IMPACT OF POLLUTION IN TEACHING HOSPITALS: AN APPRAISAL OF SELECTED TEACHING HOSPITALS IN KOLKATA

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[*Human Development refers to creating an environment which protects the fundamental human rights by ensuring a holistic development of human beings and its surroundings. The health sector being an indispensible element for development of a nation plays a pivotal role in this regard. Health and socio-economic conditions are interrelated and one cannot be achieved without the other. In India public health sector still occupies a significant position with respect to delivering health services. Particularly, in the state of West Bengal public hospitals (teaching and general) are the focal points of health delivery as West Bengal leads in this respect compared to other states of the country and thus maintaining a healthy environment in the public hospitals is important for both health service provider and health service recipient. With the advancement of human civilization the rapid growth of population along with industrialization has led to an expansion of urban civilization which in turn has escalated environmental pollution as a result of which the hospital environment has also faced the severe consequences of it. Nowadays various types of pollutions have disrupted healthy human life. The change in climate along with poverty has also contributed massively in creating this public health emergency. Thus, the fundamental purpose of ensuring the expansion of human capabilities and widening choices through equality, sustainability, productivity and empowerment is at stake. In this article an attempt has been made to review the impact of pollution on patients in the public teaching hospitals in Kolkata and to judge their perception in this respect. Five major teaching or medical college hospitals have been selected for the period 2015 to 2018.*

Keywords: *Health, Public Hospitals, Human Civilization, Pollution, Patient*]

Introduction

The spread of human civilization, brisk industrialization and modernization of technology in order to address unending want of comfort of human beings has significantly harmed the natural habitat over the years globally. Though the advent of industrial revolution has enhanced the standard of living of the common mass across the world yet it has contributed negatively to the society by escalating various types of pollutions in the environment. Growth along with development contributes to the holistic development of a nation. Education,

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health, shelter are the basic needs of human beings. Human development which is viewed as the holistic development of human beings cannot be ensured without ensuring a healthy environment and balanced development of healthy life. Thus, human development depends upon a healthy living as well as working environment. 'Health' being a buzzword in this context plays a pivotal role in ensuring proper human development in a nation. Keeping in mind the popular term 'health is wealth', we can categorize health into two parts, curative healthcare and precautionary health care. Precautionary health care includes certain measures to be adopted beforehand to keep the surrounding healthy and less disease-prone. On the other hand curative healthcare evolves around diseased persons and health points. Here, hospital refers to an institution which provides diagnosing facilities, nursing facilities, medical as well as surgical treatments. With the ill-effects of pollution, the health condition in the society has deteriorated gradually and therefore health points have become the focal points of the affected persons. It is quite natural that a diseased individual goes to a hospital or a health care unit for treatment or sometimes diagnosis, but with the gradual increase in pollution levels in the hospital premises, the concern has also increased equally. Nowadays from various media sources we come across several incidents which highlight the increasing pollution levels in and around the hospital premises. According to the Times of India (Kolkata) dated 19th April 2017, noise level at SSKM Hospital has surpassed the normal permissible limits of 50 decibel during day time and 40 decibel during night time and has recorded 70-80 decibel.

In this paper an attempt has been made to review the impact of pollution on teaching hospitals in Kolkata.

Objective

In this study, the main objective was to review the opinions from the view point of the service recipients i.e. patients and on the basis of this feedback, analyze how various kinds of pollution and its adverse impact on the some of the selected teaching hospitals in Kolkata.

Literature Review

In spite of extensive search for the literature in the field of health sector and particularly public health sector few literature has been found.

Rao (1992) illustrated health scenario and hospital administration in India.

Barnum and Kurzin (1993) carried out an investigation to review various healthcare related issues in public hospitals.

Srinivasan (2002) explained the profile and future of healthcare in India and managerial aspects of it.

Sharma (2007) explained that government expenditure in health care sector is declining; it is private sector investment that will drive the sector's transformation.

Singh and Sharma (2011) highlighted different issues relating to healthcare and social development by analyzing various case studies. They also pointed out

hospital functions, organization, classification and components to understand hospital as well as health sector.

Haque and Singh (2017) in their study explained the effects of air pollution on human health in Kolkata.

West Bengal Pollution Control Board (2016) in its 'state of environment report West Bengal' elaborated explicitly the effects of various pollutions in the environment and laid down the ways available to combat them efficiently and effectively.

