Air Quality Index (AQI) Awareness Among Indian Population: A Comprehensive Analysis of Three Research Studies

Executive Summary

This report presents a comprehensive analysis of **Air Quality Index (AQI) awareness** among Indian citizens based on three significant research studies conducted across multiple cities and demographic segments. The findings reveal a **critical knowledge gap** in environmental health literacy, with awareness levels varying dramatically across socio-economic strata, geographical locations, and urban development levels. Despite India's expanding air quality monitoring infrastructure, **the majority of citizens remain unaware or unable to interpret AQI data**, severely limiting their ability to protect themselves from air pollution health risks.

Key Findings:

- **45.9% of Indians** across 17 major cities are completely unaware of AQI
- **83.6% of Delhi-NCR residents** including metro users and students lack AQI knowledge
- **90% of lower-income groups** versus **30% of higher-income groups** are unaware
- **Stark regional variations** exist, with smaller industrial cities showing lowest awareness

1. Introduction

Air pollution has emerged as one of India's most pressing environmental and public health challenges, with major cities consistently ranking among the world's most polluted. While government initiatives have expanded air quality monitoring networks and made real-time AQI data publicly available, the **effectiveness of these measures depends critically on public awareness and understanding**.

This report synthesizes findings from three comprehensive studies that collectively surveyed over **7,200 respondents** across India's major urban centers to assess the current state of AQI awareness among different population segments. The research reveals concerning gaps in environmental health literacy that demand immediate policy attention and targeted interventions.

2. Research Study 1: National Perception Study on Air Quality in 17 Indian Cities

2.1 Study Overview

Conducted by: CMSR Consultants & ASAR Social Impact Advisors Pvt. Ltd.
Objective: Assess public awareness and understanding of AQI across India's most polluted and emerging polluted cities

2.2 Methodology

- **Sample Size:** 5,000 respondents
- **Geographic Coverage:** 17 cities categorized by pollution levels
    - **Most Polluted Cities:** Delhi & NCR, Patna, Lucknow, Varanasi, Amritsar, Singrauli, Dhanbad, Raipur, Korba, Chandrapur, Angul, Nagpur
    - **Emerging Polluted Cities:** Bangalore, Pune, Mumbai, Chennai, Calcutta
- **Demographic Diversity:** Representation across gender, age, profession, and educational qualifications
- **Data Collection:** Mixed methodology with both offline and online surveys

2.3 Key Findings

[INSERT IMAGE 1B - Overall Awareness Levels Chart showing 35% aware & understand, 19.1% aware but don't understand, 45.9% not aware]

2.3.1 National Awareness Levels

- **35% aware and understand AQI** (compared to 58.9% in select urban areas)
- **19.1% aware but don't understand** the relevance or implications
- **45.9% completely unaware** of AQI concepts

2.3.2 City-wise Performance Variations

Highest Awareness Cities:

- **Delhi & NCR:** 63% aware and understand
- **Patna:** 48.7%

- **Calcutta:** 46%
- **Pune:** 45.7%

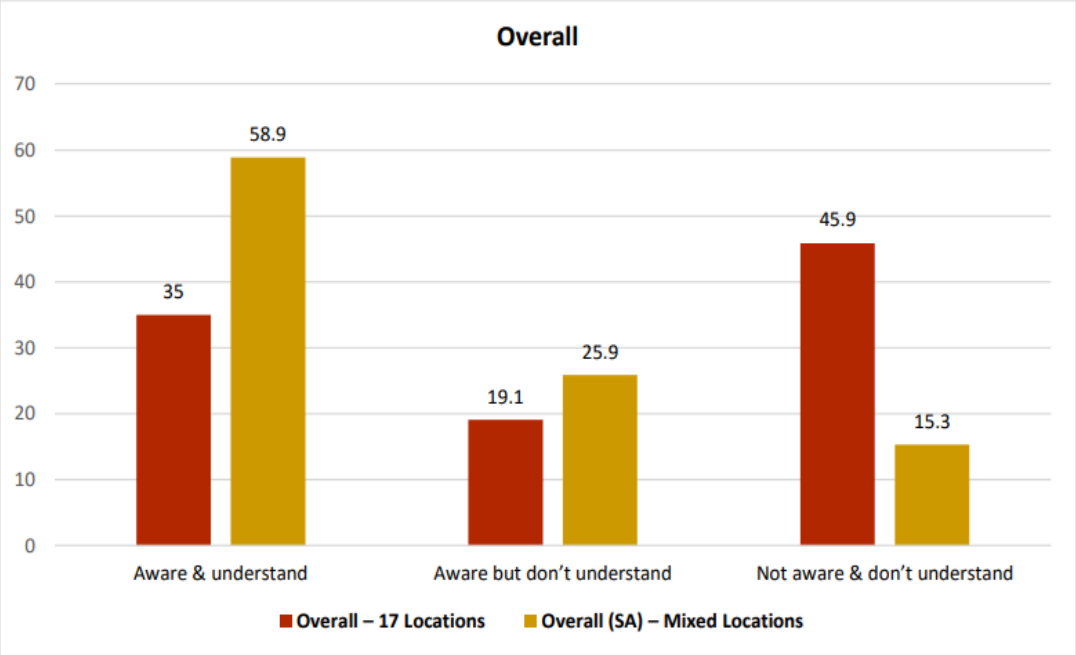
Lowest Awareness Cities:

