

## Original Article

# PERCEPTION OF GENERAL POPULATION ABOUT SMOG IN LAHORE AND ITS IMPACT ON HUMAN HEALTH.

Ahmad Niaz<sup>1</sup>, Hamza Asghar<sup>2</sup>

### ABSTRACT

**Background:** Smog has become a public environmental crisis in most areas of Pakistan. The purpose of this research was to study the effects of smog on the health of the population in Lahore.

**Material and Methods:** This descriptive cross sectional study was conducted from Nov. 2021 to Feb. 2022. A questionnaire survey was employed to collect data which included demographic, socioeconomic and health-related information. Descriptive statistics were used to study the impact of smog on groups of people who were exposed to smog and later contacted symptoms such as cough and eye irritation etc.

**Results:** The results showed that the perception of people about smog was significantly different from the actual circumstances, demonstrating that public view tends to diverge when challenged with a public disaster.

**Conclusion:** Most of the people in the study area knew about smog. They followed the precautions to prevent themselves from the harmful effects of smog (96% used face masks).

**Key Words:** Smog, Health, Cough

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## INTRODUCTION

Smog is a form of intense air pollution. The word "smog" was devised at the beginning of the 20th century. The reduction of the words smokes and fog point toward the smoky fog because of its opaqueness and odor.

Smog formation depends on primary and secondary pollutants. Sources of primary pollutants include coal-burning which releases sulfur dioxide (SO<sub>2</sub>). Secondary pollutants, for instance, ozone (O<sub>3</sub>), are released when primary pollutants undergo chemical reactions in the air.<sup>1</sup> Although there has been a surge in research in the field of community observation of ecological trials, recent research on air pollution has primarily focused on chemical methods. Research based on behavior in response to smog is limited.<sup>2</sup>

<sup>1</sup>Department of Human Genetics and Molecular Biology, UHS, Khayaban-e-Jamia Punjab, Lahore, Pakistan.

<sup>2</sup>Department of Biomedical Sciences, UHS, Khayaban-e-Jamia Punjab, Lahore, Pakistan.

Lahore suffers from an advanced level of air pollution and the city frequently stands at top of the Index Quality Air of Visual live pollution standings of major worldwide cities.<sup>3</sup> However, pollution received its fair share of attention from the public in the early 2017 when unlawful air quality statistics were available in Pakistan. Air pollution in Lahore results from automobile and commercial emissions, burn after block forges, burning of harvest deposits and overall waste, and dirt from building places. What further worsens the quality of air is the large-scale cutting down of trees to build new transportation and infrastructure.<sup>4</sup> Due to the drop in temperature air pollution is worse during winters and leads to a sheet of warm air that is used or trapped with increasing air pollutants.<sup>5</sup>

Lahore is the capital of the Punjab province. Latitude of Lahore, Pakistan 31.582045 and population of Lahore is 13 million which has doubled in the last sixteen years with a growth rate of 3.58%. Smog weather has occurred frequently in Lahore City since 2014. The sudden surge in the number of automobiles on roads and industrialization has contributed to the worsening of the air pollution in Lahore city.<sup>6-8</sup> This evidence frames the basis intended for our study of public awareness of smog in Lahore.

The goal of this study was to investigate the perception of the public about smog by surveying residents of different areas within Lahore city.

The objective of the study was to evaluate the knowledge and attitude of the people of Lahore regarding smog.

## MATERIAL AND METHODS

This descriptive cross-sectional study was conducted from Nov. 2021 to Feb. 2022 among people living in different areas of Lahore city. Most of the subjects included were from lesser developed areas of Lahore. Convenience sampling technique was used to recruit sample of 50 participants. Respondents from both gender and aged more than 18 years were included in the study. Those who did not give consent were excluded.

Data was entered and analysed in SPSS version 23. Frequency and percentages were used for categorical variables. Mean and standard deviation was calculated for continuous variables.

## RESULTS

In this study a total of 50 respondents were recruited, out of which 26 (52%) belonged to the age group 18-30 years, 12 (24%) belonged to 31-50 years and 12 (24%) belonged to more than 51 years. Male respondents were 22 (44%), female respondents were 25 (50%) and 3 (6%) were transgender. Matric qualified respondents were 4 (8%), intermediate qualified respondents were 19 (38%) and masters above qualified were 27 (54%). 3 (6%) respondents belonged to the

longitude 74.329376 with directs of 31° 34' 55.3620" N and 74° 19' 45.7536" E. The lower class, 35 (70%) belonged to the middle class and 12 (24%) belonged to the upper class.

Descriptive analysis of participants is depicted in **Table 1**.

**Table 1:** Demographic characteristics of respondents

Variable	Description	Frequency	Age%
Age	18-30 Years	26	52%
	31-50 Years	12	24%
	≥ 51 Years	12	24%
Gender	Male	22	44%
	Female	25	50%
	Transgender	3	6%
Education	Matric	4	8%
	Intermediate	19	38%
	Masters and above	27	54%
Socioeconomic status	Lower Class	3	6%
	Middle class	35	70%
	Upper Class	12	24%

Overall, 98% of people said they understood the smog, and 2% said they did not. 90% understood the sources of smog and 10% said no. From our group, 78% said smog is caused by burning crops and 22% said no. Out of the group, 72% said yes, they had known about the other cities affected by smog and 92% said yes about the season of the smog.