Dr. Sahai (2014) in his study highlighted various types of hospital wastes and pointed out various regulations and policies applicable to minimize the effects of pollution.

Saxena (2012-13) rightly pointed out the ways of efficiently handling hospital wastes to reduce pollution emerging out of hospital wastes.

Methodology

The main objective of the present study is to analyze the impact of different types of pollution on patient within the teaching public hospitals in Kolkata. The study period is 2015 to 2018. In this study some selected questions was framed to interview 104 respondents from 5 public teaching hospitals. To collect primary data from respondents' structured questionnaire was used. On the other hand, secondary data were collected from various published reports, journals, magazines etc. The collected data are coded, tabulated and analyzed by using SPSS package.

Data Presentation and Interpretation

In this study, the opinions of the service recipients of the health system have been reviewed by interviewing 104 patients in a few selected teaching hospitals in Kolkata over two and a half year. In patient perception study, general demographic profile of patients, their opinion and perception about different types of hospital related pollution and its impact has been observed. The detailed statistical analysis and their interpretations are given below:

Table 1: Gender Distribution of Patient Interviewed.

Gender	Number of Patients	Percent
Male	54	51.92
Female	50	48.08
Total	**104**	**100.0**

104 patients were interviewed, out of which 51.92% are found to be male and rest are female as shown in Table 1 and regarding educational qualifications of patients in the Table 2 it is found that only 11.54% are illiterate, 19.23 % primary, 13.46 % junior high, 23.08% secondary, 12.5% higher secondary, 16.35% graduate and around 2.88 % are having post graduate and 0.96 % with professionals degrees.

Table 2: Educational Qualifications of Patients Interviewed

Education	Number of Patients	Percent
Illiterate	12	11.54
Primary	20	19.23
Junior High	14	13.46
Secondary	24	23.08
Higher Secondary	13	12.50
Graduate	17	16.35
Post Graduate	03	2.88
Professionals degrees	01	0.96
Total	**104**	**100.00**

Table 3: Occupation of Patients Interviewed

Occupation	Number of Patients	Percent
Service	22	21.15
Business	8	7.69
Self employed	19	18.27
Student	6	5.77
Nothing	49	47.12
Total	**104**	**100.00**

In Table 3 it is observed that, occupation of 21.15 % patients is service and 7.69 % of those are business. Around 18.27 % of patients are self employed, 5.77 % are students and 47.12 % are doing nothing. No farmer found within the respondents.

Table 4: Monthly Family Income Distribution of Patients Interviewed

Monthly Family Income	Number of Patients	Percent
Less than 1,000	8	7.69
1,001 - 5,000	51	49.04
5,001 - 10,000	26	25.00
10,001 - 20,000	12	11.54
20,001 -30,000	6	5.77
Above 30,000	1	0.96
Total	**104**	**100.0**

The study reveals that the monthly family income level of 56.73 % patients is less than Rs.5000, 43.27 % patients are between Rs.5001 to Rs 30,000 and of 0.96% patients are above Rs. 30,000, as given in Table 4. Again, it is apparent from the analysis of family income pattern of the patient, that majority of the respondents are poor. It is also observed from the analysis of occupational outline of the patients that majority of the respondents are economically backward.

In this study the perceptions regarding various types of pollutions of various respondents were thoroughly studied. According to the study the following was observed in Table 5.

Table 5: Types of Pollutions

Types of Pollutions	Percentage (%)
Noise	47.7
Air	25
Water	19.2
Other	8.1

It is observed that different types of pollution are recognized by respondents in the teaching hospitals. These are noise pollution-47.7%, air pollution-25%, water pollution-19.2% and others-8.1%. It was also observed by the 32.7% of the patients that, during 3 pm to 6 pm pollution level is the highest. 26.2% of the patients feel that during 9am to 12 noon, the pollution is the second highest. It was also observed that, after 6pm to till 6am morning pollution reported relatively low compare to day time in public teaching Hospitals in Table 6.

