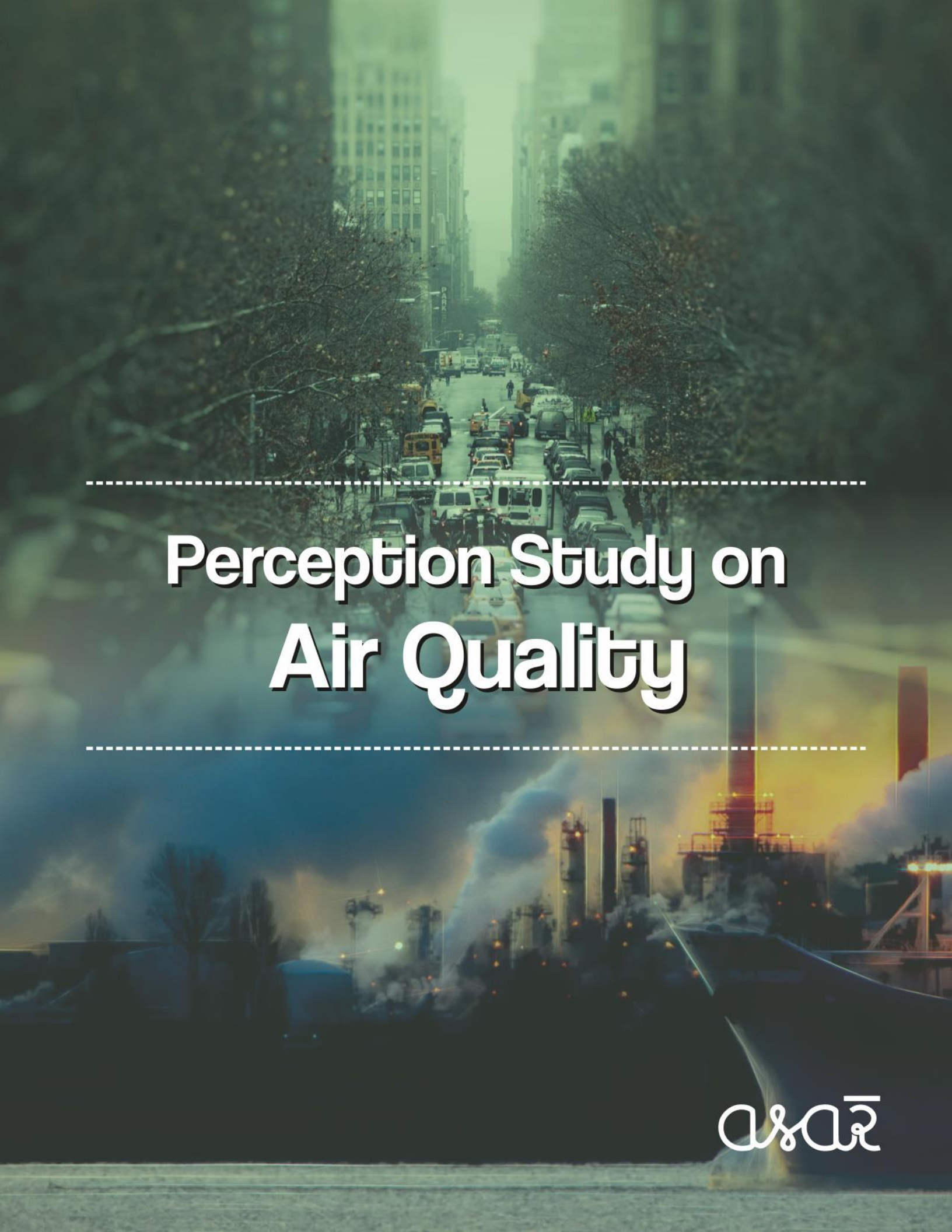

Perception Study on Air Quality

PREFACE

Air pollution is gradually becoming a major threat to both environment and mankind. Several national and international organisations and government institutions have been contemplating on social and environmental research to explore ways and means for abating air pollution in order to safeguard the natural resources and improve the quality of life.

CMSR Consultants, a multi-disciplinary research and communication consultancy organisation conducted the **'Perception Study on Air Quality in 17 Cities'** at the instance of ASAR Social Impact Advisors Pvt. Ltd. The purpose of the study was to get insights from people about air pollution and their extent of knowledge regarding its implications.

The study covered 5000 respondents from different geographic locations. The sample cities were classified into two major categories i.e. 1) most polluted cities (Delhi & NCR, Patna, Lucknow, Varanasi, Amritsar, Singrauli, Dhanbad, Raipur, Korba, Chandrapur, Angul and Nagpur) and 2) cities which are fast becoming polluted (Bangalore, Pune, Mumbai, Chennai & Calcutta). The study also ensured the representation from different gender, age groups, professions and educational qualifications.

We are thankful to ASAR for choosing CMSR Consultants for carrying out this prestigious study. We would also like to thank all the participants who spared their valuable time to attempt the on-line and off-line survey and provide their insights. We trust that the findings of the Study would be greatly helpful to all those engaged in this field and more so to the policy makers.

Date:

Place: **CMSR Consultants Pvt. Ltd.**

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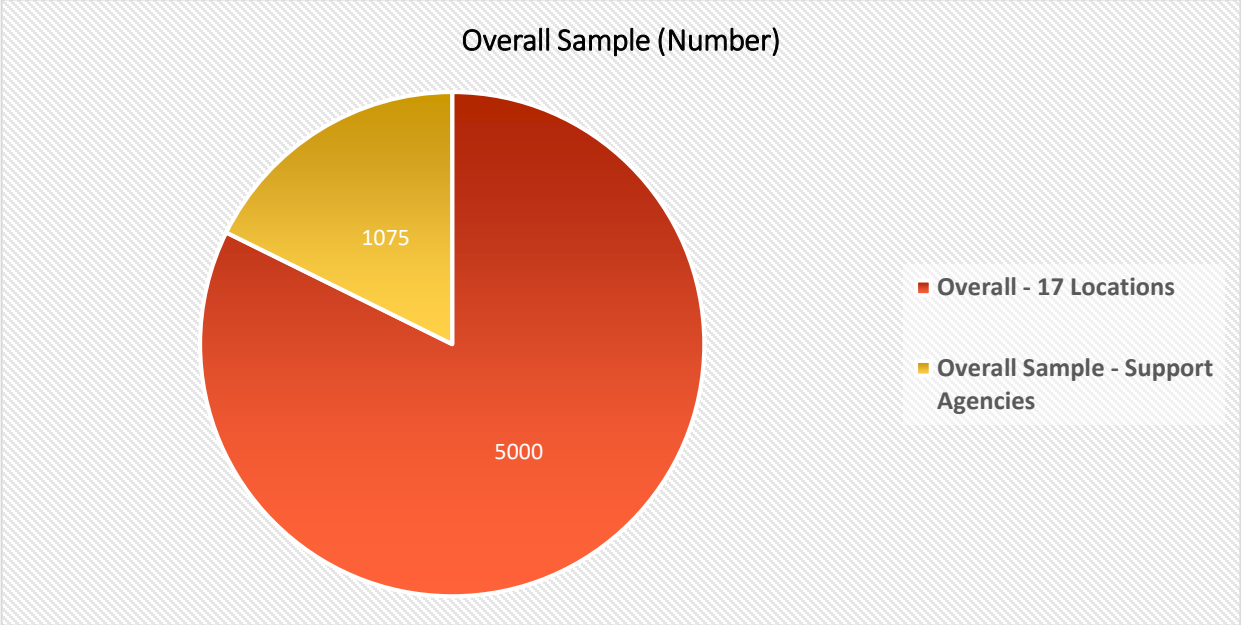
Abbreviations

AQ	Air Quality
AECC	Availability Enhancement Compulsory Course
AIIMS	All India Institute of Medical Science
AQI	Air Quality Index
CBO	Community Based Organisation
CNG	Compressed Natural Gas
CO2	Carbon Dioxide
CSE	Centre for Science and Environment
DALYs	Disability-Adjusted Life Years
FGD	Focus Group Discussion
IIT	Indian Institute of Technology
LPG	Liquefied Petroleum Gas
NCR	National Capital Region
NGO	Non-Governmental Organisation
PM	Particulate Matter
PNG	Pipelined Natural Gas
WHO	World Health Organisation
SA	Support Agency
SPSS	Statistical Package for the Social Sciences

Summary of the Findings

The study involved interviewing a total of 5000 respondents through both; on-line and off-line survey from 17 cities. Besides, the client also shared the same on-line survey link among the Support Agencies and achieved a sample of 1075 through them.



The idea behind inviting the survey by the SAs was to draw a comparison between the neutral audiences and those who are already working on air pollution or environmental issues in terms of their knowledge, awareness and attitude towards air pollution. **The key highlights of the survey findings are presented below;**

Characteristic of the Respondents:

- About 56.0 per cent of the sample were men and 44.0 per cent were women. In case of the data received by the support agencies, men and women constituted 72.6 per cent and 27.0 percent respectively. Transgenders represented 0.4% (4 nos.) of the study sample.
- The percentage of respondents in the age-group of 26 - 35 years was the highest i.e. 28.0 percent (SA: 32.0 percent) followed by 22.0 percent (SA: 1.0 percent) in the age group of less than 18 years. Senior citizens (60 years & above) constituted 4 percent of the total sample.
- More than 32.0 percent (SA: 42 percent) of the sample respondents were graduates, while postgraduates constituted 23.0 percent (SA: 39.0 percent) of the sample. Those who completed

middle school constituted 9.0 percent of the total sample. Around 2.0 percent of the sample were doctorates while in the case of the support agencies, 6.0 percent respondents were PhD holders.

- In terms of employment status, around 28.0 percent were students while 24.0 percent (SA: 39.0 percent) were engaged in private sector jobs. Self-employed respondents constituted 15.0 per cent (SA: 18.0 percent) of the sample followed by 11.0 percent (SA: 2.0 percent) who were homemakers. Those engaged in Government jobs formed 7.0 percent (SA: 5.0 percent) of the total sample.

- Respondents who did not possess any vehicles constituted 10.0 per cent of the sample while the corresponding figure for the support agencies was 17.0 percent.

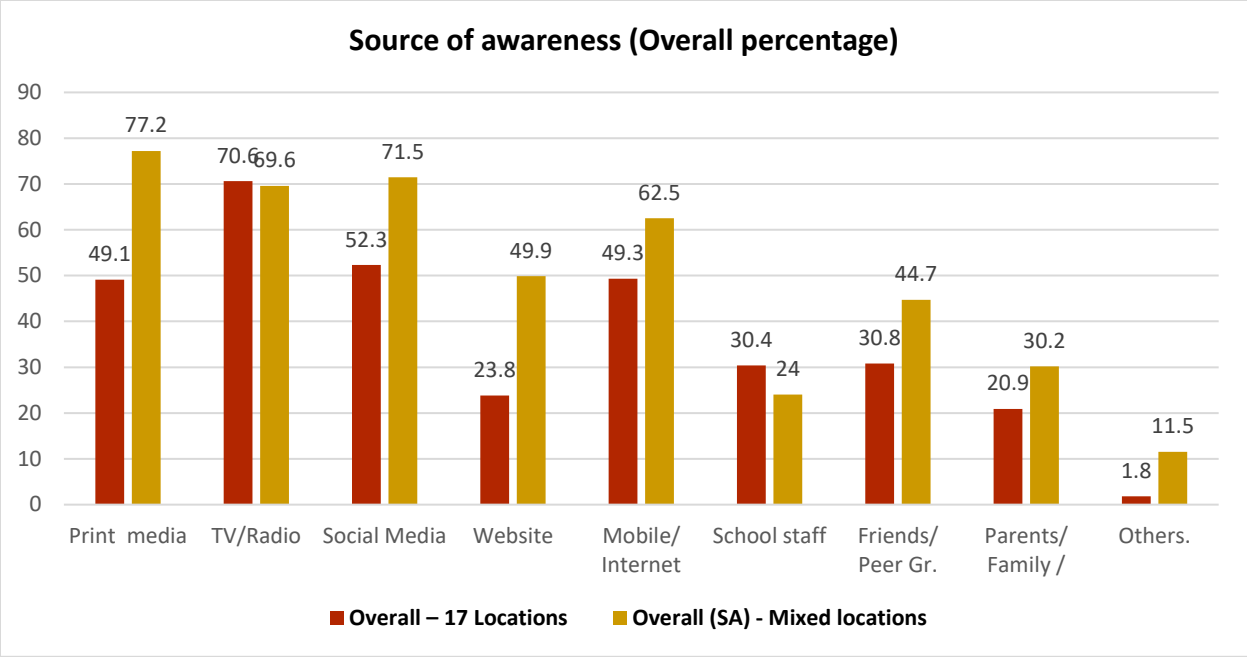
- Around three-fourth (75.6 percent, SA: 44.0 percent) of the respondents owned two-wheelers. Those who owned "cars that run on petrol" formed 28.0 percent (SA: 47.0 percent) of the sample. Around 11.0 percent respondents (SA: 16.0 percent) reported possessing diesel cars.

- The percentage of respondents using LPG as fuel exceeded 95.0 percent (SA: 85.0 percent). Those having electric stoves formed 22.0 per cent in the sample. PNG users constituted only 2.0 per cent of the total sample while PNG users from the support agencies was 10.0 percent.

Awareness about Air Pollution:

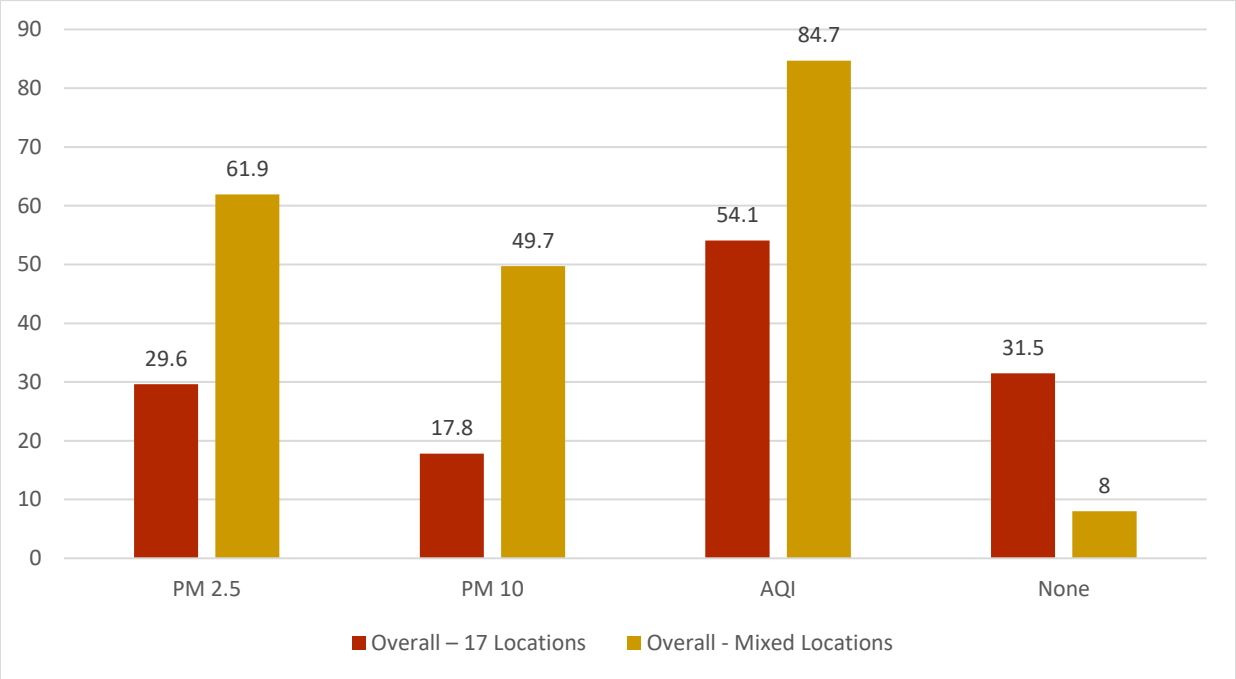
- Respondents who had heard about air pollution formed 95.4 percent (SA: 99.9 percent) in the study sample. Cent percent awareness about air pollution was noticed only in Delhi & NCR. Maximum awareness was seen among the respondents of Pune (99.7 percent), Chennai (99.7 percent), Bangalore (98.7 percent) and Calcutta (98.3 percent).