- **Raipur:** 15% (83.3% completely unaware)
- **Chandrapur:** 19%
- **Dhanbad:** 24.3%
- **Korba:** 35% aware (64% completely unaware)

Table 3.10: *Extent of knowledge among the respondents about AQI (Location-wise)*

Location	Percentage of respondents stating		
	Aware & understand	Aware but don't understand	Not aware & don't understand
Amritsar	40.7	20.7	38.7
Angul	43.3	5.0	51.7
Bangalore	33.7	20.7	45.7
Chandrapur	19.0	30.0	51.0
Chennai	29.7	36.0	34.3
Delhi & NCR	63.0	19.0	18.0
Dhanbad	24.3	12.0	63.7
Calcutta	46.0	7.3	46.7
Korba	35.0	1.0	64.0
Lucknow	37.3	11.7	51.0
Mumbai	29.0	24.0	47.0
Nagpur	26.7	35.7	37.7
Patna	48.7	26.0	25.3
Pune	45.7	27.7	26.7
Raipur	15.0	1.7	83.3
Singrauli	29.7	10.0	60.3
Varanasi	27.7	30.7	41.7

Figure 3.7: Extent of knowledge among the respondents about AQI (Overall)



2.3.3 Critical Observations

- **Large metropolitan areas** showed higher awareness levels
- **Industrial cities and smaller urban centers** demonstrated significantly lower awareness
- **Emerging polluted cities** (Bangalore, Pune, Mumbai) performed better than heavily polluted smaller cities
- The pattern suggests that **city size and development level** are stronger predictors of awareness than actual pollution levels

3. Research Study 2: AQI Awareness Among Delhi-NCR Metro Users and Students

3.1 Study Overview

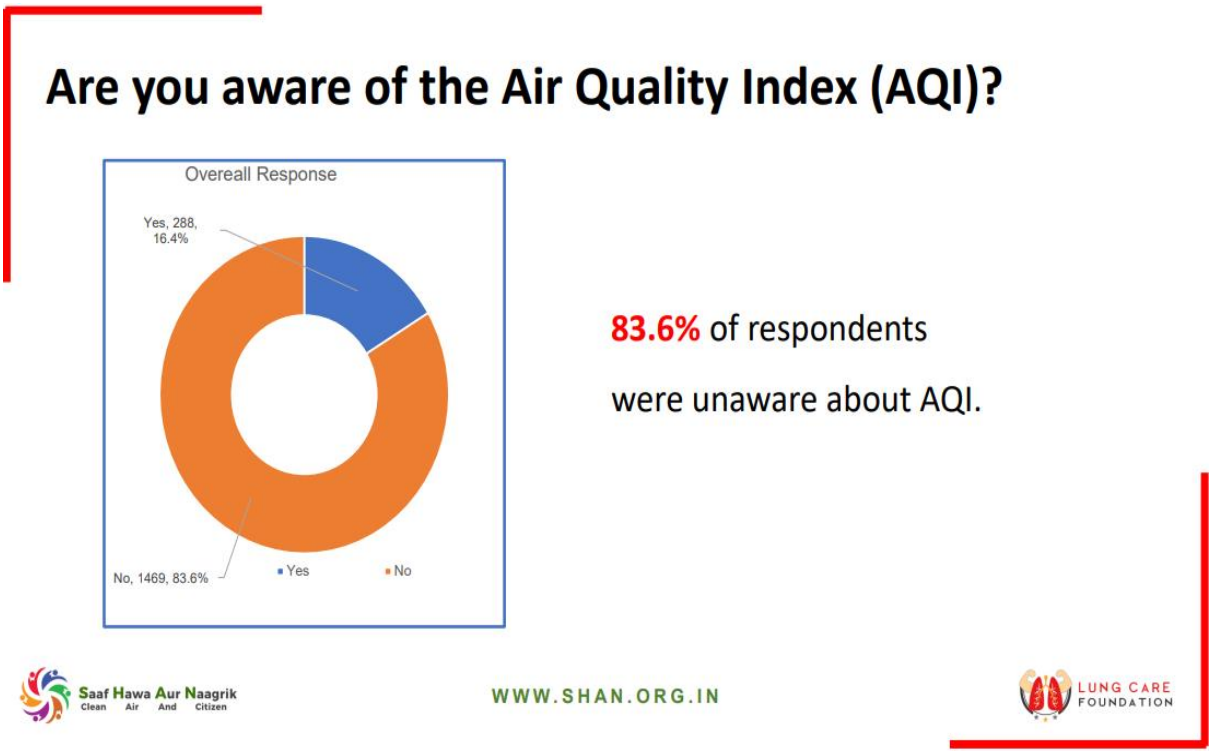
Objective: Assess AQI awareness among high-exposure populations including daily commuters, urban slum residents, and school students in Delhi-NCR

