Awareness and perception of air pollution among people in a tertiary care hospital, Coimbatore, India

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Abstract. Air pollution is a public health problem in India with many exposed to high levels of particulate matter causing various health hazards. Awareness against this is the cornerstone for any intervention. Our main objective is to evaluate the knowledge and perception on air pollution amongst people in a Coimbatore tertiary care hospital. This study was done among 154 hospital staff and patients (semi-structured questionnaires) and the findings were: Most respondents were under 35 , female and urban. 28.6% rated air quality as hazardous due to private vehicles and industrial processes. Many were aware of pollution's health effects but only few were aware of AQI and particulate matter. The study suggests government action to improve the air quality by creating awareness about air pollution and implementing strategies to reduce the same by encouraging community participation.

Keywords: Air pollution, awareness, perception, AQI, health effects.

1 Introduction

Air pollution is a pressing public health concern in India, affecting a significant proportion of the population and giving rise to various health hazards. The exposure to elevated levels of particulate matter (PM) and other pollutants, stemming from both natural phenomena and human activities, necessitates a comprehensive understanding of the awareness and perceptions of individuals towards this pervasive environmental issue. Recognizing the pivotal role of awareness in shaping interventions, this research focuses on assessing the knowledge and perception of air pollution among individuals associated with a tertiary care hospital in Coimbatore, Southern India.

The prevalence of air pollution in India, characterized by high levels of PM and diverse pollutants, underscores the urgency of addressing this issue to safeguard public health. The awareness and attitudes of individuals towards air pollution form the foundation for effective interventions and public health strategies. This study, conducted within the specific context of

a tertiary care hospital, aims to provide valuable insights into the understanding of air pollution among hospital staff and patients.

Accurate, timely information can be a powerful tool to mitigate harmful effects of air pollution. While national guidelines for environmental risk communication – based on risk and crisis communication principles – exist, little is known how these are operationalized, nor about the effectiveness of existing communication efforts. Moreover, a growing literature on environmental health literacy suggests that communication about environmental risks must move beyond individual behavior education to empower communities to mobilize to reduce environmental threats.

Three themes emerged:

1) Lack of clarity about responsibility for communicating about air quality (information sources),

2) Existing air quality communication strategies lack critical information including risk mitigation behaviors and long-term health impacts (information quality) and

3) Existing air quality communications fail to reach vulnerable populations (information reach).

This study demonstrates that air quality communication is lacking yet crucially needed. Information about air pollution and health risks focuses on individual risk behaviors but is disseminated using channels that are unlikely to reach the most vulnerable populations.

2 Objective

The primary objective of this research is to evaluate the level of knowledge and perception regarding air pollution among individuals associated with the selected tertiary care hospital. By examining demographic characteristics, identifying sources of pollution, and assessing awareness levels of key indicators like the Air Quality Index (AQI) and particulate matter, this study aims to contribute nuanced insights that can inform targeted awareness campaigns and interventions. The findings from this research are expected to shed light on the existing gaps in understanding and awareness, providing a foundation for developing strategies to enhance public awareness and mitigate the adverse health effects of air pollution.

3 Methodology

The study encompasses 154 participants, consisting of hospital staff and patients, selected through stratified sampling over a three-month period. Ethical considerations were adhered to, with approval obtained from the ethics committee.

Data collection utilized a semi-structured questionnaire, administered through Google Forms. The analysis employed descriptive statistics, presenting findings in terms of frequency and percentage.

4 Results

The comprehensive analysis of sociodemographic characteristics and air quality awareness-related aspects among the 154 participants in this research study provides valuable insights into the perceptions and knowledge surrounding air pollution.

The diverse *demographic profile* of the respondents, spanning age, gender, education level, profession, and residential area, allows for a nuanced understanding of how different segments of the population perceive and respond to air quality concerns.

- The age distribution indicates a *balanced representation* across various age groups, with a notable majority falling in the 15-34 years range.
- The gender distribution reveals a higher participation of females (66.9%), highlighting the *importance of considering gender-specific approaches in awareness campaigns and interventions.*
- The educational background of the participants reflects a diverse range, with a substantial portion holding bachelor's and master's degrees. This diversity in education levels emphasizes *the need for tailored communication strategies* that cater to varying levels of understanding and awareness.

Table 1. Sociodemographic characteristics

Q. No.	Characteristics	Sub-category	N (154)	%
1	Age (years)	**15 – 24**	**47**	**30.5**
		25 – 34	**51**	**33.1**
		35 – 44	30	19.5
		45 – 54	19	12.3
		55 and above	7	4.5
2	Gender	**Female**	**103**	**66.9**
		Male	51	33.1
3	Education level	SSC	8	5.2
		HSC	23	14.9
		Bachelor's	74	48.1
		Master's	49	31.8

Table 2. Air quality awareness related aspects

Q. No.	Characteristics	Sub-category	Survey (N)	(%)
5	How would you rate air quality in Coimbatore?	Good	30	19.5
		Moderate	54	35.1
		Unhealthy for sensitive groups	26	16.9
		Hazardous	**44**	**28.6**
6	How would you rate your level of awareness of air pollution?	Highly aware	26	16.9
		Moderately aware	**118**	**76.6**
		Not at all aware	10	6.5
7	What do you think are the top 3 causes of air pollution?	**Use of private vehicles**	**137**	**89**
		Industrial processes	**124**	**80.5**
		Construction activity	**79**	**51.3**
8	Which mode of transportation do you use commonly for your daily commute?	**Car**	**34**	**22.1**
		Taxi	1	0.6
		Bus	**44**	**28.6**
		Bicycle	4	2.6
		Two wheeler	**68**	**44.2**
		Metro/local train	1	0.6
		Walking	2	1.3
		Auto rickshaw	0	0
9	**Do you think exposure to air pollution affects health?**	**Yes**	**142**	**92.2**
		No	0	0