- The major source of awareness was TV/Radio (71.0 percent, SA: 70 percent) followed by Social Media (52.0 percent, SA: 72 percent), Mobile/internet & Print media (49.0 percent).



Awareness about PM 2.5, PM 10 & Air Quality Index

- Around 54.0 percent (SA: 84.0 percent) of the survey respondents had heard about about "Air quality index". Awareness about the terms "PM 2.5" and PM "10" were affirmed by 30.0 percent (SA: 62.0 percent) and 18.0 percent (SA: 50.0 percent) of the respondents respectively.



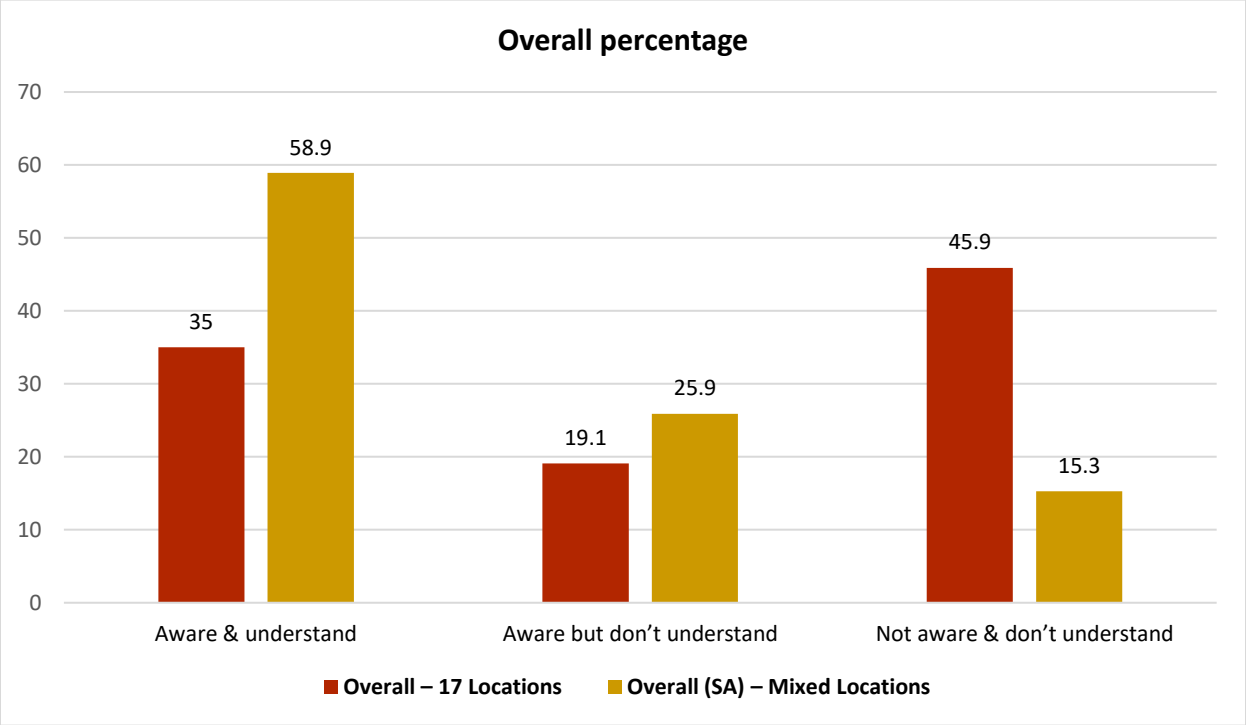
- The level of awareness was more in the metros with Delhi & NCR region respondents showing maximum awareness of all three terms (Air quality index: 82.0 percent, PM 2.5: 62.0 percent, PM 10: 40.0 percent). Only 17.0 percent of the respondents from Raipur had heard about air quality index.

- Awareness about PM 2.5 was the lowest in Chandrapur (9.0 percent). Awareness about PM 10 was very less in the cities of Varanasi (5.0 percent), Angul and Singrauli (6.0 percent each).

Awareness and Understanding the Relevance of Air Quality Index

- Respondents who are aware and understand the relevance of the Air quality index constituted 35.0 percent (SA: 59.0 percent) of the total sample. About 46.0 percent respondents (SA: 15.0 percent) stated that they were neither aware nor understood the relevance of AQI.

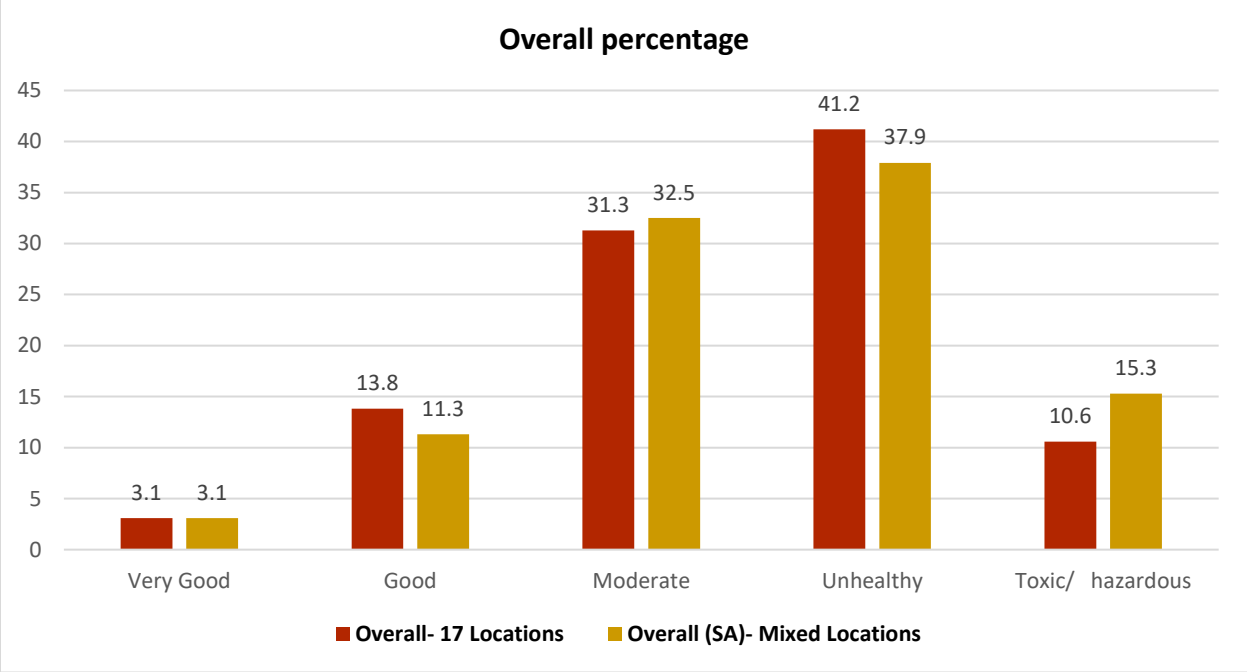
- Awareness about AQI and understanding its relevance was highest in the Delhi & NCR region (63.0 percent).



- Majority of the respondents (70.0 percent, SA: 50.0 percent)) secured accurate information about air quality index from newspapers.

Rating of Air Quality

- Only 3.0 percent (SA: 3.0 percent) respondents in the total sample felt that the air quality in their cities is very good. Around 10.6 percent (SA: 15.3 percent) of the respondents believed that the air quality was toxic/hazardous while 41.2 percent respondents (SA: 37.9 percent) stated that the air quality in their cities is unhealthy.



- More than 50.0 percent respondents from the cities of Amritsar, Angul, Delhi/NCR, Calcutta, Korba, Lucknow and Singrauli believed that the air quality in their respective cities is unhealthy.

Main Causes of Air Pollution

- Maximum respondents from the sample cities stated Motor vehicles (74.0 percent, SA: 91.8 percent) as the major cause of pollution followed by Industrial units (58.0 percent, SA: 53.8 percent), Cutting of trees (56.9 percent, SA: 70.2 percent) and Construction work (48.2 percent, SA: 66 percent) in the neighbourhood.

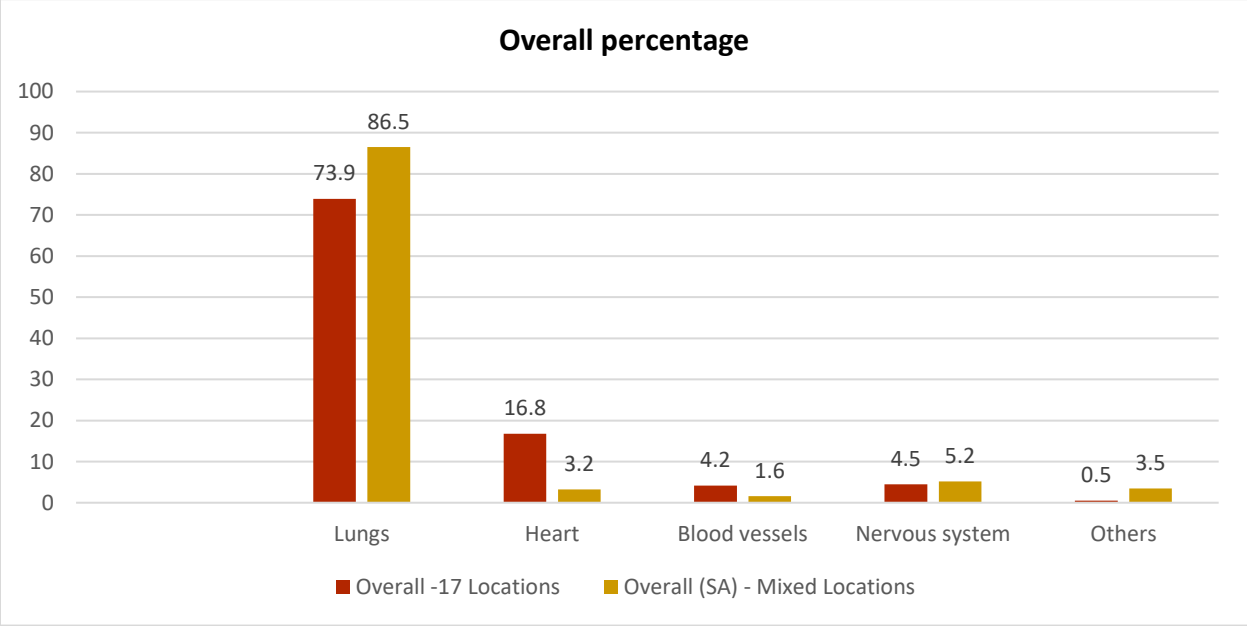
Impact of Bad Air Quality on Human health

- More than 92.0 percent (SA: 98.3 percent) respondents opined that air pollution has a negative impact on human health.

- Around 85.0 percent (SA: 82.0 percent) of the sample respondents stated feeling sick and uncomfortable when the air quality worsens.

- Majority of the respondents (51.5 percent, SA: 64.4 percent) pointed out that air pollution caused irritation to eyes, nose and throat. Another 49.4 percent respondents (SA: 27.1 percent) stated that they faced skin problems followed by 45.0 percent (SA: 43.6 percent) who said they had difficulty in breathing when the air quality worsened.

- More than 73.0 percent respondents (SA: 86.9 percent) believed that it is the lungs that is the most affected by pollution. Only 16.8 percent of the respondents (SA: 3.2 percent) were of the view air pollution also affects the heart.



Safeguards Adopted to avoid effects of air pollution

Around 43.2 percent (SA: 36.8 percent) of the respondents reported wearing masks while going out to as a safeguard against air pollution followed by 30.1 percent (SA: 43 percent) stating that they go out only when there is emergency.

Ranking of Environmental Issues

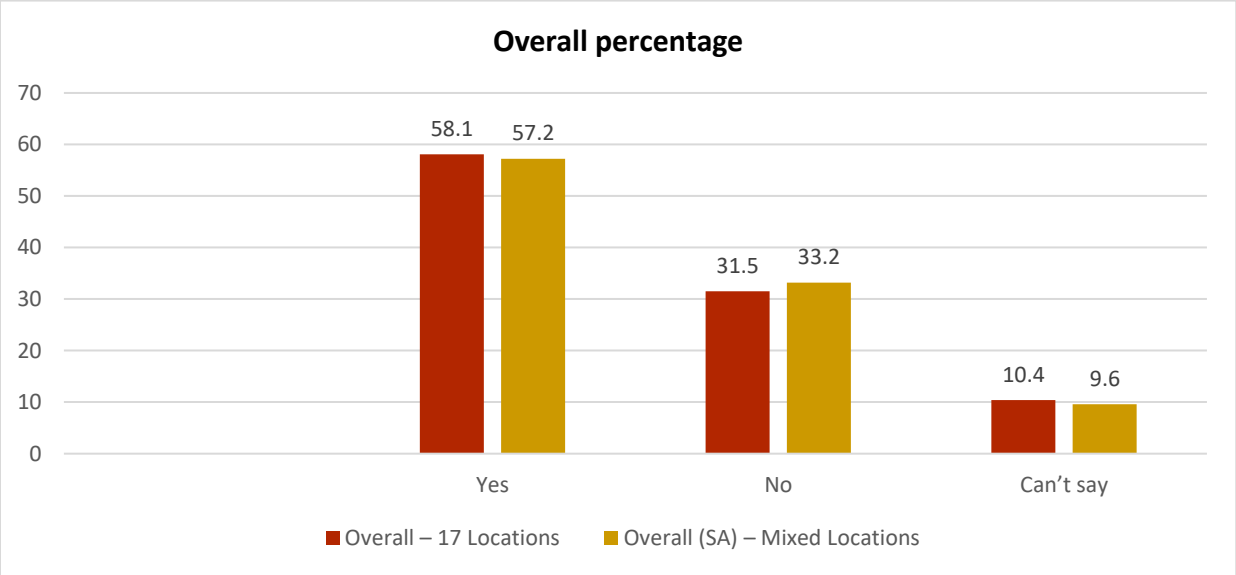
- The respondents were asked to rank eight environmental issues that affects their personal health or well-being. Maximum number of respondents (46.4 percent, SA: 40.1 percent) ranked air pollution as their highest concern followed by drinking polluted water (19.5 percent, SA: 17.4 percent), global warming and climate change (12.2 percent, SA: 17.2 percent), liquid waste (6.9 percent, SA: 1.2 percent), garbage and solid waste (5.1 percent, SA: 4.8 percent), loss of green areas in the city (5.0 percent, SA: 10.1 percent), unsafe food (2.9 percent, SA: 4.9 percent) and surface water pollution (2.0 percent, SA: 4.2 percent).