3.2 Methodology

- **Sample Size:** 1,757 residents of Delhi-NCR

- **Geographic Coverage:**
  - **Delhi:** 7 zones based on Parliamentary Constituencies
  - **NCR Cities:** 11 busy metro stations across Delhi + 4 stations in Ghaziabad, Noida, Gurgaon, Faridabad
- **Target Areas:**
  - 1 km radius around metro stations
  - Urban slums within station catchments
  - 2 public schools (students from 9th-12th standard)

3.3 Key Findings



3.3.1 Overall Awareness Crisis

- **83.6% of respondents** had never heard of the Air Quality Index
- Only **16.4% (288 people)** were familiar with the term AQI
- **1,469 out of 1,757 respondents** completely unaware of air quality terminology

3.3.2 Demographic Implications

- **School students (9th-12th grade):** Despite environmental education in curricula, awareness remained critically low
- **Daily commuters:** High pollution exposure did not correlate with increased awareness
- **Urban slum residents:** Continued the pattern of minimal environmental health knowledge

3.4 Critical Observations

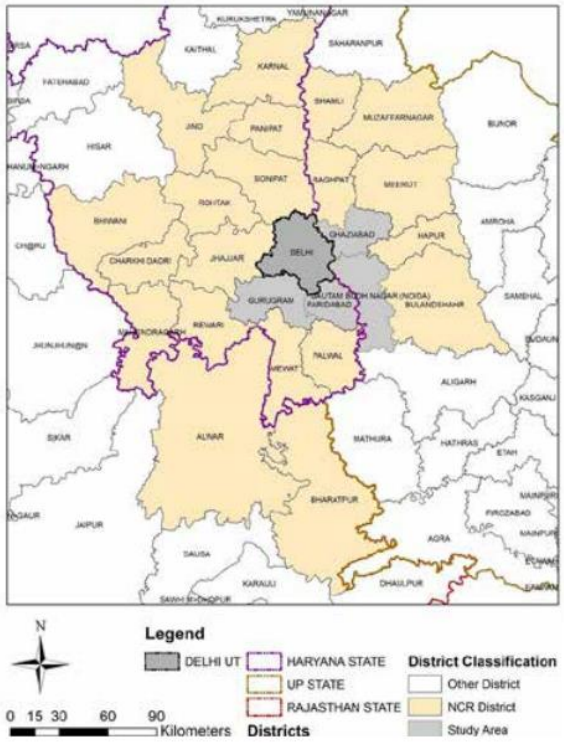
This study is particularly significant because it targeted populations with **high pollution exposure and accessibility to information** through metro stations and schools. The persistent low awareness levels indicate that **proximity to pollution and information infrastructure alone is insufficient** to drive environmental health literacy.

4. Research Study 3: Socio-Economic Awareness of AQI in Delhi NCR

4.1 Study Overview

Conducted by: SAAF SAANS (A Citizen Survey on Air Pollution in Five Cities)
Date: April 2024
Objective: Examine air pollution awareness across socio-economic divides in the National Capital Region

Figure 1: *Map of Study Area (within NCR)*



4.2 Methodology

- **Sample Size:** 500 respondents
- **Geographic Coverage:** 5 NCR cities (Delhi, Faridabad, Ghaziabad, Gurugram, NOIDA)
- **Demographic Segmentation:**
  - **Group 1 (G1):** Lower-income residents in informal settlements
  - **Group 2 (G2):** Mid to high-income residents in formal housing
- **Data Collection:** Bilingual online questionnaire (Hindi/English) with informed consent
- **Sample Distribution:** 50 respondents per group per city

4.3 Key Findings

4.3.1 Awareness Gap Between Socio-Economic Groups

[INSERT IMAGE 3B - Comparative Awareness Charts between G1 and G2 across cities]

Group 1 (Lower-income) - Extremely Low Awareness:

- Delhi: Only **4%** of both males and females aware of AQI terminology
- Gurugram: **0% awareness** across all respondents
- Ghaziabad: Highest among G1 with **24% male and 16% female** awareness
- Overall: Approximately **90% of Group 1 respondents** unaware of basic air quality terms

