

Knowledge, Attitude and Practice Regarding Ill Effects of Smog and its Prevention among Residents of Delhi NCR

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Abstract: Background: Smog is an ongoing severe air pollution event in the New Delhi and the adjoining region of the national capital territory of India. On November 7, 2017 the pm 2.5 levels in Delhi shot up to 999, much above the recommended 60 µg/m³. It has been reported as one of the worst levels of air quality in Delhi NCR since 1999. Objectives: The objective of the study was to assess the knowledge, attitude and practice regarding the ill effects of smog and its prevention among the residents of selected areas of Delhi NCR and to find out the association of knowledge regarding the ill effects of smog and its prevention with the selected demographic variables of residents of selected areas of Delhi NCR. Methods and Material: A non-experimental descriptive survey design was used to collect data from 100 residents of selected areas of Delhi NCR. A self-structured knowledge questionnaire was developed for data collection. Convenience sampling technique was used. The collected data was analyzed by using descriptive statistics. Results: The mean percentage of overall knowledge score was 45.06%. Majority of the subjects i.e. 49% were having moderately adequate knowledge, 17% had poor knowledge and 34% had adequate knowledge. The mean percentage of overall attitude score was 80.14%. Majority of the subjects i.e. 63% had favorable attitude and 37% had unfavorable attitude. The mean percentage of overall practice score was 62.13%. Majority of the subjects i.e. 64% had ineffective practices and 36% had effective practices. Conclusion: This study concludes that although the knowledge among residents of Delhi NCR is moderately adequate and they have favorable attitude toward ill effects of smog and its prevention but still people are not showing effective practices to combat the issue of smog. So, the information booklet was distributed with the view that it will improve the practices of residents of Delhi NCR.

Keywords: knowledge, attitude, practice, residents, smog, ill effects, prevention

1. Introduction

Air pollutant in India is a serious issue with the major sources being fuel wood and biomass burning, fuel adulteration, vehicle emission and traffic congestion.[1] In autumn and winter months, large scale crop residue burning in agriculture fields – a low cost alternative to mechanical tilling – is a major source of smoke, smog and particulate pollution. India has a low per capita emissions of greenhouse gas but the country as a whole is the third largest after China and the United States.[2] Smog is a type of air pollutants. The word "smog" was coined in the early 20th century as a portmanteau of the words smoke and fog to refer to smoky fog, its opacity, and odor. The word was then intended to refer to what was sometimes known as pea soup fog.[3] Smog is yellowish or blackish fog formed mainly by the mixture of the pollutant in the atmosphere which consists of fine particles and ground level ozone. Smog which mainly occurs due to air pollutants can also be summed up as the mixture of various gases with dust and water vapor. Smog also refers to the hazy air that makes breathing difficult. This kind of visible air pollution is composed of nitrogen oxides, sulphur oxides, ozone, smoke or dirt particles and also less visible particles such as CFC's. Human-made smog is derived from coal emissions, vehicular emissions, industrial emissions, forest and agricultural fires and photochemical reactions of these emissions.[4] Heavy traffic, high temperatures, sunshine and calm winds are few of the factors behind increasing level of air pollution in atmosphere. During the winter months when the wind speeds are low, the smoke and fog become stagnate at a place forming smog and increasing pollution levels near the ground and makes breathing difficult. It hampers visibility and disturbs the

environment. But it is also true that smog is more severe when it occurs farther away from the sources of release of pollutants. [5] This is because the photo chemical reactions that cause smog take place in the air when the released pollutants from heavy traffic drift due to the wind. Smog can thus affect and prove to be dangerous for suburbs, rural areas as well as urban areas or large cities.[6]

2. Need of the study

As the air quality index (AQI) of Delhi NCR is deteriorating day by day, it is becoming a gas chamber in which people are living. Delhi's air quality breached the 'severe' level as level of particulate matter shot up drastically over the past few weeks. Smog causes grave environmental issue and can also impede reproduction and growth capacities in animals and plants. It also causes harm to the health of human beings and agriculture. Exposure to smog can lead to health issues like asthma attacks, throat infection, or even respiratory problems of high order. [7] As smog is the topic of talk in the country especially in Delhi NCR and as nurses we are dealing with the health of human beings. This topic is of prime importance for the research study.

3. Review of Literature

A study was conducted to investigate how smog knowledge and risk perception (physical health risk perception and mental health risk perception) of public affect their attitude and intention to reduce car use. A questionnaire survey of 334 randomly sampled respondents was designed to test these relationships. The results show that public smog knowledge is positively and significantly related to physical

health risk perception, mental health risk perception, attitude and intention to reduce car use. Public smog knowledge has the largest impact on intention to reduce car use. Furthermore, physical health risk perception and mental health risk perception are positively and significantly associated with attitude and intention to reduce car use. In addition, the results also indicated that public smog knowledge is at a low level. Based on the results, implications and suggestions for future research were discussed. [8]