		Maybe	12	7.8
10	If yes, what are some of the symptoms that may be seen in those affected by air pollution?	Difficulty in breathing	84	54.5
		Allergies	97	63
		Headache	47	30.5
		Poor visibility	26	16.9
		Irritation of eyes/nose/skin/ throat	80	51.9
11	What do you think are some of the health effects caused as a result of exposure to air pollution?	Asthma	135	87.7
		Heart diseases	17	11
		Lung cancer	57	37
		Respiratory tract infections	100	64.9
		Low birth weight in children	10	6.5
		Hypertension	12	7.8
12	How do you protect yourself from air pollution?	**Wear a face mask**	**120**	**77.9**
		Cover your mouth with handkerchief	7	4.5
		Do nothing	27	17.5
13	Who do you think are most at risk of air pollution?	Pregnant women and babies in their womb	68	44.2
		Children	96	62.3
		Elderly	86	55.8

		People working in factories/ construction	73	47.4
14	Do you agree that it is every citizen's responsibility to improve air quality?	**Strongly agree**	**91**	**59.1**
		Agree	**60**	**39**
		Neutral	2	1.3
		Disagree	1	0.6
		Strongly disagree	0	0
15	Are you aware of what AQI is?	Yes	44	28.6
		No	**110**	**71.4**
16	If yes, do you check the AQI before stepping out?	Yes	9	13.4
		No	**58**	**86.5**
17	Are you aware of what particulate matter is	Yes	50	32.5
		No	**104**	**67.5**
18	What are the sources that you usually follow for information on air pollution?	Newspaper	93	60.4
		Television	94	61
		Social media	74	48.1
		Radio	15	9.7
		Healthcare provider	26	16.9
		Poster displayed at various places	24	15.6

19	Are you aware of any govt policies/programs for air pollution?	Yes	21	13.6
		No	**133**	**86.4**
20	Do you think the air quality has improved compared to last year's?	Improved	17	11
		Worsened	49	31.8
		Remained the same	**88**	**57.1**

The findings related to *air quality awareness* highlight some key aspects. While a majority of participants rated their awareness as moderate (76.6%), the perception of air quality in Coimbatore was notably divided, with *28.6% considering it hazardous*.

- The identified top causes of air pollution align with known sources, *emphasizing the need for targeted interventions* addressing private vehicle usage, industrial processes, and construction activities.

- Health awareness indicators reveal a high level of understanding, with 92.2% recognizing the health impacts of air pollution. Symptoms associated with pollution exposure, such as difficulty in breathing and allergies, were well-acknowledged.

- *However, a significant portion (67.5%) was not aware of particulate matter, indicating a specific area for targeted education.*

- The participants' reliance on personal protective measures, such as face masks, demonstrates a proactive approach to mitigate the effects of air pollution. Furthermore, the acknowledgment of specific vulnerable groups, like pregnant women and children, suggests an understanding of the differential impact of air pollution on diverse populations.

- While there is a moderate level of awareness regarding air quality indices (28.6%) and particulate matter (32.5%), the majority is unaware of government policies and programs addressing air pollution. *This gap underscores the need for improved dissemination of information regarding existing initiatives.*

- In assessing the perceived changes in air quality compared to the previous year, the responses were distributed, with 57.1% perceiving no change. This perception could be influenced by various factors, including seasonal variations and individual experiences.

5 Conclusion

This research provides a comprehensive overview of the awareness and perceptions of air pollution among individuals in a tertiary care hospital in Coimbatore.

The findings emphasize the importance of targeted awareness campaigns, considering demographic variations, and addressing specific gaps in knowledge, particularly regarding particulate matter and government initiatives. The findings from this study can inform future public health interventions aimed at enhancing awareness and mitigating the adverse health effects of air pollution in the region.

The insights gleaned from this study are not just statistics; they are windows into the collective understanding of our community regarding the air we breathe and its impact on our health.

As we delve into the conclusion of this research, it's evident that there exists a foundation of awareness among our fellow citizens. They recognize the health implications of air pollution, the sources contributing to it, and even take personal measures to protect themselves. However, there are notable gaps, especially in understanding particulate matter and the government initiatives addressing air pollution.

- Why is this crucial, you might ask?
Understanding these gaps is the key to crafting effective government initiatives that truly resonate with our community. Our study has unearthed valuable information on the top causes of air pollution as perceived by the community, with private vehicle use, industrial processes, and construction activities taking center stage. This knowledge is a powerful tool for the government to tailor regulations and awareness campaigns that directly address these primary contributors.

Moreover, while the majority of participants are aware of the health impacts of air pollution, there is a need for targeted education on specific aspects like particulate matter. This presents an opportunity for government bodies to collaborate with healthcare providers, schools, and community leaders to disseminate targeted information, fostering a more nuanced understanding among our citizens.

One of the striking findings is the limited awareness about existing government policies and programs related to air pollution. This is a call to action for our authorities to improve the communication channels, making information about initiatives like the National Clean Air Programme (NCAP) more accessible and understandable for the general public. An informed citizenry is a catalyst for successful policy implementation.

Our study also sheds light on the diverse sources of information that individuals rely on, including newspapers, television, and social media. Recognizing these channels allows the government to strategically disseminate information, leveraging these platforms effectively. Whether through public service announcements, informative articles, or engaging social media campaigns, the government has an opportunity to meet citizens where they are.

In conclusion, the results of this research study are not just data points; They are roadmaps guiding government initiatives toward a more informed, engaged, and aware community. By tailoring interventions to address the specific gaps uncovered in this study, we can collectively work towards a healthier, more sustainable future for Coimbatore.

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