Table: *Ranking of the 'Environmental Issues' affecting personal health or well- being (Overall)*

Overall	Environmental Issues	Air pollution Ranking from "I" (Issue receiving highest number of responses) to "VIII" (Issue receiving lowest number of responses)							
		I	II	III	IV	V	VI	VII	VII
Overall - 17 Locations	Air pollution	46.4	20.4	10.9	9	6.6	3	1.9	1.7
	Drinking polluted Water	19.5	31.8	15.3	9.9	7.5	6.1	4	5.9
	Garbage and solid waste	5.1	13.2	24.5	17.1	13.5	10.8	9.4	6.4
	Liquid waste	6.9	7.6	10	24.9	13.3	9.9	13.3	14.2
	Global warming and climate change	12.2	11	13.8	10.5	25.2	10.1	9.6	7.5
	Loss of green areas in the city	5	5.1	11.4	11.3	12.8	31.9	13.7	8.8
	Surface water (river, lakes) pollution	2	5.7	5.8	9.3	13.3	13.3	35	15.5
	Unsafe food	2.9	5.1	8.4	8	7.8	14.7	13.2	40
Overall (SA) - Mixed Locations	Air pollution	40.1	23.1	15	8	5.6	4.1	2.2	2
	Drinking polluted Water	17.4	30.9	14.7	11.8	7.9	6	6.2	5.1
	Garbage and solid waste	4.8	9.2	18.7	12.8	24	10.7	15	4.7
	Liquid waste	1.2	2.1	7.2	21.4	14.3	24.6	15.4	13.8
	Global warming and climate change	17.2	7.5	8.9	11.3	12.7	11.6	11.4	19.2
	Loss of green areas in the city	10.1	10.5	12.4	15.5	18.2	15.2	12.6	5.5
	Surface water (river, lakes) pollution	4.2	7.5	11.6	12.5	10.3	17.4	28.7	7.8
	Unsafe food	4.9	9.1	11.5	6.6	6.9	10.5	8.5	42

Awareness about Initiatives taken by Government/Civil Society Organisations

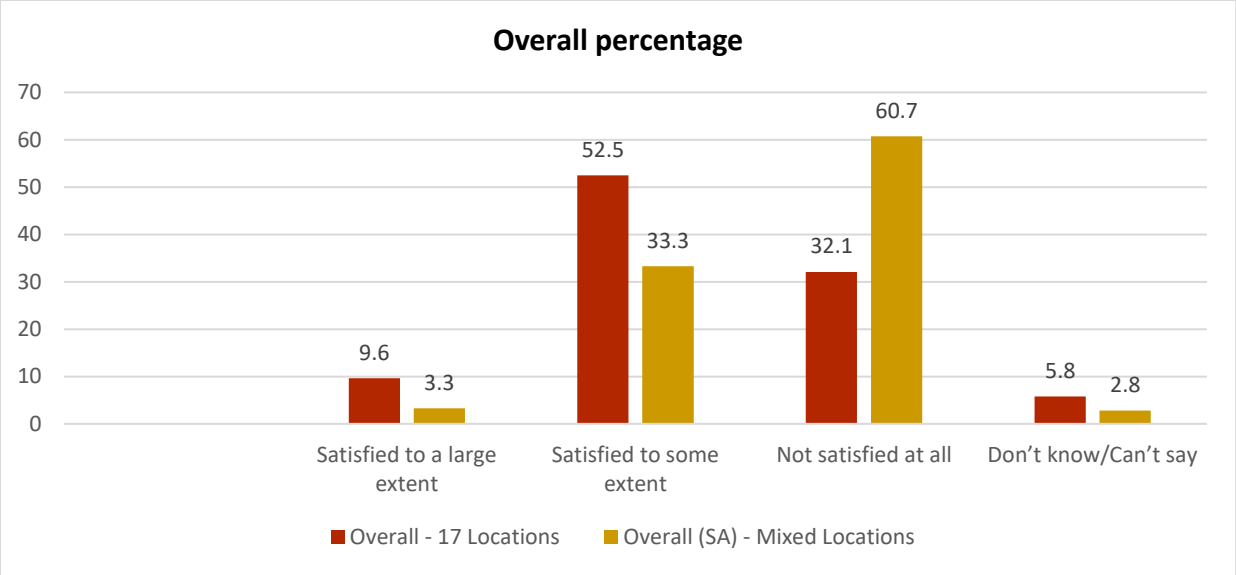
- About 58.1 percent (SA: 57.0 percent) respondents stated that they are aware of the initiatives taken by the Government and Civil society organisations to curb air pollution and mitigate the negative impact of bad air quality.



- Majority of the respondents (48.2 percent, SA: 53 percent) stated that the major action taken by the government to improve air quality was to put a ban on the entry of polluting and old vehicles in the cities followed by traffic police being more alert and checking vehicles for car emissions more frequently (41.8 percent, SA: 34.0 percent).

Level of Satisfaction with Government Initiatives

- Only around 9.6 percent (SA: 3.3 percent) respondents expressed that they were satisfied to a large extent with the initiatives taken by the government to curb pollution. Around 32.1 percent (SA: 60.7 percent) expressed their disappointment with the initiatives taken by the government and stated that they were not satisfied at all.



Initiatives taken by the Respondents to Mitigate the Effects of Bad AQ

- Slightly more than 69.0 percent (SA: 81.6 percent) of the respondents stated that they had taken some initiatives on their own to reduce the effect of air pollution.
- Around 59.7 percent respondents (SA: 78.9 percent) stated that they opt to walk whenever possible. Slightly over 40.0 percent (SA: 34.3 percent) respondents said that they have done a lot of plantation to improve the air quality. 29.6 percent (SA: 17.2 percent) respondents stated using bicycles instead of four/two-wheelers while going to work or shopping and another 29.2 percent used only public transport for commuting.
- Maximum respondents (49.6 percent) stated not taking any action on their own against air pollution as they are not aware on how to contribute to a cleaner environment.

Awareness about NGOs/CBOs Working for Improving AQ

- Only around 3.0 respondents stated awareness about NGOs/CBOs that are working on air pollution. None of the respondents in the cities of Angul and Dhanbad stated awareness of any NGOs or CBOs functioning in their areas. In case of the respondents from the support agencies, 25.9 percent stated that they were aware of NGOs/CBOs working on air pollution.

Willingness to Secure Information about AQ

- Around 85.5 percent (SA: 86.5 percent) respondents stated that they would be interested in securing more information about air quality. Cities where more than 90.0 percent respondents

expressed keen interest in securing more information about air pollution were Korba, Singrauli, Patna, Angul, Dhanbad, Chennai and Mumbai.

Conclusion:

Although majority of the survey respondents had heard about air pollution, however their awareness levels about PM 2.5, PM 10 and Air quality index was comparatively very low. Even among those who had heard about these terms, very few understood its relevance. Awareness about these terms was highest among the respondents of Delhi/NCR and especially low among the respondents of Raipur, Chandrapur, Angul, Varanasi, and Singrauli. The reason for low awareness in smaller towns could be due to less media attention unlike Delhi/NCR. Local and vernacular media could be more sensitised about air pollution so that it could be given the attention it deserves.

Respondents believed motor vehicles to be the main cause of air pollution and to some extent industrial sources/manufacturing facilities. Most respondents were of the view that the air quality in their cities is unhealthy or toxic and felt that the air quality has worsened in the last 2-3 years.

Almost cent percent respondents opined that bad air quality would have negative impact on human health and well-being. However, they were not aware how they could contribute to a cleaner environment. The study also revealed that very few respondents were taking precautionary measures against air pollution. Only one-third of the respondents used masks when there is bad air quality. Therefore, there is a greater need to organise workshops/awareness campaigns to orient people about air pollution and the steps that need to be taken to mitigate the impact of bad air quality.

Majority of the respondents expressed their disappointment with the initiatives taken by the government to curb air pollution. Most respondents expressed their willingness to take action against air pollution if they knew what was needed be done. The fight against air pollution has to be thought of as a mass movement. Individuals should also be made accountable.

Section I: Introduction

1.1 Background

Air pollution levels remain at dangerously high levels in many parts of the world. New data reveals that 9 out of 10 people breathe air containing high levels of pollutants like black carbon which penetrate deep into the lungs and cardio-vascular system. WHO estimates that around 7 million people die every year from exposure to fine particles in polluted air that lead to diseases such as stroke, heart disease, lung cancer, chronic obstructive pulmonary diseases and respiratory infections including pneumonia[1].

Now a new study has shown that air pollution, even at a level considered safe, caused one in seven new cases of diabetes in 2016. The study published in 'The Lancet Planetary Health' estimated that pollution contributed to 3.2 million new diabetes cases (14% of the total) globally in 2016[2].

Air pollution in India is a serious issue with the major sources being fuel wood, biomass burning, fuel adulteration, vehicle emission and traffic congestion. In autumn and winter months, large scale crop residue burning in agriculture fields which is a low-cost alternative to mechanical tilling is a major source for smoke, smog and particulate pollution. According to the World Health Organisation (WHO) global air pollution database released in Geneva, India has 14 out of the 15 most polluted cities in the world in terms of PM 2.5 concentrations[3].

It is stated that household air pollution is the second and ambient air pollution is the seventh leading risk factor for diseases in India. Over 620 000 deaths and about 18 million Disability-Adjusted Life Years (DALYs) are attributable to Ambient Air Pollution in India, while over one million deaths and 31 million DALYS are attributable to Household Air Pollution in India[4].

1.2 The Perception Study

While the condition being so severe in most parts of the country, when it comes to awareness, concern, campaigning and engagement on the issue, it is predominantly limited to Delhi & NCR. In cities like Varanasi, Patna, Chandrapur, Korba, etc. which are more polluted than Delhi, it is not clear if people realise the impact of bad air quality on their health. Even in Delhi/NCR, the issue was primarily led by the media and neither the public nor the policy makers are showing the urgency towards the issue that it deserves.

[1] WHO: News Release I May, 2018 I Geneva
[2] The Times of India: July 1, 2018
[3] The Times of India: May 2, 2018
[4] MOHFW & WHO Multisectoral Workshop on Air Pollution (28-29 September, 2016)

Probably, the message with regard to cause and effect of the air pollution and how to take the measures to protect from the effects of the bad air quality is not being delivered in the right 'frame' for the people.

In order to deliver the right message to the right audiences, we need to understand them better. Therefore, ASAR Social Impact Advisors Pvt. Ltd., engaged CMSR Consultants to carry out 'Perception Study on Air Quality in 17 Cities'. The sample cities were mainly classified under two categories i.e. 1) most polluted cities (Delhi & NCR, Patna, Lucknow, Varanasi, Amritsar, Singrauli, Dhanbad, Raipur, Korba, Chandrapur, Angul and Nagpur) and 2) cities which are fast becoming polluted (Bangalore, Pune, Mumbai, Chennai, Calcutta).

1.3 Objectives of the Study

The objective of the survey was to find out the level of awareness (cause, effect, precaution & solution) among people on the issue of air pollution. Broadly the survey tried to capture the following;

- If citizens are aware about the health impacts of polluted air.
- If citizens are aware the actions being taken by the government and civil society organisations to mitigate it.
- Awareness levels about the sources of pollution in their city.
- Amongst the issues that affect them (social or environmental) where does air pollution figure on that list.
- What would trigger them to take personal action.
- What kind/ level of actions would they like to take on air pollution.
- Understand their current media source of information about Air Pollution.
- Who do they think should be responsible to take actions to reduce pollution in their city.

1.4 Scope of Work

The scope of work included:

- Development of survey questionnaire and FGD guideline.
- Recruitment and orientation of the survey teams.
- On-line and Off-line data collection
- Data processing, validation and analysis.
- Submission of draft & final report along with final power point presentation.

- Cleaned data set in excel as well as SPSS.

1.5 Study Methodology and Execution Plan

- A robust methodology was developed before initiating the study. A core team (a mix of domain expert, M&E expert and researchers) was constituted by the Consultant organisation to carry out the assignment.
- An initial meeting was also organized with the representative of ASAR to understand the need and requirement of the client and to finalise the indicators.
- Besides, a complete literature and desk review was conducted by the core team of CMSR. During the process of literature review, the team went through various published reports, articles and other documents about air pollution. Both, initial meeting with the client and desk review enabled the research team to develop the draft questionnaire and focus group discussion (FGD) guideline.
- The draft questionnaire was sent to ASAR team and it was also pre-tested with selected audiences in Delhi and the same was finalized after duly incorporating the feedback suggested by the client as well as the feedback received from the pre-testing.
- The survey questionnaire was broadly divided into five sections i.e. Section A: Demographic Profile of the Respondent; Section B: Air Pollution: Level of Awareness among the Respondents; Section C: Air Pollution: Causes, Effects & Precautions; Section D: Air Pollution: Steps taken to control and improve the air quality and Section E: Overall feedback & suggestion.
- All the questions in each section had optional responses (close ended questions) with the provision of some questions having multiple responses.
- The survey was conducted using two different procedures i.e. on-line and off-line methods. For the on-line survey, link for the questionnaire was created on 'SurveyMonkey' app and audiences were invited to access the link through e-mail and whatsapp. Off-line survey was conducted by directly administering the questionnaire among the respondents. The survey was kept open for a period of almost one month (from 20-04-18 to 31-04-2018).
- The target groups for the survey included; students, working professionals, health professionals, senior citizens, young mothers, school principals, teachers and homemakers.
- Apart from the survey conducted by CMSR, ASAR also shared the Survey link with few of its Support Agencies across the country who gathered information from their respective support groups online.

- The study team also conducted two Focus Group Discussions in Delhi. One FGD was conducted with the college going students and other group had mixed participants i.e. working professionals, Sr. citizens, young mothers, etc.

1.6 Study Sample

A total of 5000 respondents were covered through both; on-line and off-line survey across the seventeen sample cities. Besides, the same on-line survey link was also shared by the Support Agencies among their people and a sample of 1075 was achieved through them from across the cities in India. The idea behind inviting the survey by the SAs was to draw a comparison between the neutral audiences and those who are already working on air pollution or environmental issues in terms of their knowledge, awareness and attitude towards air pollution. The location wise break-up of the sample covered is given below;

TABLE 1.1 *Location-wise distribution of sample coverage (Off-line & On-line)*

Sl. No	Location/City	Sample Coverage
1	Amritsar	300
2	Angul	300
3	Chandrapur	300
4	Delhi & NCR	300
5	Dhanbad	300
6	Korba	200
7	Lucknow	300
8	Nagpur	300
9	Patna	300
10	Raipur	300
11	Singrauli	300
12	Varanasi	300
13	Bangalore	300
14	Chennai	300
15	Calcutta	300

16	Mumbai	300
17	Pune	300
Overall – 17 Locations		**5000**
Overall (Support Agencies) – Mixed Locations		**1075**

1.7 Structure of the Report

The report presents the findings of the survey conducted by CMSR Consultants that covered 5000 respondents chosen from the identified 17 cities in the country. Besides, it also incorporated the findings of the online survey done in parallel by the Support agencies of ASAR among their support group comprising of 1075 respondents. The responses are analysed primarily by location, gender and age-group for each indicator. Some of the indicators are also analysed by education and employment status.

The Report has been divided into seven sections. The first Section briefly states the objectives and purpose of the survey and methodology adopted for undertaking the study. Section-II provides information on the social characteristics of the respondents. Information pertaining to the awareness about air pollution expressed by the respondents is presented in Section-III of the Report. Section-IV deals with aspects related to causes, effects and desired precautions for controlling air pollution. The awareness about the steps taken by government and civil society organisations to control and improve the air quality is presented in Section-V of the Report. Section VI of the report contains the 'Findings of the Focus Group Discussions'. Recommendations and Suggestions offered by the respondents are presented in Section VII. Summary of the overall findings is placed at the beginning of the report.

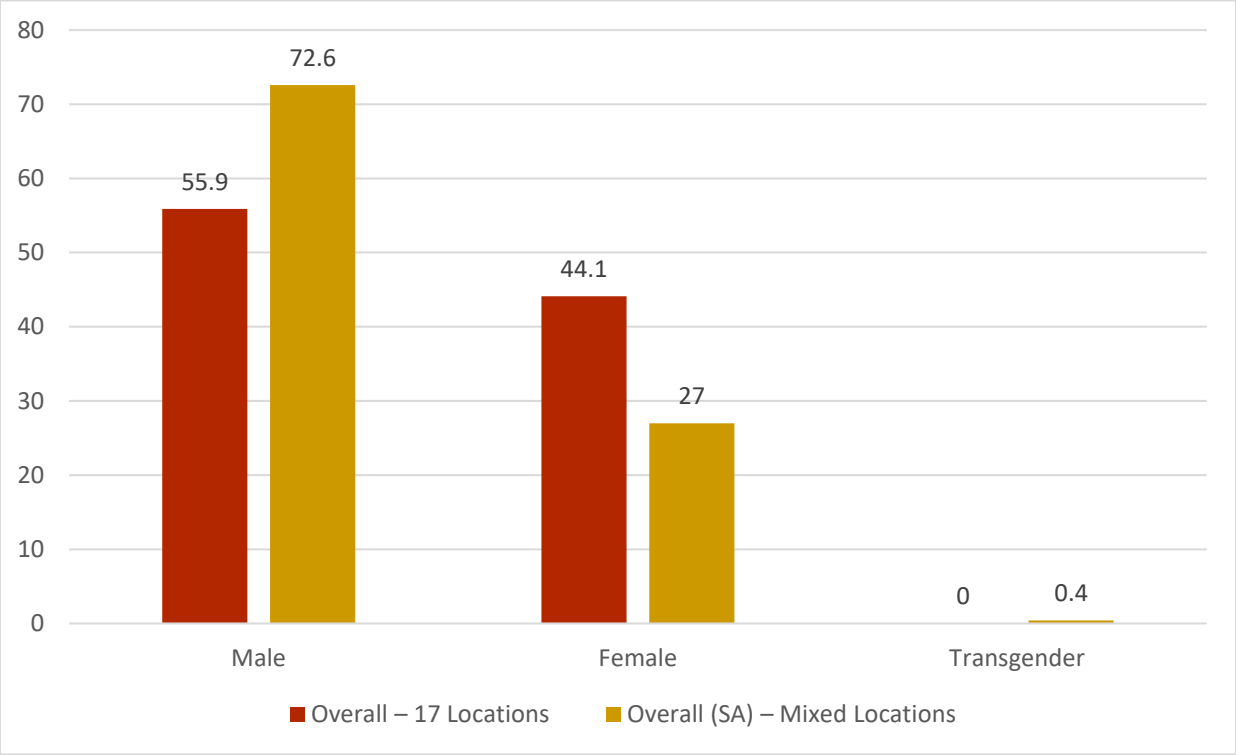
Section II: Characteristics of the Respondents

This section of the report indicates the gender and age group wise coverage of the respondents, their educational qualification, employment status, type of vehicle owned by them and the type of cooking fuel used by the households of the respondents.