A survey of residents living around eight state-controlled atmospheric environmental monitoring sites in Ningbo City was conducted using stratified sampling. The data was statistically analyzed to investigate people's views and behavioral tendencies in smog weather, the influence of different media reports on public outlook, and public opinions on the local atmosphere and pollution management in different areas. The results showed that people's perception of smog differs greatly from actual conditions, indicating that the public opinion tends to deviate when faced with a public crisis. Mainstream media (TV, newspaper, etc.), accounting for 67% of all media sources, are the main source for dissemination of smog information. The main sources of pollution, in order of decreasing contribution, according to residents of Ningbo City are as follows: motor vehicle exhaust, industrial coal combustion, large-scale construction, biomass burning, and kitchen fumes.[9]

An evidence-based insight into the status of air pollution in Delhi and its effects on health and control measures instituted. The urban air database released by the World Health Organization in September 2011 reported that Delhi has exceeded the maximum PM 10 limit by almost 10-times at 198 $\mu\text{g}/\text{m}^3$. Vehicular emissions and industrial activities were found to be associated with indoor as well as outdoor air pollution in Delhi. Studies on air pollution and mortality from Delhi found that all-natural-cause mortality and morbidity increased with increased air pollution. Delhi has taken several steps to reduce the level of air pollution in the city during the last 10 years. However, more still needs to be done to further reduce the levels of air pollution.[10]

4. Statement of Problem

"A descriptive study to assess the knowledge, attitude and practice regarding ill effects of smog and its prevention among residents of Delhi NCR with a view to develop an information booklet"

4.1. Objectives

- To assess the Knowledge, Attitude and Practice regarding the ill effects of smog and its prevention among the residents of selected area of Delhi NCR.
- To find out the association of knowledge regarding the ill effects of smog and its prevention among the residents of selected area of Delhi NCR.

4.2 Operational Definition

Knowledge -In this study knowledge refers to information regarding the ill effects of smog and its prevention among the residents of Delhi NCR.

Attitude -In this study attitude refers to the feeling or acting towards the situation of smog and its prevention.

Practice -In this study practice refers to action performed or adopted by the residents of Delhi NCR in order to combat the situation of smog.

Health - In this study health refers to the state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.

Ill Effects - In this study effects refers to the unpleasant effect of smog on the health of residents of Delhi NCR.

SMOG- In this study smog refers to the kind of air pollution, originally named for the mixture of smoke and fog.

Residents of Delhi NCR - In this study residents of Delhi NCR refers to the residents of Mahipalpur, New Delhi within the age group of 15-50 years.

4.3. Research Methodology

- **Research Approach**- Quantitative Research Approach
- **Research Design** - Descriptive Research Design
- **Setting of the Study**- The setting of the present study is Mahipalpur, Delhi NCR.
- **Target Population**- The target population for this study includes residents of Delhi NCR.
- **Sample and Sampling Techniques**- The samples selected for this study are the residents of Mahipalpur, (Delhi NCR). Non - probability convenience sampling technique was used to collect data in the present study.
- **Sample Size**- The sample size for the present study consists of 100 residents of Mahipalpur (Delhi NCR).
- **Development of the Tool**- Structured knowledge questionnaire, attitude scale and practice checklist was developed after the review of literature and with the consultation of guide and co-guide. The informational booklet was titled as "Brief review of Smog" and was organized into the following headings: Definition, causes, health effects, major risk factors of smog, ways to reduce smog and its prevention. Tools and booklet were validated by 7 experts.
- **Ethical consideration**: Permission was obtained prior to the data collection process from MLA of Mahipalpur (New Delhi).The investigator explained the purpose of the study and assured confidentiality of all subjects. An informed consent was taken from the subjects.

5. Results and Analysis

Table 5.1: Demographic profile of Residents of Delhi NCR.
N=100

Demographic Variables	Frequency (F)	Percentage (%)
Age in Years	18-25	2
	26-35	40
	36-55	41
	56 and above	17
Religion	Hindu	85
	Muslim	6
	Sikh	3
	Christian	6
	Others	0
Education	Secondary	27
	Senior secondary	23
	Graduate	36
	Post graduate	14
	Others	0
Source of Health Information	Family members	38
	Friends/relatives	18
	Mass media	26
	Others	18

Table 5.2: Overall Knowledge Score of Residents of Delhi NCR regarding the ill effects of Smog and its prevention.
N=100

Areas	Mean and Standard Deviation	Mean Percentage
Overall Knowledge Score	6.76 ± 2.92	45.06%

Maximum score- 15

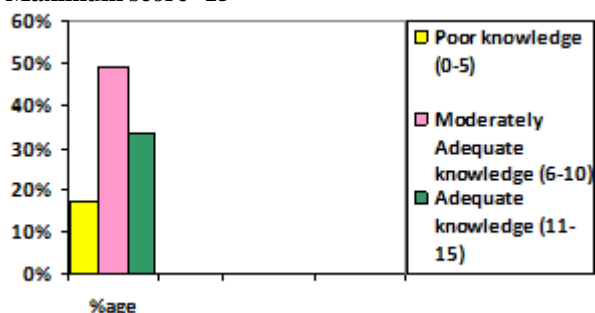


Figure 5.1: Level of knowledge score of residents of Delhi NCR regarding the ill effects of smog and its prevention

Fig. 5.1 shows that majority of samples i.e. 49% were having moderately adequate knowledge, 34% were having adequate knowledge and 17% were having poor knowledge.