Group 2 (Mid/High-income) - Significantly Higher Awareness:

- Delhi: **85% females and 76% males** familiar with AQI concepts
- Consistent **70%+ awareness** across all NCR cities
- **Females often more aware than males** in this demographic

4.3.2 Gender Dynamics

- **In lower-income groups:** Women showed lower awareness than men
- **In higher-income groups:** Women demonstrated higher awareness levels
- This pattern suggests that **access to information and education** significantly influences gender-based knowledge gaps

Table 1: *Number of respondents in Delhi NCR's Group 1 familiar with AQI, CAQM and PM 2.5*

Knowledge of AQI & Other Terminologies: Group 1 (%)										
Response	Delhi		Faridabad		Ghaziabad		Gurugram		New Okhla Industrial Development Authority (Noida)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
No	96	96	100	76	84	76	100	100	94	78.1
Yes	4	4	0	24	16	24	0	0	6	22

Table 2: *Number of respondents in Delhi NCR's Group 2 settlement areas familiar with AQI, CAQM and PM 2.5*

Knowledge AQI & Other Terminologies: Group 2 (%)										
Response	Delhi		Faridabad		Ghaziabad		Gurugram		New Okhla Industrial Development Authority (NOIDA)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
No	12	20	33	24	34	25	21	33	14	17
Yes	85	76	66	76	48	45	76	62	82	79
Not Sure	4	4	0	0	17	30	3	5	5	3

4.4 Critical Observations

The research identified a **"disproportionately large gap"** between the two surveyed groups, highlighting how socio-economic status directly impacts environmental health literacy. This gap is particularly concerning as lower-income populations often face higher pollution exposure due to residential proximity to industrial areas and limited resources for protection measures.

5. Comparative Analysis Across All Three Studies

5.1 Consistent Patterns Identified

5.1.1 Socio-Economic Stratification

All three studies confirmed that **economic status is the strongest predictor** of AQI awareness:

- Higher-income, formally housed populations: **60-85% awareness**
- Lower-income, informal settlement residents: **0-10% awareness**
- This pattern holds across different cities and study methodologies

5.1.2 Urban Hierarchy Effect

- **Delhi-NCR consistently performed best** across all studies (63% in Study 1, higher awareness in Studies 2 & 3)
- **Secondary cities and industrial towns** showed markedly lower awareness
- **Metropolitan advantage** is evident in information access and environmental health literacy

5.1.3 Gender Dynamics Vary by Economic Status

- **Lower-income groups:** Men more aware than women
- **Higher-income groups:** Women often more aware than men
- Suggests **education and access to information** mediates gender-based knowledge gaps

5.2 Scale of the Challenge

When combining findings across all studies, the data reveals:

- **Approximately 60-85% of India's urban population** lacks adequate AQI awareness
- **The most vulnerable populations** (poor, residing in high-pollution areas) have the lowest awareness
- **Even well-connected, exposed populations** (metro users, students) show insufficient knowledge

6. Critical Insights and Key Findings

6.1 Inverse Relationship Between Need and Knowledge

The studies consistently show that **populations at highest risk from air pollution have the lowest awareness** of air quality indices. This creates a dangerous cycle where those who need protection most are least equipped to seek it.

6.2 Information Infrastructure Is Insufficient

Despite extensive AQI monitoring networks and digital platforms, **mere availability of information does not translate to awareness**. The gap between data accessibility and public understanding remains vast.

6.3 Education and Economic Status Are Key Determinants

Formal education and economic stability emerge as the strongest predictors of environmental health literacy, suggesting that awareness campaigns must be specifically designed for different demographic segments.

6.4 Youth Knowledge Gap

Even among school students (Study 2), awareness remains critically low, indicating that **environmental health education in formal curricula** may be inadequate or ineffective.

6.5 Regional Development Disparities

The performance gap between metropolitan areas and smaller industrial cities reflects broader **developmental inequalities** in information access and public health infrastructure.

Methodology Notes

Data Sources:

1. Perception Study on Air Quality in 17 Indian Cities (CMSR Consultants & ASAR Social Impact Advisors Pvt. Ltd.) Link
2. AQI Awareness Study among Delhi-NCR Metro Users and Students Link
3. SAAF SAANS: A Citizen Survey on Air Pollution in Five Cities (April 2024) Link

Total Respondents: 7,257 across all studies
Geographic Coverage: 17+ cities across India
Study Period: 2024-2025

This report represents the most comprehensive assessment of environmental health literacy among Indian urban populations conducted to date. The findings provide a critical foundation for evidence-based policy interventions to bridge the AQI awareness gap and protect public health.