2.1 Gender Representation

The classification of respondents by gender indicated that 56.0 per cent of the sample were men and 44.0 per cent were women. In case of the data received by the support agencies, men and women constituted 72.6 per cent and 27.0 percent respectively. Transgenders represented 0.4% (4 nos.) of the study sample.

Figure 2.1: *Gender wise distribution of study sample (Overall)*



However, in the cities of Amritsar, Bangalore, Kolkata, Patna, Singrauli and Varanasi, the representation of females was slightly more than that of the males. The least representation of female respondents was noticed in the cities of Angul and Dhanbad with only around 21.0 of women respondents in the sample.

Table-2.1: *Location and gender-wise distribution of study sample*

Sl. No	Location	Male (%)	Female (%)	Transgender (%)	Total (No.)
1	Amritsar	48.7	51.3	0.0	300
2	Angul	78.7	21.3	0.0	300
3	Bangalore	47.3	52.7	0.0	300
4	Chandrapur	65.7	34.3	0.0	300
5	Chennai	50.3	49.7	0.0	300
6	Delhi & NCR	56.3	43.7	0.0	300
7	Dhanbad	79.3	20.7	0.0	300
8	Kolkata	46.3	53.7	0.0	300
9	Korba	63.0	37.0	0.0	200
10	Lucknow	55.7	44.3	0.0	300
11	Mumbai	53.3	46.7	0.0	300
12	Nagpur	55.0	45.0	0.0	300
13	Patna	40.7	59.3	0.0	300
14	Pune	51.0	49.0	0.0	300
15	Raipur	68.7	31.3	0.0	300
16	Singrauli	47.7	52.3	0.0	300
17	Varanasi	44.7	55.3	0.0	300

2.2 Age - group

Distribution of sample respondents by age-group indicate that the percentage of respondents in the age-group of 26 - 35 years was the highest i.e. 27.8 percent (SA: 32.0 percent) followed by 21.9 percent (SA: 1.0 percent) in the age group of less than 18 years. Respondents in the age group of 36 - 45 years formed 18.8 percent (16.7 percent) while the representation of the 18 to 25 years age group was 17.6 percent (SA: 13.8 percent) of the total sample. Around 9.6 percent of the respondents was in the age group of 46- 60 years (SA: 18.8 percent). Senior citizens (60 years & above) constituted 4.3 percent of the total sample with highest representation of senior citizens in Korba (9.5 percent). In the case of Support agencies, senior citizens constituted 17.7 percent of the total sample.

Figure 2.2: *Distribution of sample by "Age-group" (Overall)*

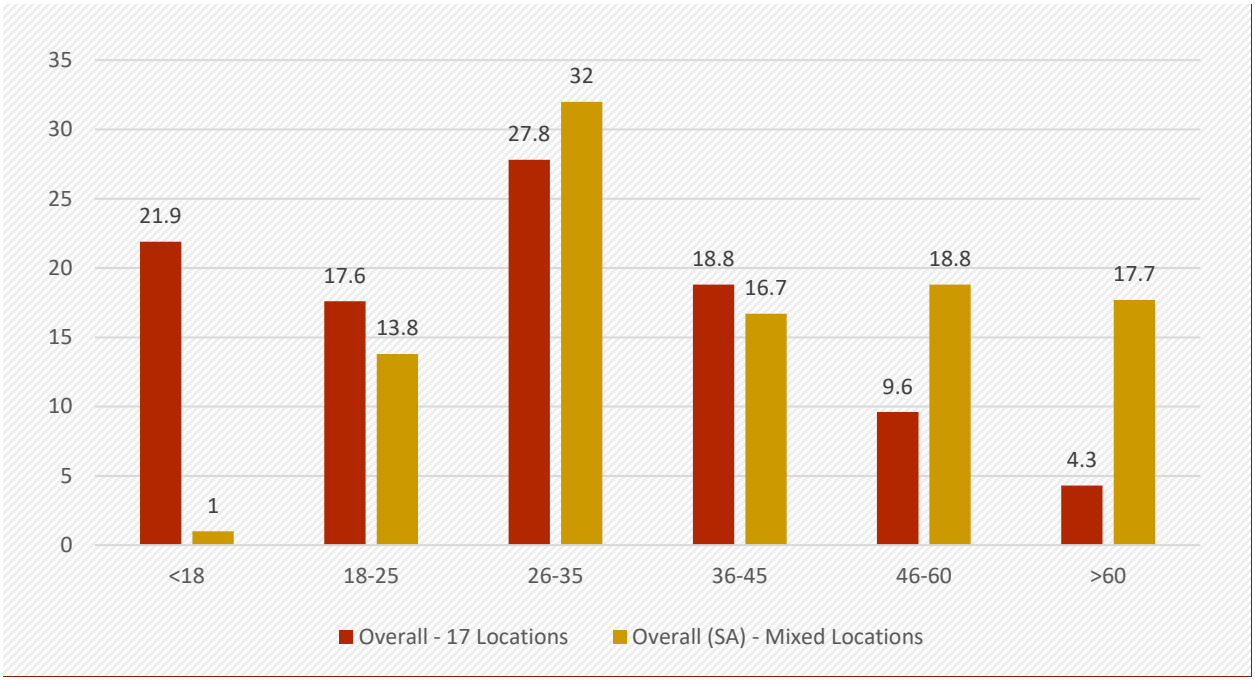


Table-2.2: *Location wise distribution of sample by "Age-group"*

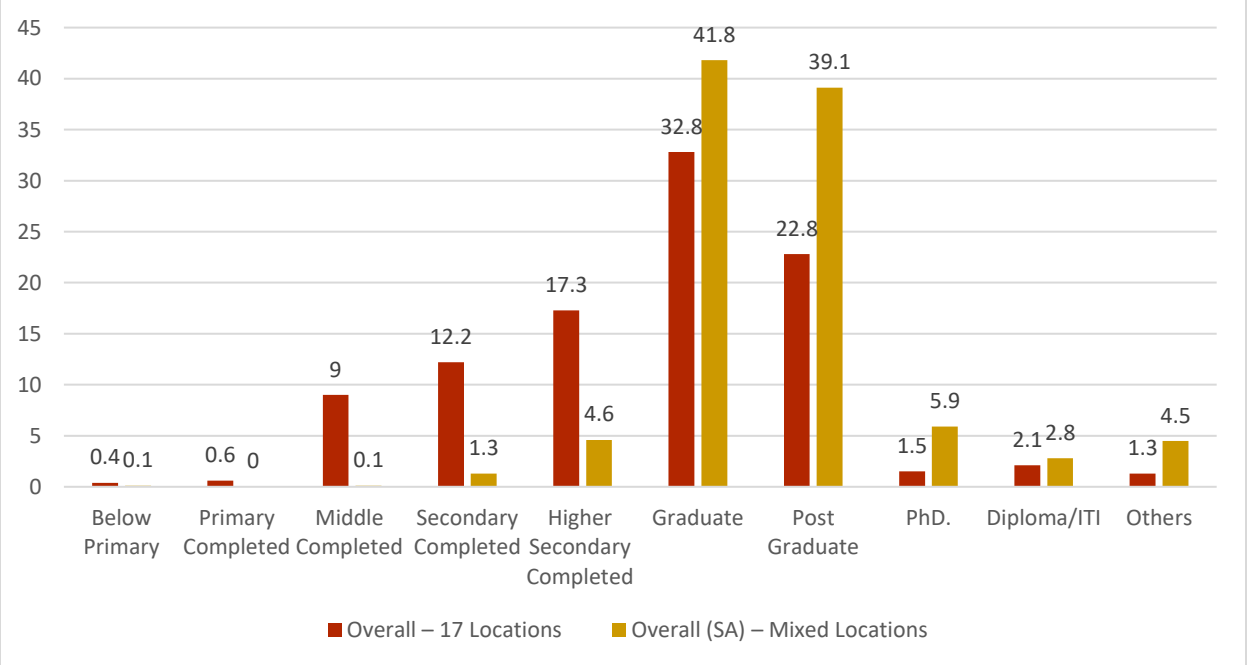
Sl. No	Location	Age-group (in percentage)						Total (No.)
		<18	18-25	26-35	36-45	46-60	>60	
1	Amritsar	13.0	21.7	35.0	19.3	7.3	3.7	300
2	Angul	26.0	12.0	22.7	22.0	14.0	3.3	300
3	Bangalore	19.3	20.7	32.7	10.3	12.0	5.0	300
4	Chandrapur	13.7	28.3	23.0	23.0	9.0	3.0	300
5	Chennai	15.3	19.0	33.3	22.7	6.3	3.3	300
6	Delhi & NCR	18.0	22.0	35.0	15.0	7.0	3.0	300
7	Dhanbad	22.0	23.3	31.0	16.3	4.0	3.3	300
8	Calcutta	13.7	17.7	29.0	24.7	11.3	3.7	300
9	Korba	27.5	5.5	24.5	24.5	8.5	9.5	200
10	Lucknow	17.7	8.0	18.7	27.7	22.0	6.0	300
11	Mumbai	21.3	17.7	24.7	15.0	14.7	6.7	300
12	Nagpur	17.3	11.7	28.0	23.0	15.7	4.3	300
13	Patna	31.3	9.3	27.0	20.0	8.3	4.0	300

Sl. No	Location	Age-group (in percentage)						Total (No.)
		<18	18-25	26-35	36-45	46-60	>60	
14	Pune	34.7	23.3	18.3	11.3	8.3	4.0	300
15	Raipur	20.7	12.3	41.3	18.7	3.7	3.3	300
16	Singrauli	32.3	23.7	22.0	13.3	4.7	4.0	300
17	Varanasi	31.0	19.3	26.0	14.0	5.3	4.3	300

2.3 Educational Status

Slightly more than 32.0 percent (SA: 41.8 percent) of the sample respondents were graduates, while postgraduates constituted 22.8 percent (SA: 39.1 percent) of the sample. Around 17.3 percent (SA: 4.6 percent) of the respondents had completed higher secondary and another 12.2 percent (SA: 1.3 percent) were secondary school pass outs. Those who completed middle school constituted 9.0 percent of the total sample. Around 1.5 percent of the sample were doctorates while in the case of the support agencies, 5.9 percent respondents were PhD holders.

Figure 2.3: *Distribution of sample by Education (Overall)*



Maximum graduate respondents were from Kolkata and Chandrapur (46.7 percent) while the highest number of postgraduates were from Lucknow (46.0 percent) followed by Delhi & NCR (35.3 percent).

Likewise, maximum PhD holders were noticed from the cities of Nagpur (6.7 percent), Chennai & Calcutta (3.0 percent each).

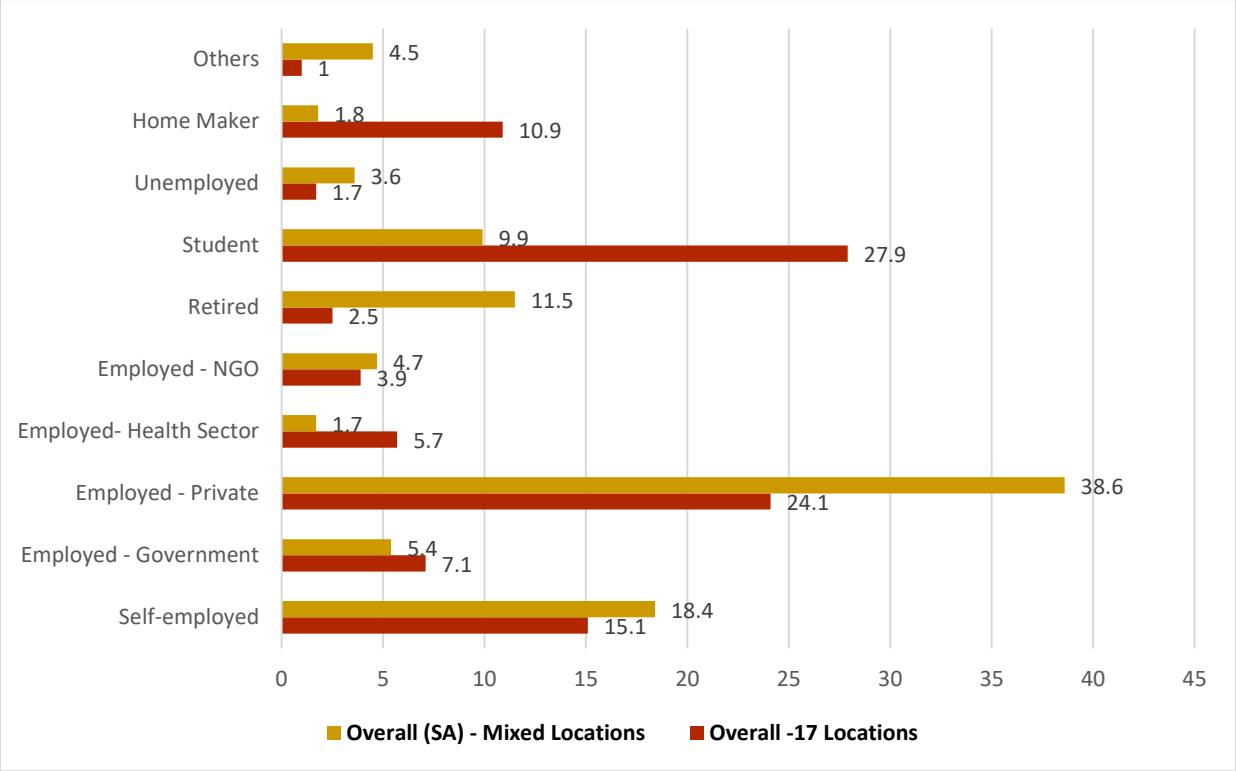
Table-2.3: *Distribution of sample by Educational Status (Location wise)*

Sl. No	Location	Education level (%)										Total (No.)
		Below Primary	Primary Completed	Middle Completed	Secondary Completed	Higher Secondary Completed	Graduate	Post Graduate	PhD.	Diploma/ITI	Others	
1	Amritsar	0.7	0.3	3.7	7.7	26.7	30.3	22.7	1.3	2.7	4.0	300
2	Angul	0.3	1.0	27.7	8.3	12.0	32.7	16.7	0.3	0.7	0.3	300
3	Bangalore	0.0	0.0	12.7	9.0	11.3	43.0	21.7	1.7	0.3	0.3	300
4	Chandrapur	0.0	0.0	1.0	4.0	24.0	46.7	15.3	2.3	3.7	3.0	300
5	Chennai	0.0	0.3	0.7	8.0	17.0	43.0	22.3	2.7	5.7	0.3	300
6	Delhi & NCR	0.0	0.0	1.7	6.0	16.0	37.7	35.3	1.7	0.7	1.0	300
7	Dhanbad	0.3	1.7	5.3	19.3	38.0	29.0	4.0	1.3	1.0	0.0	300
8	Calcutta	0.0	0.3	10.3	7.3	19.7	46.7	11.7	2.7	0.7	0.7	300
9	Korba	3.5	4.0	7.5	37.5	14.5	14.0	15.5	0.0	0.0	3.5	200
10	Lucknow	0.0	0.0	1.3	14.0	5.7	29.3	46.0	0.3	1.3	2.0	300
11	Mumbai	0.7	2.3	12.7	10.0	7.0	34.7	28.3	0.7	2.0	1.7	300
12	Nagpur	0.3	0.3	10.0	9.0	8.0	33.7	26.3	6.7	2.3	3.3	300
13	Patna	0.0	0.0	5.3	22.3	15.7	37.0	18.7	0.3	0.7	0.0	300
14	Pune	0.3	0.3	32.3	1.3	4.0	29.7	27.3	1.7	1.7	1.3	300
15	Raipur	2.0	1.3	6.3	10.3	28.3	23.3	21.3	0.3	6.3	0.3	300
16	Singrauli	0.0	0.0	1.7	17.3	27.7	23.0	25.0	0.7	4.7	0.0	300
17	Varanasi	0.0	0.0	12.0	24.0	17.0	18.0	27.0	0.7	1.0	0.3	300

2.4 Employment Status

Classification of the sample respondents by employment status revealed that 27.9 percent were students followed by 24.0 percent (SA: 38.6 percent) who were engaged in private sector jobs. Self-employed respondents constituted 15.1 per cent (SA: 18.4 percent) of the sample followed by 10.8 percent (SA: 1.8 percent) who were homemakers. Those engaged in Government jobs formed 7.1 percent (SA: 5.4 percent) of the total sample. The sample also had a representation of health professionals with 5.7 per cent (SA: 1.4 percent) employed in the health sector. Less than 2 percent (SA: 3.6 percent) of the sample were found to be un-employed.