Table 5.4: Overall Attitude score among residents of Delhi NCR regarding the ill effects of smog and its prevention,
N=100

Areas	Mean and Standard Deviation	Mean Percentage
Overall Attitude Score	60.11 ± 8.83	80.14%

Maximum score- 75

Table 5.4 shows the overall attitude score of residents of Delhi NCR regarding the ill effects of smog and its prevention. They were having mean percentage score of 80.14%.

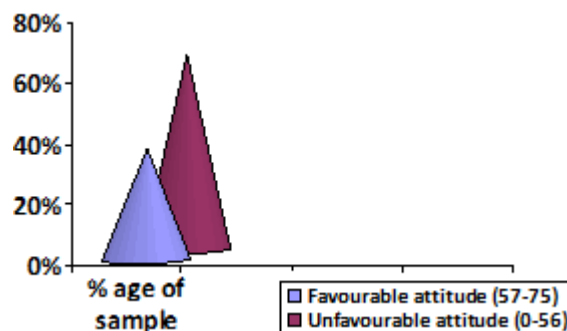


Figure 5.2: Level of attitude score of residents of Delhi NCR regarding the ill effects of smog and its prevention

It shows that 63% of the subjects have unfavourable attitude and 37% have favourable attitude

Table 5.5: Overall Practice Score of Residents of Delhi NCR regarding the ill effects of Smog and its prevention.
N=100

Areas	Mean and Standard Deviation	Mean Percentage
Overall Practice Score	9.32 ± 3.05	62.13%

Maximum score- 15

Table 5.5 shows that overall practice scores of residents of Delhi NCR regarding the ill effects of smog and its prevention. They are having 62.13% of mean percentage practice score.

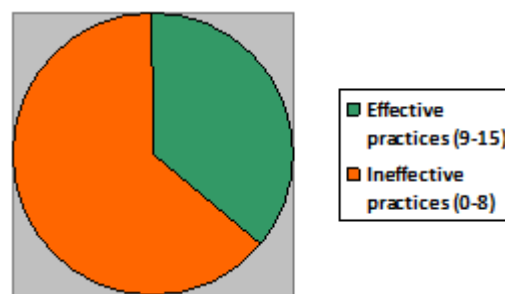


Figure 5.3: shows the practice level of residents of selected areas of Delhi NCR regarding the ill effects of smog and its prevention; i.e., 64% subjects have ineffective practices and 36% subjects have unfavorable practices.

There is no association of knowledge with the demographic variables of the residents of Delhi NCR regarding ill effects of smog and its prevention.

6. Discussion

Objective 1: To assess the Knowledge, Attitude and Practice regarding the ill effects of smog and its preventions among the residents of selected area of Delhi NCR.

Based on the objective of the study, the finding of the knowledge score of samples regarding the ill effects of smog and its prevention that they were able to answer the question to a good extent. The research analysis shows that out of the 100 samples 17% people having poor knowledge 49% having moderately adequate knowledge and 34% people having adequate knowledge. The finding of attitude score of

samples regarding the ill effects of smog and its prevention was that 63% have favourable attitude and 37% have unfavourable attitude. The finding of practice score of samples regarding the ill effects of smog and its prevention was that 64% of total subjects had ineffective practices and 36% subjects have effective practice.

Above results were supported by relevant study conducted by Pramod V Niphadkar to assess the level of awareness about indoor air pollution in urban Indian population and to identify factors that influence this awareness. A total of 754 subjects including 487 asthmatic patients and 265 control subjects were recruited in this study. The result of the study was that 98.8% the total subjects were not able to score more than 25 marks. Out of 754 subjects 485 patients and 260 controls could not pass the test. The study concluded that awareness and knowledge regarding air pollution causing respiratory ailments is still grossly inadequate in India.[11]

The above results were supported by a similar survey of residents living around eight state-controlled atmospheric environmental monitoring sites in Ningbo City was conducted using stratified sampling. The data was statistically analyzed to investigate people's views and behavioral tendencies in smog weather, the influence of different media reports on public outlook, and public opinions on the local atmosphere and pollution management in different areas. The results showed that people's perception of smog differs greatly from actual conditions, indicating that the public opinion tends to deviate when faced with a public crisis. Mainstream media (TV, newspaper, etc.), accounting for 67% of all media sources, are the main source for dissemination of smog information. The main sources of pollution, in order of decreasing contribution, according to residents of Ningbo City are as follows: motor vehicle exhaust, industrial coal combustion, large-scale construction, biomass burning, and kitchen fumes.[9]

Objectives 2: To find out the association of knowledge regarding the ill effects of smog and its preventions among the residents of selected area of Delhi NCR.

Based on the objectives of the study the finding shows that there is no association of knowledge with their selected demographic variable.

7. Conclusion

This study concludes that although the knowledge among residents of Delhi NCR is moderately adequate and they have favorable attitude toward ill effects of smog and its prevention but still people are not showing effective practices to combat the issue of smog. So, the information booklet was distributed with the view that it will improve the practices of residents of Delhi NCR.

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