Table 6: Maximum Pollution During a day in Hospitals

Maximum Pollution	No. of Respondent	Percent
6-9am	9	8.65
9am-12noon	**27**	**25.96**
12noon-3pm	18	17.32
3-6pm	**35**	**33.65**
6-12am	2	1.92
12-6am	2	1.92
Unknown	11	10.58
Total	**104**	**100.0**

We know that, silence zones are areas within 100 meter radius of hospitals and schools and courts while in operation. But In practice we are not maintaining such directive. The state pollution control board recently submitted a report which validated this crisis and shows lack of awareness and monitoring. According to a report [10thAugust,2017,The Telegraph] both day [6am to 10pm] and night [10pm to 6am] ambient noise levels near 10 major hospitals in Kolkata to be around 20 decibel higher than the nationally permissible limits of 50 and 40 decibel respectively. The noise level was measured by the state pollution control board round the clock over a 10 day period recently. An increase in of 10 decibel could mean doubling of sound pressure on ears experts said. The above 10 major hospitals in Kolkata includes 5 major reputed medical college hospitals of Kolkata.

Table 8: Noise Pollution in Teaching Hospitals in Kolkata

Sl. No.	Public Hospital	National permissible limit [DAY TIME] decibel	AVERAGE NOISE [DAY TIME] decibel	Excess of decibel over permissible limit	National permissible limit [NIGHT TIME] decibel	AVERAGE NOISE [NIGHT TIME] decibel	Excess of decibel over permissible limit
1	**S.S.K.M Hospital**	**50**	**72.1**	**22.1**	**40**	**64.7**	**24.7**
2	**Medical College**	**50**	**70.4**	**20.4**	**40**	**64.6**	**24.6**
3	**National Hospital**	**50**	**67.7**	**17.7**	**40**	**64.9**	**24.9**
4	**N.R.S Hospital**	**50**	**71.6**	**21.6**	**40**	**62.8**	**22.8**
5	**R.G .Kar Hospital**	**50**	**70.7**	**20.7**	**40**	**58.6**	**18.6**

Source: The Telegraph, 10th August, 2017

The above Table 8 shows that S.S.K.M, N.R.S and R.G.KAR are the noisiest during daytime and National, S.S.K.M and Medical College are the noisiest during night time. The noise is mostly caused by vehicles. This is very alarming for us, because all the teaching hospitals are affected by severe noise pollution either in day time or during night time. S.S.K.M is one of the premier public hospitals in Kolkata as well as in West Bengal which is encounter high noise pollution during day and night time as per the report. These problems need to be solved with utmost care and along with long term sustainable planning. Noise pollution is a major environmental problem and arouses more and more reactions from the population. Over time, it can cause psychological problems and stress to people who are continuously subjected and represents, therefore, a danger to human health, not to mention the deterioration of ecosystems, material goods, monuments, etc. A scientific study shows, that exposure to noise may cause

a number of direct adverse effects such as insomnia, auditory and extra-auditory physiological damage (mainly cardiovascular), communication difficulties and malaise. Noise pollution is a major cause of the deteriorating quality of life. The deleterious effects caused by the continuous noise are many. We must take caution in this regard for our better future. Besides this, with the advancement of medical science, the quantum of medical waste has increased which has also contributed significantly to the environmental pollution. They may or may not be toxic but needs to be destroyed immediately otherwise may spread infectious diseases and thereby cause health hazard. These wastes include anatomical, pathological, and radio-active as well as pharma waste. According to The Times of India (City) report dated 11th August 2015; bio-medical wastes have left open life of thousands at risk. Thus, effective waste management in hospitals can also help in reducing pollutions in and around the public health points.

Conclusion

We are aware that, human development can be ensured through proper education, enhancing workability and skills so as to improve the standard of living through increased per-capita income which is not possible without healthy environment.
In this study we have tried to highlight the effects of pollution in and around the premises of some teaching hospitals in Kolkata by reviewing the opinions of the patients interviewed for the study. Here, we will be able to observe that noise pollution has posed the maximum threat, followed by air and water pollution. Also, it can be observed that pollution is recorded maximum during the rush hours of the day. To be candid, initiatives from the common mass as well as the appropriate authority are highly desirable. As per the Times of India (City) report dated 10th August 2017, National Green Tribunal has directed the West Bengal Pollution Control Board and environment department to jointly organize awareness programmes for drivers in the city to reduce noise as well as air pollution.

Recommendations

- In order to reduce sound pollution, hospital buildings should be made sound-proof by sealing off the windows.
- Ensuring proper training of the drivers and arranging awareness programmes to prevent sound pollution in silence zones.
- Ensuring proper hospital waste management measures so as to decrease the pollution arising out of bio-medical wastes.
- The concerned administrative authorities must forward with some stringent policies to combat pollutions.

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