Figure 2.4: *Distribution of sample by Employment Status (Overall)*



Maximum number of students were covered from the cities of Pune and Singrauli (40.0 percent each) followed by Varanasi (33.3 percent) and Mumbai and Chandrapur (31.0 percent each). Likewise, maximum number of respondents who were employed with the government sector were from Delhi/NCR and Lucknow (13.0 percent each). Private sector employees were maximum noticed from the cities of Bangalore (51.7 percent), Pune (38.7 percent) and Delhi/NCR (35.7 percent).

Table-2.4: *Distribution of sample by Employment Status (Location wise)*

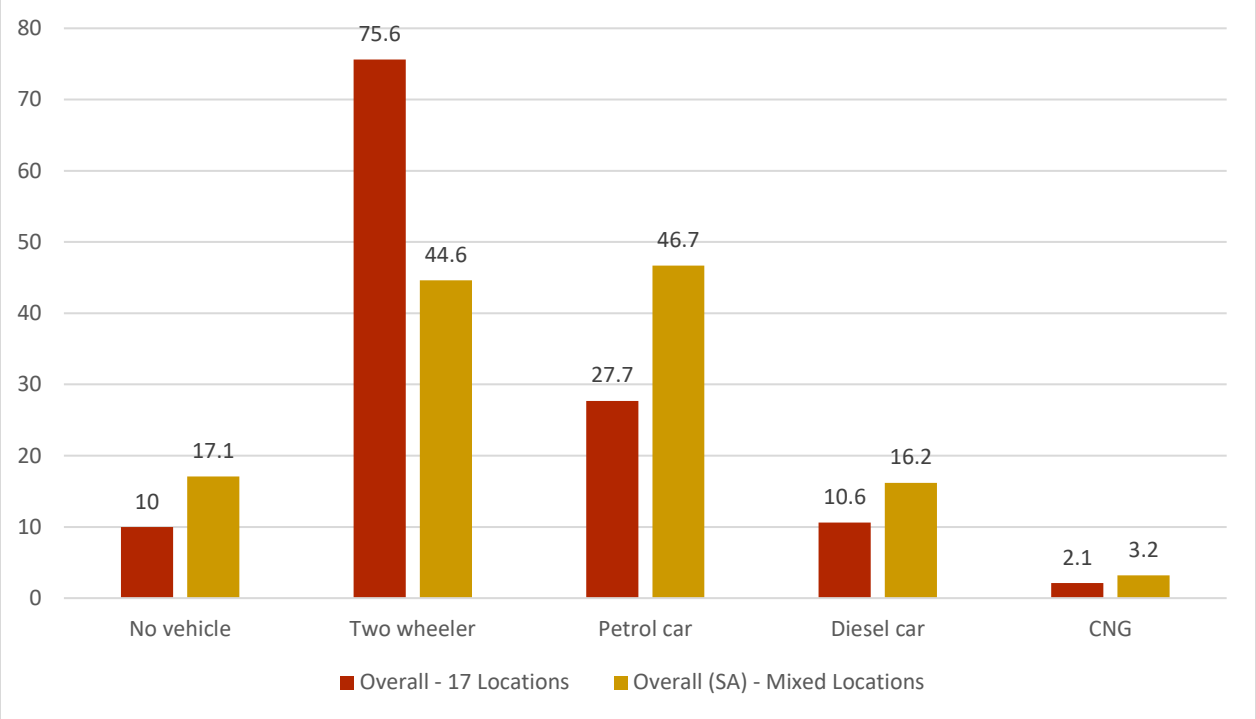
Sl. No	Location	Employment Status (%)										Total (No.)
		Self Employed	Employed - Government	Employed- Private	Employed - Heath Sector	Employed -NGO	Retired	Student	Unemployed	Home Maker	Others	
1	Amritsar	14.7	9.7	16.0	3.3	4.3	4.0	22.0	3.0	22.0	1.0	300
2	Angul	22.3	5.0	12.3	5.3	4.0	1.0	31.7	3.7	8.7	6.0	300
3	Bangalore	4.7	3.7	51.7	2.3	1.0	5.0	22.0	2.0	7.7	0.0	300
4	Chandrapur	21.7	9.3	18.7	8.0	2.0	1.3	31.3	2.3	5.3	0.0	300
5	Chennai	10.0	5.3	33.7	5.7	4.7	0.3	20.7	3.0	16.7	0.0	300
6	Delhi & NCR	10.0	12.7	35.7	2.3	5.3	1.7	26.0	1.3	5.0	0.0	300
7	Dhanbad	26.7	5.3	25.3	0.7	1.7	0.3	27.0	6.7	6.3	0.0	300
8	Calcutta	22.7	3.7	15.3	4.0	7.3	2.0	20.0	1.0	23.3	0.7	300
9	Korba	29.5	8.0	10.0	5.0	2.0	4.5	27.5	1.0	5.5	7.0	200
10	Lucknow	12.7	12.7	27.3	9.3	2.3	4.7	20.0	0.3	10.7	0.0	300
11	Mumbai	14.3	7.3	26.0	3.3	2.3	3.0	31.3	0.7	11.3	0.3	300
12	Nagpur	14.7	9.7	27.0	8.3	1.7	3.0	24.0	0.7	10.7	0.3	300
13	Patna	12.0	7.3	9.7	9.3	10.3	2.3	32.0	0.3	16.7	0.0	300
14	Pune	9.3	2.0	38.7	1.0	1.3	1.3	40.3	1.0	5.0	0.0	300
15	Raipur	16.3	11.3	12.0	11.7	3.7	3.3	25.0	1.0	12.3	3.3	300
16	Singrauli	6.7	3.7	24.7	9.0	8.0	3.7	40.3	0.0	3.3	0.7	300
17	Varanasi	13.3	3.7	21.3	7.3	4.3	2.0	33.3	1.0	13.7	0.0	300

2.5 Ownership of Vehicle

Around 10.0 per cent of the sample respondents did not possess any vehicle while the corresponding figure for the support agencies was 17.1 percent.

Around three-fourth (75.6 percent) of the respondents who were a part of the study owned two-wheelers while 44.6 percent respondents from the support agencies possessed two-wheelers. Likewise, those who owned "cars that run on petrol" formed 27.7 percent (SA: 46.7 percent) of the sample. Around 10.6 percent respondents (SA: 16.2 percent) reported possessing diesel cars. Only 2.1 percent (SA: 3.2 percent) respondents owned CNG vehicles. Less than 2.0 percent respondents stated owning other types of vehicles such as trucks, buses and auto rickshaws while the corresponding figures in case of the support agencies was 3.0 percent.

Figure 2.5: *Distribution of the respondents by type of vehicles owned (Overall)*



Respondents who did not own any vehicles were maximum from the cities of Mumbai (21.7 percent) followed by Dhanbad (19.0 percent) and Varanasi (16.7 percent). Those who own cars that run on petrol was maximum noticed from the cities of Lucknow (49.0 percent) and Delhi/NCR (48.0 percent). Interestingly maximum respondents who possessed CNG cars were from the Delhi & NCR regions (10.7 percent) followed by Pune (5.0 percent).

Table-2.5: *Distribution of the respondents by type of vehicles owned (Location-wise)*

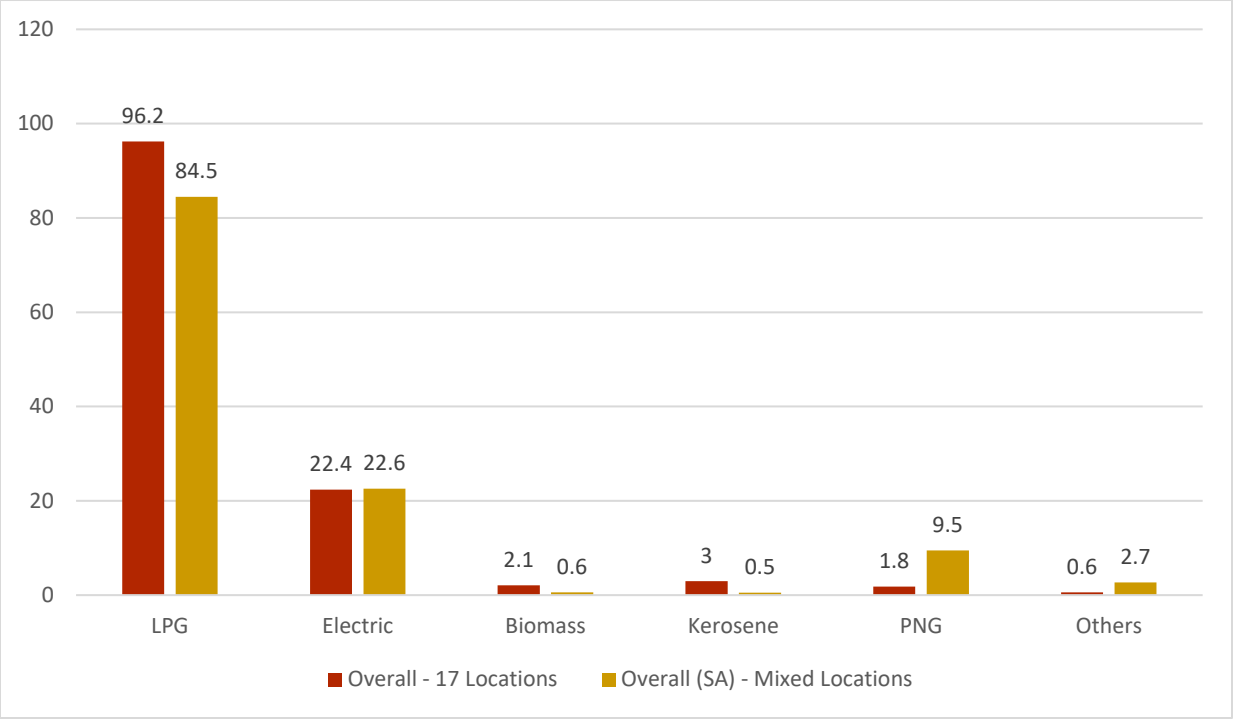
Sl. No	Location	Total no. of Responses	Ownership of Vehicle (%)					Others
			No vehicle	Two-wheeler	Petrol car	Diesel car	CNG car	
1	Amritsar	400	7.7	77.3	24.3	15.0	1.0	1.0
2	Angul	333	7.7	89.7	6.3	7.0	0.3	2.0
3	Bangalore	347	11.0	64.0	32.3	8.0	0.0	0.7
4	Chandrapur	382	7.7	89.0	28.3	9.7	0.3	3.0
5	Chennai	377	6.3	89.0	20.3	9.3	0.3	0.3
6	Delhi & NCR	405	13.0	40.3	48.0	22.0	10.7	1.0
7	Dhanbad	338	19.0	78.3	10.3	5.0	0.0	0.0
8	Calcutta	324	7.0	80.7	14.7	3.7	0.3	1.7
9	Korba	242	4.0	95.5	13.5	6.5	0.5	1.0
10	Lucknow	462	6.7	87.7	49.0	6.3	4.0	0.3
11	Mumbai	411	21.7	57.7	37.0	17.0	3.0	0.7
12	Nagpur	439	8.0	77.7	38.7	18.3	1.3	2.3
13	Patna	355	10.0	72.3	33.0	2.0	0.3	0.7
14	Pune	456	8.3	54.0	54.3	25.7	5.0	1.3
15	Raipur	365	5.0	89.0	17.7	6.0	3.0	1.3
16	Singrauli	381	8.3	80.0	28.3	5.3	3.7	1.3
17	Varanasi	330	16.7	70.3	10.3	12.0	0.7	0.0

2.6 Cooking fuel

The respondents were asked to state the type of fuel used in their households for cooking. Around 20.0 per cent of the respondents reported possessing more than one source of fuel for cooking. The overall figures indicated that the percentage of respondents using LPG as fuel exceeded 95.0 (SA: 84.5 percent). Those having electric stoves formed 22.4 per cent in the

sample. Same was the case with the respondents of the support agencies. Only 2.1 per cent (SA: 0.6 percent) of the respondents stated using biomass while 3.0 percent respondents (SA: 0.5 percent) stated using kerosene stoves. PNG users constituted less than two per cent of the total sample while PNG users from the support agencies were 9.5 percent.

Figure 2.6: *Distribution of the respondents by kind of fuel used for cooking (Overall)*



Maximum respondents (16.3 percent) who used PNG as cooking fuel were from Delhi & NCR regions. None of the respondents from Angul, Bangalore, Chennai, Dhanbad, Korba, Lucknow, Patna and Singrauli reported using PNG as cooking fuel. Maximum use of kerosene stoves was observed in Angul (19.0 percent), Chandrapur, Calcutta and Dhanbad (5.0 percent each).