**Table 2:** Knowledge of respondents about smog

Statement	Yes	No	Don't know
Do you know about smog?	49 (98%)	1 (2%)	0
Do you know the sources of smog?	45 (90%)	2 (4%)	3 (6%)
Do you think smog is caused by burning crops?	39 (78%)	2 (4%)	9 (18%)
Do you know any other city which is affected by smog?	36 (72%)	4 (8%)	10 (20%)
Do you know about the season of smog?	46 (92%)	4 (8%)	0

Overall, about 70% of respondents knew about the smog. According to this study, 42% of respondents suffered from cough, 39%

suffered from eye problems, 27% suffered with wheeze, 2% suffered from asthma, 0% suffered from Chronic Obstructive Pulmonary Disease and 7% suffered from breathing problems and 2% suffered from Emphysema.

**Table 3:** Harmful impacts of smog on respondent's health

Symptoms/Diseases	Yes	No	Don't Know
Cough	42 (84%)	7 (14%)	1 (2%)
Eye Irritation	39 (78%)	10 (20%)	1 (2%)
Wheeze	27 (54%)	18 (36%)	5 (10%)
Fever	0	31 (62%)	19 (38%)
Asthma	1 (2%)	25 (50%)	24 (48%)
Chronic Obstructive Pulmonary Disease (COPD)	0	31 (62%)	19 (38%)
Headache	16 (32%)	18 (36%)	16 (32%)
Shortness of Breath	7 (14%)	24 (48%)	19 (38%)
Allergy	0	32 (64%)	18 (36%)
Emphysema	1 (2%)	34 (68%)	15 (30%)

The majority (54%) of participants reported that they were afraid of smog because they suffered respiratory diseases and irritation of the eyes and 20-40% weren't afraid of smog. 84% also reported some eatables prevented them from smog-related health problems, 54% believed that media is over-estimating smog, and 94% believed that traffic smoke is an important source of smog. Table 3 summarizes the perception of respondents towards smog.

**Table 4:** Perception of respondents about smog

Statement	Yes	No	Don't Know
Are you afraid of smog?	27 (54%)	10 (20%)	13 (26%)
If yes then why are you afraid? Due to respiratory diseases and Eyes Irritating problems etc.	28 (56%)	6 (12%)	16 (32%)
Do you believe the media is over-estimating smog?	27 (54%)	4 (8%)	19 (38%)

Do you believe some eatables prevent smog-related diseases?	42 (84%)	2 (4%)	6 (12%)
Do you believe traffic smoke in Lahore is the source of smog?	47 (94%)	1 (2%)	2 (4%)

**Table 5:** Preventative measures followed by respondents

Statements	Yes	No	Don't know
I use a facemask when going outside.	48 (96%)	2 (4%)	0
I avoid eye massage after exposure to smog.	46 (92%)	1 (2%)	3 (6%)
I use specific foods and other eatables the prevention diseases caused by smog.	34 (68%)	10 (20%)	6 (12%)
I use an air filter at home to protect me from city smog.	27 (54%)	13 (26%)	10 (20%)
I usually stay at home when there is massive smog outside.	37 (74%)	7 (14%)	6 (12%)

In this study, 96% of people used face masks when going outside and 4% didn't use them. 92% avoided eye rubbing after exposure to smog and 8% did it. 68% said they used those eatables that prevent smog-related problems. 54% used air filters in their houses and 74% stayed at home during severe smog in Lahore.

## DISCUSSION

The result of this research shows that the increase in the concentration of smog in wintertime harmfully impacted the health of people in the study area and comparable in other urban areas. The complex occurrence of smog specifically in October, November, and December forced the citizens to limit their activities because of its adverse effects on human health and limited movement due to poor visibility. Dominant health problems reported were associated with lung disease symptoms such as coughing, mucus, breathlessness, and shortness of breath. Comparable outcomes were described by Saleem et al.<sup>9,10</sup> in their study in Rawalpindi, Pakistan. There were significant changes

detected in the existence of numerous health problems by healthcare professionals. It challenges our hypothesis that people working outdoors with continuous exposure to ambient air pollution are affected differently than those who are working indoors. This observation shows that, regardless of activities inside or outside, atmospheric midair contamination throughout the most polluted time of year practically disturbs everybody alike.<sup>11,12</sup> Although the logistic analysis underlined that the professions indoors and outdoors were equally vulnerable to air pollution, self-reported health problems revealed dissimilarity amongst various professional sets. For instance, the employees who majorly worked outdoor were established to be most affected by lung diseases, while domestic employees and other employees who were required to work indoors were more susceptible to allergies.<sup>13,14</sup> Moreover, research showed that workers such as office employees and domestic employees were mostly expected to wear a mask when they went outside as compared to the other professional groups possibly more exposed to air pollution.<sup>15,16</sup>

## CONCLUSION

This study attempted to understand the public's perception of smog. This study concludes that most of the people in the study area knew about smog. They followed the precautions to prevent themselves from the harmful effects of smog (96% used face masks). Still, most of them suffered from cough, eye infections, sneezing, etc. Most of them believed in religious factors contributing to the formation of smog. Moreover, the educated people included in this study area followed the precautions and played their role in spreading the message to protect everyone from smog. Most of the subjects included were from lesser developed areas of Lahore. Upcoming studies would contain a broader study area and design a more targeted questionnaire to obtain substantial data.

## AUTHOR'S CONTRIBUTION

AN: Data collection and Writing

HA: Drafting and review

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