selected sites. Clearly, the loss of fitness due to environmental degradation is vast and calls for policy interventions.

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