Table-2.6: *Distribution of the respondents by kind of fuel used for cooking (Location wise)*

Sl. No	Location	Source (in percentage)							Total (No.)
		Cooking fuel	LPG	Electric	Biomass	Kerosene	PNG	Others	
1	Amritsar	300	98.0	7.0	1.0	0.0	0.3	0.3	320
2	Angul	300	96.0	14.7	0.3	19.0	0.0	3.3	400
3	Bangalore	300	98.7	11.3	0.3	0.0	0.0	0.3	332
4	Chandrapur	300	97.3	31.3	3.3	5.0	2.7	0.0	419
5	Chennai	300	99.0	33.0	0.7	2.3	0.0	0.0	405
6	Delhi & NCR	300	82.3	7.3	0.0	0.3	16.3	0.0	319
7	Dhanbad	300	94.0	6.3	15.7	5.0	0.0	3.3	372
8	Calcutta	300	97.7	31.3	0.0	5.3	0.3	0.0	404
9	Korba	200	100.0	25.0	0.0	0.0	0.0	0.0	250
10	Lucknow	300	100.0	39.7	0.0	0.0	0.0	0.0	419
11	Mumbai	300	94.3	17.3	1.0	1.7	4.0	0.3	356
12	Nagpur	300	93.0	20.3	4.3	3.0	2.3	0.0	369
13	Patna	300	100.0	8.3	0.0	0.0	0.0	0.0	325
14	Pune	300	93.3	18.3	0.0	1.3	3.0	0.3	349
15	Raipur	300	99.7	67.7	0.3	4.3	0.7	0.0	518
16	Singrauli	300	96.0	23.3	1.3	0.0	0.0	1.7	367
17	Varanasi	300	97.7	19.3	6.0	3.3	0.7	0.0	382

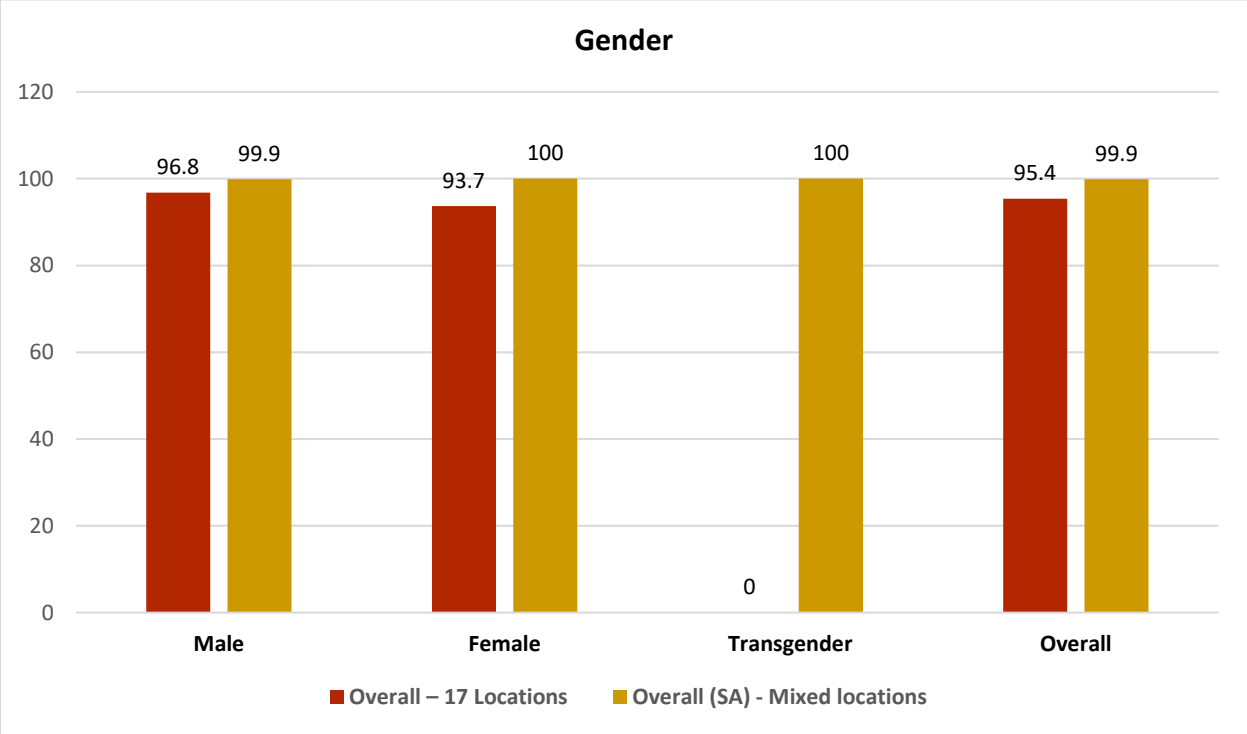
Section III: Level of Awareness about Air Pollution

This section focuses on whether the respondents had heard about air pollution, their source of awareness and their awareness about the terms PM 2.5, PM 10 and air quality index. An attempt was also made to find out whether respondents seek information about air pollution, the rating they would give to the air quality in their cities and if they have perceived any changes in the air quality in their cities in the last 2-3 years.

3.1 Level of Awareness about Air Pollution

Around 95.4 percent respondents in the study sample had heard about air pollution. Cent percent awareness about air pollution was noticed only in Delhi & NCR. Maximum awareness was seen among the respondents of Pune (99.7 percent), Chennai (99.7 percent), Bangalore (98.7 percent) and Calcutta (98.3 percent). The awareness levels were the least in the city of Korba (90.5 percent) followed by Chandrapur (91.3 percent), Dhanbad (92.7 percent), Singrauli (93.0 percent), Patna (93.3 percent) and Angul (93.7 percent). Around 99.9 percent of the respondents of the support institutions were aware of air pollution.

Figure 3.1: *Distribution of the respondents by their awareness about Air Pollution (Overall)*



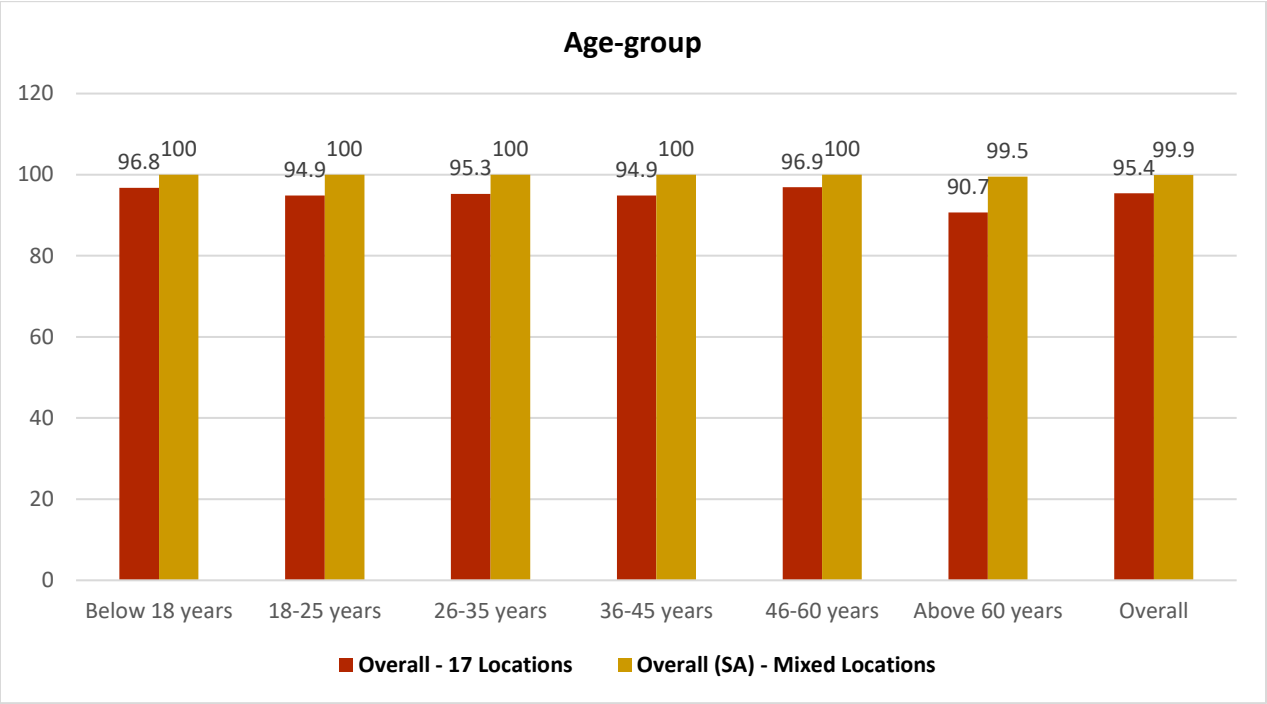
In the cities of Chennai and Pune, awareness about air pollution among women was 100 percent. Likewise, in Amritsar, all the men respondents stated having heard about air pollution. Awareness was quite low among women respondents of Angul and Dhanbad (less than 80.0 percent).

Table-3.1: *Distribution of the respondents by their awareness about Air Pollution (Location wise)*

Location	Percentage of Respondents stating awareness			
	Male	Female	Transgender	Overall
Amritsar	100.0	90.9	0	95.3
Angul	97.5	79.7	0	93.7
Bangalore	98.6	98.7	0	98.7
Chandrapur	89.8	94.2	0	91.3
Chennai	99.3	100.0	0	99.7
Delhi & NCR	100.0	100.0	0	100.0
Dhanbad	96.6	77.4	0	92.7
Calcutta	98.6	98.1	0	98.3
Korba	94.4	83.8	0	90.5
Lucknow	99.4	91.0	0	95.7
Mumbai	97.5	97.1	0	97.3
Nagpur	93.3	95.6	0	94.3
Patna	93.4	93.3	0	93.3
Pune	99.3	100.0	0	99.7
Raipur	96.6	84.0	0	92.7
Singrauli	95.8	90.4	0	93.0
Varanasi	96.3	93.4	0	94.7

The overall age group-wise figures reveal that maximum awareness about air pollution was among the 46-60 years age group (96.9 percent) followed by below 18 years age group (96.8 percent). Awareness was the least among the senior citizens (90.7 percent).

Figure 3.2: *Distribution of the respondents by their awareness about Air Pollution (Age group)*

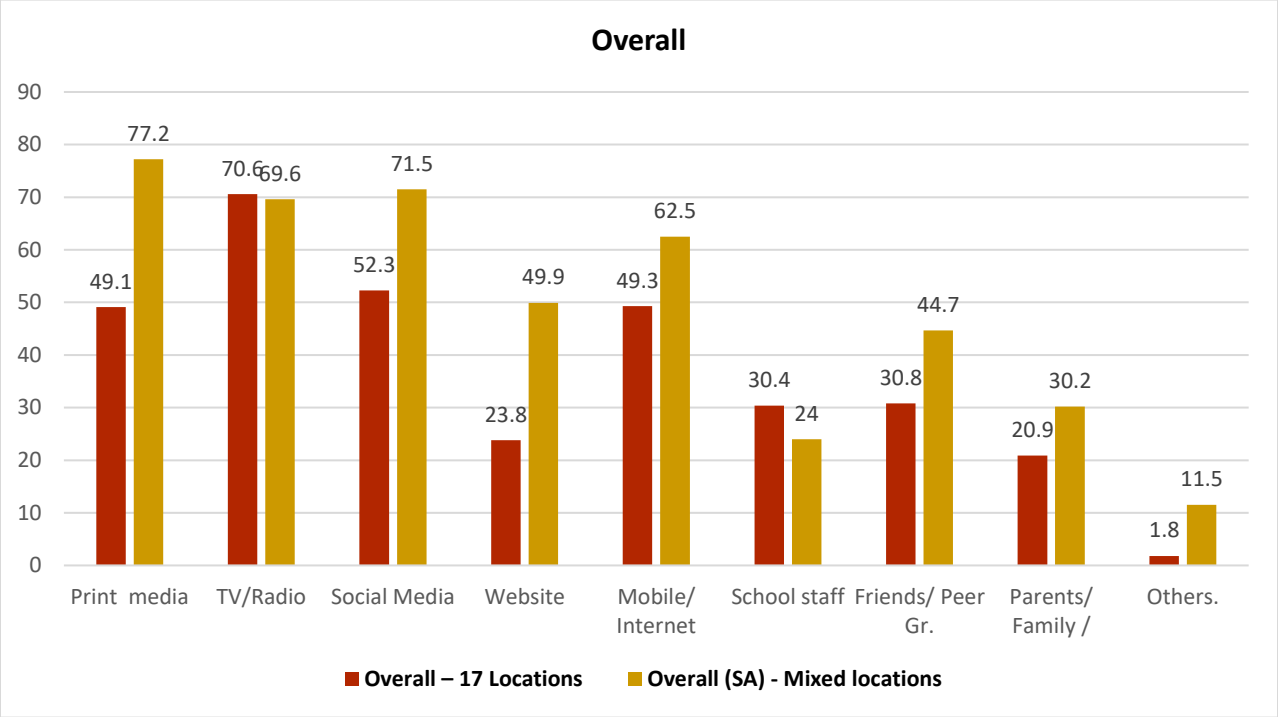


3.2 Source of Awareness about Air Pollution

Respondents who had heard about air pollution were further asked to state their source of awareness. Across the cities, it was observed that the major source of awareness was TV/Radio (71.0 percent,) followed by Social Media (52.0 percent), Mobile/internet & Print media (49.0 percent) and School teachers, Principals & Friends (30.0 percent). Only 23.0 percent of the total sample respondents stated websites as their source of awareness. No major variations were observed in the source of awareness among men and women.

The information obtained from the Support Agencies revealed that the major source of awareness was Print media (77.0 percent), followed by Social media (72.0 percent), TV/Radio (70.0 percent), Mobile/internet (63.0 percent) and website (50.0 percent). Friends & peer groups were reported as major source by 45.0 percent respondents.

Figure 3.3: *Distribution of the respondents by source of awareness about Air Pollution (Overall)*



Majority of the respondents in the cities of Korba (93.9 percent), Angul (90 percent) and Calcutta (89.5 percent) stated their source of awareness as Television and Radio. Those who stated that their source of awareness was social media were maximum from Delhi/NCR (73.7 percent) followed by Patna (73.2 percent), Pune (65.9 percent), Varanasi (64.8 percent) and Chennai (61.9 percent).

Table-3.2: *Distribution of the respondents by source of awareness about Air Pollution (Location wise)*

Location	Source of Awareness (% of respondents)								
	Print media	TV/Radio	Social Media	Website	Mobile/ Internet	School staff	Friends/ Peer Gr.	Parents/ Family /	Others.
Amritsar	36.4	59.1	51.7	11.5	61.2	20.6	23.1	11.5	1.4
Angul	63.7	90.0	39.5	5.7	16.7	23.1	42.7	23.5	0.4
Bangalore	46.3	53.4	47.0	22.6	42.2	42.9	32.1	17.6	5.1
Chandrapur	9.5	49.3	51.5	38.7	48.2	33.2	27.4	18.6	0.4
Chennai	24.4	73.6	61.9	19.7	53.5	19.7	21.4	16.1	3.0

Delhi & NCR	71.7	75.3	73.7	29.7	67.7	20.0	43.0	24.0	2.3
Dhanbad	23.4	43.9	41.0	21.2	48.9	21.6	28.8	3.2	0.4
Calcutta	52.9	89.5	60.7	24.7	45.1	20.3	32.2	29.2	0.7
Korba	70.2	93.9	40.9	8.8	70.2	34.3	8.8	23.8	4.4
Lucknow	65.2	70.4	30.3	19.5	28.2	19.2	10.8	6.6	0.3
Mumbai	50.0	64.4	52.1	26.7	48.3	46.2	28.4	22.6	3.4
Nagpur	33.6	61.1	54.4	32.2	41.0	40.6	26.1	17.0	3.2
Patna	71.4	85.0	73.2	46.1	66.1	36.8	55.7	43.6	1.1
Pune	61.9	68.9	65.9	42.1	61.9	55.2	44.5	44.8	3.7
Raipur	78.4	85.6	50.4	14.7	50.7	33.1	62.6	42.4	0.0
Singrauli	44.8	72.4	24.0	12.2	30.1	26.2	18.3	8.6	1.1
Varanasi	37.7	72.5	64.8	22.2	63.4	25.4	10.6	1.8	0.0

Source of awareness by age groups reveal that in case of those below the age of 18 years the major source were TV/Radio (62.0 percent) (SA: 67.6 percent) followed by school staff (58.9 percent) (SA: 72.7 percent) and Mobile/internet & Social media (46.0 percent each) (SA: Mobile/internet: 63.6 percent, Social media: 82 percent). In the age group of 18-25 years, the major source of information about air pollution was TV/Radio (64.7 percent, SA: 67.6 percent), followed by Social media (56.7 percent, SA: 81.8 percent) and Mobile/internet (52.0 percent, SA: 80.4 percent). In case of the respondents in the age group of 46-60 years and above 60 years old, TV/Radio (80.0 percent each, SA: 69.8 percent & 73.5 percent respectively) was their major source of awareness. Websites (7.7 percent) had minimal impact among the senior citizens. However, in case of support agencies, around 40.2 percent of the respondents above the age of 60 years stated websites as their source of awareness.

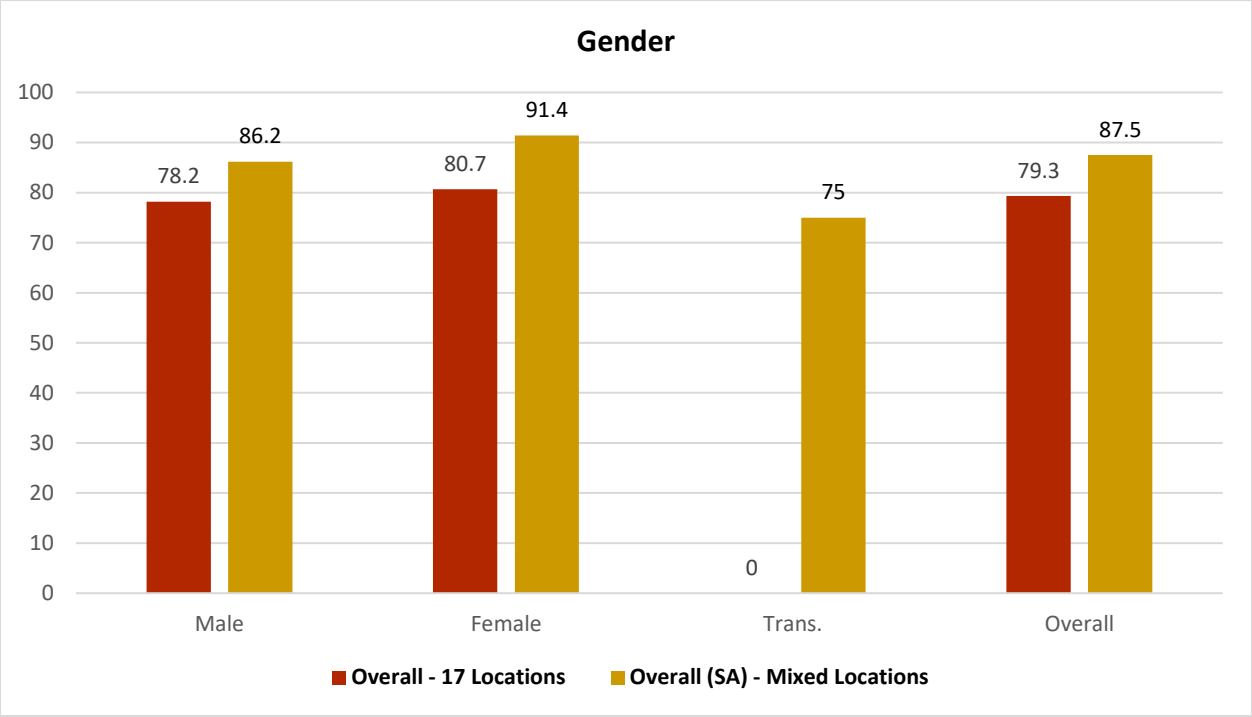
Table 3.3: *Overall distribution of the respondents by source of awareness about Air Pollution (Age group)*

Sl. No	Age-group	Source of Awareness (% of respondents)								
		Print media	**TV/Radio**	**Social Media**	**Website**	**Mobile/ Internet**	**School staff**	**Friends/ Peer Gr.**	**Parents/ Family /**	**Others.**
Overall – 17 Locations	Below 18	41.4	62.0	46.4	18.7	46.1	58.9	28.6	28.1	0.8
	18 – 25 Years	37.0	64.7	56.7	27.9	52.0	34.3	29.3	21.1	1.6
	26 – 35 Years	50.9	72.5	57.0	26.7	55.1	23.6	33.3	19.1	1.9
	36 - 45 Years	56.7	77.0	55.4	25.2	49.6	15.8	32.1	19.2	2.7
	46 – 60 Years	67.4	79.9	48.6	24.0	42.3	13.0	31.3	14.7	1.9
	60 Years & above	53.6	79.4	28.9	7.7	29.9	13.4	25.8	15.5	2.6
Overall (SA) - Mixed Locations	Below 18	81.8	72.7	81.8	18.2	63.6	72.7	54.5	45.5	0.0
	18 – 25 Years	73.0	67.6	82.4	59.5	80.4	51.4	56.8	45.9	6.8
	26 – 35 Years	69.5	66.9	79.9	51.5	71.2	29.7	45.6	34.0	9.9
	36 - 45 Years	78.3	72.2	68.9	53.9	62.8	20.0	49.4	30.6	10.6
	46 – 60 Years	84.7	69.8	67.3	47.5	54.0	13.9	44.6	27.2	9.4
	60 Years & above	85.7	73.5	54.0	40.2	41.3	4.2	28.6	12.7	21.7

3.3 Air Quality/Pollution – Topic for discussion at Home

Around 78.2 percent respondents (SA: 86.2 percent) reportedly discussed the topic of air pollution at their homes. More women (80.7 percent, SA: 91.4 percent) than men (78.2 percent, SA: 86.2 percent) stated discussing about air pollution.

Figure 3.4: *Gender wise distribution of the respondents who discuss about air quality at home (Overall)*



Maximum respondents who discussed about air pollution was observed in Lucknow (93.7 percent) followed by respondents from Delhi/NCR (90.0 percent). Surprisingly, respondents of Bangalore (62.2 percent) were positioned last with regard to discussing about air quality at home followed by Singrauli (71.0 percent), Mumbai (72.3 percent) and Korba (73.5 percent).

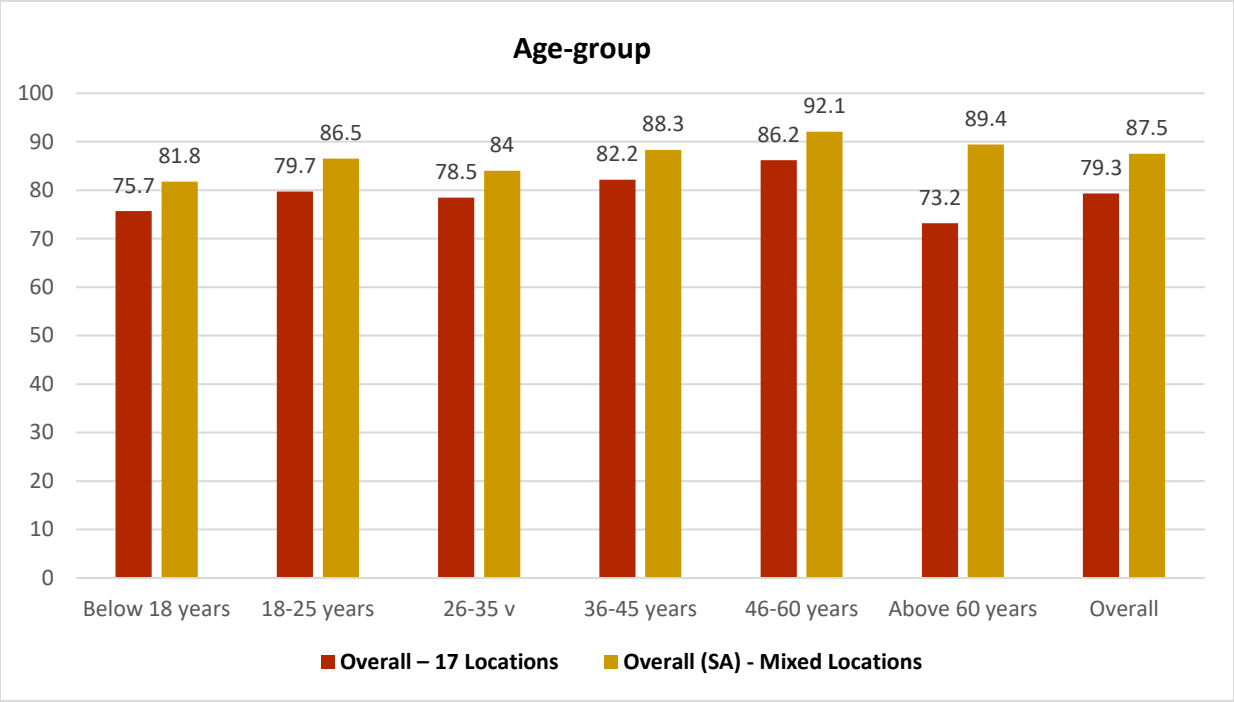
Table 3.4: *Location and gender wise distribution of the respondents who discuss about air quality at home*

Location	Percentage of Respondents who discuss at Home			
	Male	Female	Trans.	Overall
Amritsar	79.5	87.1	0.0	83.2
Angul	78.7	62.7	0.0	75.8
Bangalore	65.0	59.6	0.0	62.2

Chandrapur	82.5	85.6	0.0	83.6
Chennai	76.0	85.9	0.0	80.9
Delhi & NCR	87.6	93.1	0.0	90.0
Dhanbad	78.7	89.6	0.0	80.6
Calcutta	83.2	90.5	0.0	87.1
Korba	73.1	74.2	0.0	73.5
Lucknow	97.0	89.3	0.0	93.7
Mumbai	66.0	79.4	0.0	72.3
Nagpur	75.3	76.0	0.0	75.6
Patna	81.6	86.7	0.0	84.6
Pune	79.6	78.9	0.0	79.3
Raipur	74.4	75.9	0.0	74.8
Singrauli	73.0	69.0	0.0	71.0
Varanasi	74.4	80.6	0.0	77.8

The age group wise data revealed that it was the 46-60 years respondents (86.2 percent, SA: 92.1 percent) who discussed about air pollution the most followed by the 36-45 years age group (82.2 percent, SA: 88.3 percent). Only 73.2 percent (SA: 89.4 percent) of the senior citizens reported discussing about air pollution at their homes. Around 79.7 percent respondents (SA: 86.5 percent) in the 18-25 years age group stated that the topics discussed at their homes covered air pollution. Likewise, 75.7 percent (SA: 81.8 percent) of the respondents below the age of 18 years discussed about the air quality in their cities. Location-wise figures indicated that cent percent respondents of Delhi & NCR in the age group of 46-60 years and 36-45 years discussed the issue of air pollution at their homes.

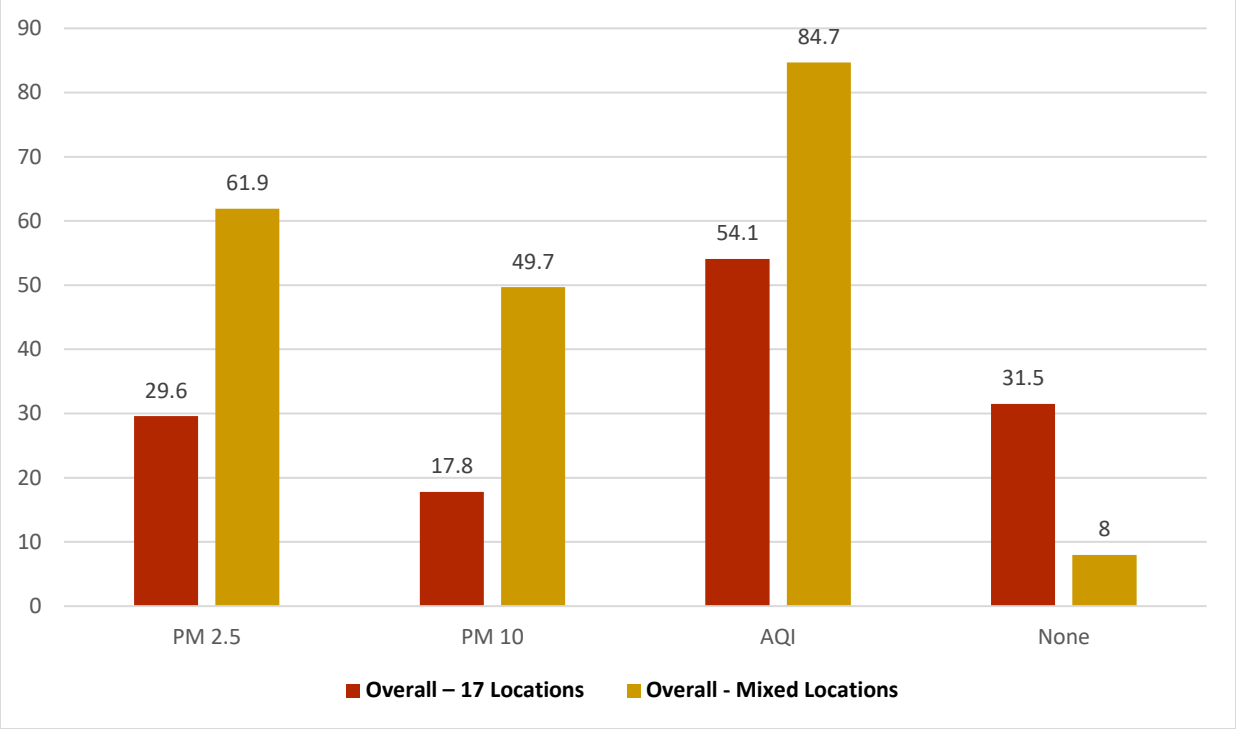
Figure 3.5: *Age group wise distribution of the respondents who discuss about air quality at home (Overall)*



3.4 Awareness about PM 2.5, PM 10 & Air Quality Index

The respondents were asked whether they have heard the terms PM 2.5, PM 10 and Air quality index. Around 54.1 percent (SA: 84.7 percent) of the survey respondents reported hearing about "Air quality index". Awareness about the terms "PM 2.5" and PM "10" were affirmed by 29.6 percent (SA: 61.9 percent) and 17.8 percent (SA: 49.7 percent) of the respondents respectively. About 31.5 percent (SA: 8.0 percent) of the respondents had not heard about any of the three terms PM 2.5, PM 10 or Air quality index.

Figure 3.6: *Distribution of the respondents by their awareness about PM 2.5., PM 10 & Air Quality Index (Overall)*



The level of awareness was more in the metros with Delhi & NCR region respondents showing maximum awareness of all three terms (Air quality index: 82.0 percent, PM 2.5: 62.0 percent, PM 10: 40.3 percent). About 74.7 percent of respondents of Patna had heard about Air quality index followed by Pune (73.3 percent), Chennai (65.7 percent), Nagpur (62.3 percent) and Amritsar (61.3 percent). Only 16.7 percent of the respondents from Raipur had heard about air quality index. With regard to the term PM 2.5, maximum respondents from Mumbai (46.7 percent) stated awareness followed by, Calcutta (42.3 percent) and Nagpur (36.3 percent). Awareness about PM 2.5 was the lowest in Chandrapur (9.3 percent) followed by Varanasi & Angul (11.0 percent each) and Singrauli (12.0 percent). Awareness about PM 10 was very less in the cities of Varanasi (4.7 percent), Angul and Singrauli (6.0 percent each).

Table 3.5: *Distribution of the respondents by their awareness about PM 2.5., PM 10 & Air Quality Index (Location wise)*

Location	Percentage of respondents stating awareness about			
	PM 2.5	PM 10	AQI	None
Amritsar	22.0	14.0	61.3	25.0
Angul	11.3	5.7	48.3	40.7

Bangalore	33.7	21.7	54.3	31.7
Chandrapur	9.3	14.0	49.0	40.7
Chennai	29.3	9.7	65.7	26.0
Delhi & NCR	62.0	40.3	82.0	5.7
Dhanbad	35.7	11.3	36.3	20.7
Calcutta	42.3	32.7	53.3	34.7
Korba	32.5	12.5	36.0	28.5
Lucknow	20.0	10.3	49.0	43.7
Mumbai	46.7	29.3	53.0	40.7
Nagpur	36.3	31.7	62.3	23.7
Patna	39.3	13.0	74.7	18.0
Pune	32.3	27.3	73.3	19.7
Raipur	28.3	15.7	16.7	57.3
Singrauli	12.0	6.3	39.7	50.3
Varanasi	11.0	4.7	58.3	27.0

Around 31.0 percent men (SA: 7.4 percent) and 32.0 percent women (9.7 percent) reported not hearing about any of the three terms PM 2.5, PM 10 or Air quality index. About 52.9 percent men (84.1 percent) and 55.5 percent women (86.2 percent) stated that they had heard about “Air quality index”. Likewise, 31.1 percent men (SA: 64.5 percent) and 27.7 percent women (SA: 54.1 percent) stated being aware of the term “PM 2.5”. Awareness about the term “PM 10 was stated by 20.3 percent men (SA: 52.9 percent) and 14.5 percent women (SA: 41.0 percent).

Table 3.6: *Distribution of the respondents by their awareness about PM 2.5., PM 10 & Air Quality Index (Gender wise)*

	Gender	Percentage of respondents stating awareness about			
		PM 2.5	PM 10	AQI	None
Overall – 17 Locations	Men	31.1	20.3	52.9	31.0
	Women	27.7	14.5	55.5	32.0
Overall (SA) - Mixed Locations	Men	64.5	52.9	84.1	7.4
	Women	54.1	41.0	86.2	9.7
	Trans.	100.0	50.0	100.0	0.0

The age-wise distribution with regard to awareness about the term “Air quality index” revealed that it is the 18-25 years age group respondents (60.2 percent, SA: 89.2 percent) who had the maximum awareness followed by the 26-35 years age group (55.2 percent, SA: 83.4 percent)). Around 54.0 percent each respondents in the age bracket of 36-45 years and 46-60 years (SA: 36-45 yrs – 88.3 percent, 46-60 yrs – 82.2 percent) had heard about “Air quality index. Awareness was least among the senior citizens (43.5 percent, SA: 83.2 percent). Maximum respondents who stated hearing about “PM 2.5” was in the 36-45 years age group (34.9 percent, SA: 60.0 percent) followed by 46-60 years and 26-35 years age groups (34.0 percent each, SA: 46-60 yrs: 63.4 percent, 26-35 yrs: 60.2 percent). Only 16.3 percent (SA: 45.5 percent) of the respondents who were less than 18 years had heard about PM 2.5. Likewise, maximum awareness about “PM 10 was observed in the case of respondents who were in the 46-60 years age bracket (23.3 percent, SA: 52.0 percent) followed by the respondents in the 26-35 years age group (20.8 percent, SA: 48.5 percent). Only 11.7 percent of the respondents below the age of 18 years (SA: 54.5 percent) and 8.9 percent (SA: 49.5 percent) above the age of 60 years had heard of PM 10.

Table 3.7: *Distribution of the respondents by their awareness about PM 2.5., PM 10 & Air Quality Index (Age group wise)*

	Age group	Percentage of respondents stating awareness about			
		PM 2.5	PM 10	AQI	None
Overall – 17 Locations	Below 18	16.3	11.7	49.4	39.1
	18 – 25 Years	32.6	18.3	60.2	24.9
	26 – 35 Years	34.3	20.8	55.2	27.9
	36 - 45 Years	34.9	19.1	54.3	29.9
	46 – 60 Years	34.3	23.4	54.8	31.6
	60 Years & above	21.0	8.9	43.5	49.1
Overall (SA) - Mixed locations	Below 18	45.5	54.5	81.8	18.2
	18 – 25 Years	65.5	52.0	89.2	6.8
	26 – 35 Years	60.2	48.5	83.4	9.0
	36 - 45 Years	60.0	47.2	88.3	7.2
	46 – 60 Years	63.4	52.0	82.2	5.0
	60 Years & above	63.2	49.5	83.2	10.5

While analysing the awareness levels about PM 2.5, PM 10 and AQI, it was observed that PhD holders stated highest awareness followed by Post graduates and Graduates. Awareness about AQI was slightly more than 80 percent among the PhD holders (SA: 90.5 percent) while it was 65.5 percent (SA: 87.4 percent) among the post graduate respondents and 57.8 percent among graduates (SA: 83.3 percent). The same trend was observed in case of awareness about PM 10 and PM 2.5. None of the respondents whose education was below primary level stated awareness about PM 10 although 19.0 percent and 38.1 percent had heard about PM 2.5 and AQI respectively.

Table 3.8: *Distribution of the respondents by their awareness about PM 2.5., PM 10 & Air Quality Index (Education wise)*

	Education wise	Percentage of respondents stating awareness about			
		PM 2.5	PM 10	AQI	None
Overall – 17 Locations	Below Primary School	19.0	0.0	38.1	61.9
	Primary (Completed	9.4	6.3	15.6	78.1
	Middle (8 pass)	14.0	9.1	41.4	51.2
	Secondary (10 pass)	14.6	7.9	44.3	40.6
	Higher Secondary (12 pass)	19.0	9.5	45.3	38.5
	College level (Grad.)	30.5	18.3	57.8	27.4
	Post Graduate	51.1	31.1	65.5	18.6
	PhD	68.4	52.6	80.3	6.6
	Dip./ITI	13.2	9.4	51.9	39.6
	Others	12.7	14.3	52.4	28.6
Overall (SA) - Mixed locations	Below Primary School	0.0	0.0	100.0	0.0
	Primary (Completed	0.0	0.0	0.0	0.0
	Middle (8 pass)	0.0	0.0	0.0	100.0
	Secondary (10 pass)	42.9	35.7	85.7	14.3
	Higher Secondary (12 pass)	55.1	42.9	69.4	16.3
	College level (Grad.)	58.8	44.8	83.3	8.5
	Post Graduate	65.5	54.8	87.4	6.9
	PhD	76.2	69.8	90.5	0.0
	Dip./ITI	46.7	23.3	80.0	13.3
	Others	64.6	54.2	87.5	8.3

The table below depicts awareness about PM 2.5, PM 10 and AQI by employment status of the respondents. Awareness about PM 2.5 was highest among the respondents who were government employees (50.4 percent, SA: 67.2 percent) followed by those employed with the private sector (38.1 percent, SA: 57.8 percent). Awareness was low among students (19.6 percent), unemployed (20.9 percent) and homemakers (21.9 percent). Similar trend was observed in the case of awareness about PM 10 also. However more than 50.0 percent students, homemakers and unemployed respondents stated hearing about AQI. More than 80.0 percent respondents of all categories from the support agencies stated awareness about AQI.

Table 3.9: *Distribution of the respondents by their awareness about PM 2.5., PM 10 & Air Quality Index (Employment status)*

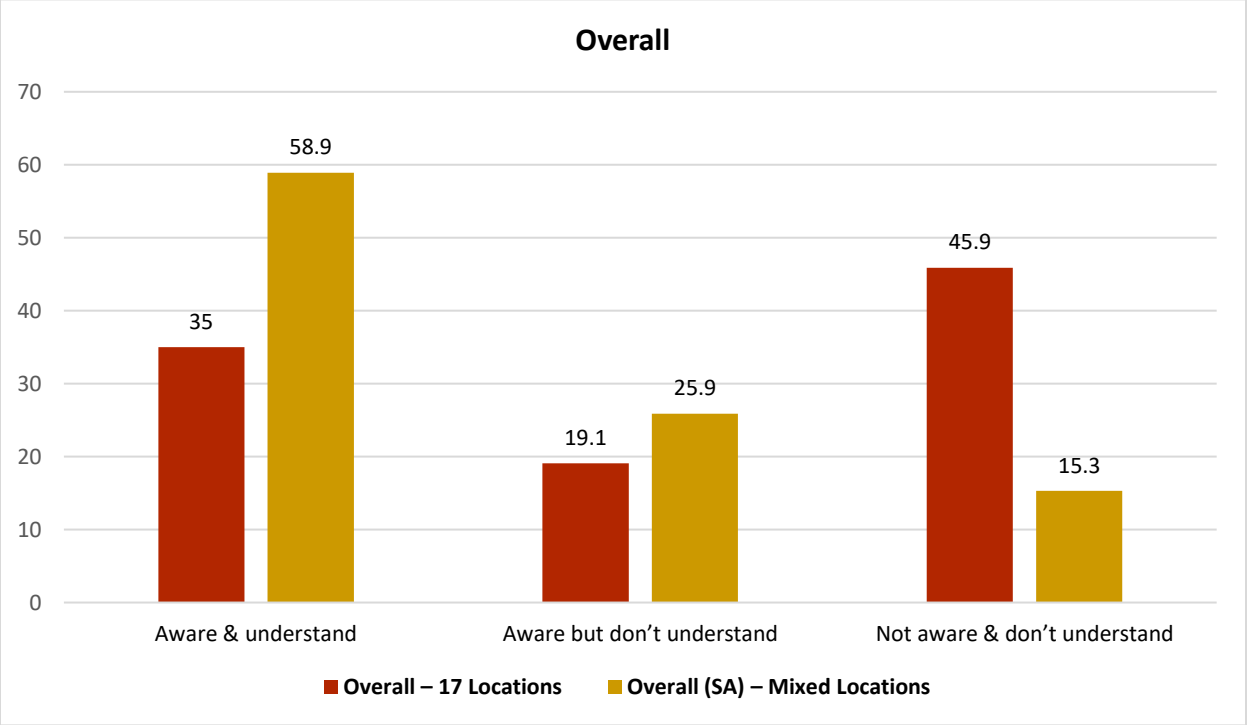
	Education wise	Percentage of respondents stating awareness about			
		PM 2.5	PM 10	AQI	None
Overall – 17 Locations	Self-employed	29.5	17.0	44.6	35.4
	Employed-Government	50.4	31.2	62.6	17.6
	Employed- Private sector	38.1	23.5	60.0	24.6
	Employed- Health sector	32.9	19.1	52.7	30.4
	Employed- Non-Government sector	34.0	21.3	54.8	31.5
	Retired	24.6	13.5	54.8	37.3
	Student	19.6	13.5	53.6	35.3
	Unemployed	20.9	12.8	59.3	29.1
	Homemaker	21.9	9.5	52.8	37.8
	Others	33.3	3.9	17.6	52.9
Overall (SA) - Mixed locations	Self-employed	65.2	54.5	86.4	7.1
	Employed-Government	67.2	56.9	81.0	5.2
	Employed- Private sector	57.8	45.5	84.3	8.0
	Employed- Health sector	77.8	66.7	77.8	11.1

	Employed- Non-Government sector	74.0	50.0	84.0	10.0
	Retired	61.3	49.2	83.9	9.7
	Student	67.0	54.7	85.8	7.5
	Unemployed	51.3	43.6	92.3	7.7
	Homemaker	31.6	21.1	78.9	15.8
	Others	68.8	56.3	85.4	6.3

3.5 Understanding the Relevance of Air Quality Index

The respondents were asked whether they are aware and understand the relevance of AQI. Those who stated that they are aware and understand the relevance of the Air quality index constituted 35.0 percent (SA: 58.9 percent) of the total sample. Another 19.1 percent survey respondents (SA: 25.9 percent) reported being aware of AQI, however did not understand its relevance. The remaining 45.9 percent respondents (SA: 15.3 percent) stated that they were neither aware nor understood the relevance of AQI.

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



Awareness about AQI and understanding its relevance was highest in the Delhi & NCR region (63.0 percent). Maximum respondents who were ignorant about the AQI and also did not understand its relevance was highest in Raipur (83.3 percent) followed by Korba (64.0 percent), Dhanbad (63.7 percent), Singrauli (60.3 percent), Angul (51.7 percent), Chandrapur (51.0 percent) and Lucknow (51.0 percent).

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

Only marginal differences were observed with regard to awareness about AQI among men and women. Around 35.8 percent men (SA: 58.0 percent) and 34.0 percent women (SA: 61.0 percent) stated that they are aware of AQI and also understand its relevance.

Table 3.11: *Extent of knowledge among the respondents about AQI (Gender wise)*

	Gender	Percentage of respondents stating		
		Aware & understand	**Aware but don't understand**	**Not aware & don't understand**
Overall – 17 Locations	Men	35.8	17.2	47.1
	Women	34.0	21.6	44.5
Overall (SA) – Mixed Locations	Men	58.0	26.1	15.9
	Women	61.0	25.2	13.8
	Trans.	75.0	25.0	0.0

While analysing the scores by age groups, not much difference was observed. Awareness about AQI and its relevance was maximum in the 18-25 years age group (38.5 percent, SA: 65.5 percent) followed by the 46-60 years age group (37.9 percent, SA: 54.0 percent). Maximum respondents who were neither aware of AQI nor understood its relevance was found among the age groups of above 60 years (56.5 percent). In the case of respondents over 60 years from the support agencies, only 16.8 percent stated that they were not aware of AQI nor understood its relevance.

Table 3.12: *Extent of knowledge among the respondents about AQI (Age group)*

	Age group	Percentage of respondents stating		
		Aware & understand	**Aware and don't understand**	**Not aware & don't understand**
Overall – 17 Locations	Below 18	35.1	14.3	50.6
	18 – 25 Years	38.5	21.7	39.8
	26 – 35 Years	33.4	21.8	44.8
	36 - 45 Years	32.8	21.4	45.7
	46 – 60 Years	37.9	16.9	45.2
	60 Years & above	32.7	10.7	56.5

Overall (SA) – Mixed Locations	Below 18	45.5	36.4	18.2
	18 – 25 Years	65.5	23.6	10.8
	26 – 35 Years	55.5	27.9	16.6
	36 - 45 Years	60.0	28.3	11.7
	46 – 60 Years	54.0	28.2	17.8
	60 Years & above	64.7	18.4	16.8

The table below depicts the respondents' awareness of AQI by their employment status. Awareness about AQI and its relevance was highest among government employees (44.8 percent, SA: 58.6 percent) followed by retired persons (43.7 percent, SA: 58.9 percent). Maximum respondents who stated not being aware nor understand the relevance of AQI were the self employed (55.4 percent, SA: 13.6 percent).

Table 3.13: *Extent of knowledge among the respondents about AQI by employment status*

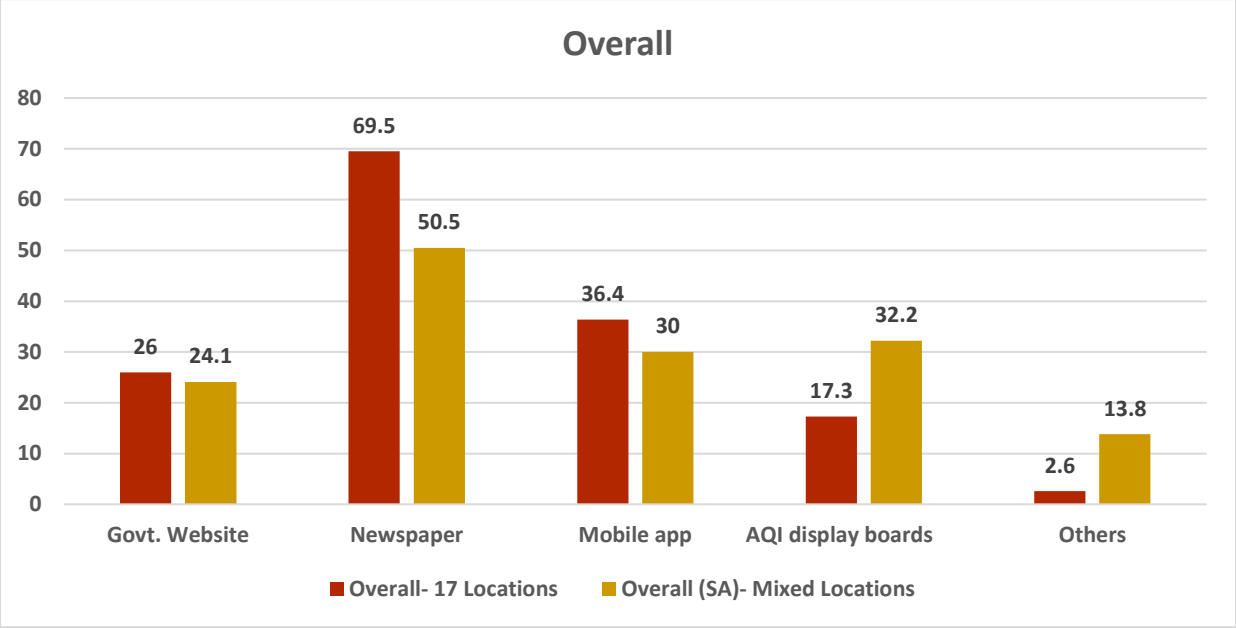
		Percentage of respondents stating		
	Employment status	**Aware & understand**	**Aware and don't understand**	**Not aware & don't understand**
Overall – 17 Locations	Self-employed	28.7	15.9	55.4
	Employed- Government	44.8	17.8	37.4
	Employed- Private sector	36.8	23.1	40.0
	Employed- Health sector	32.2	20.5	47.3
	Employed- Non-Government sector	38.6	16.2	45.2
	Retired	43.7	11.1	45.2
	Student	36.5	17.0	46.4
	Unemployed	37.2	22.1	40.7
	Homemaker	29.3	23.6	47.2
	Others	9.8	7.8	82.4
	Self-employed	61.6	24.7	13.6

Overall (SA) – Mixed Locations	Employed- Government	58.6	22.4	19.0
	Employed- Private sector	55.9	28.4	15.7
	Employed- Health sector	66.7	11.1	22.2
	Employed- Non-Government sector	56.0	28.0	16.0
	Retired	58.9	25.0	16.1
	Student	62.3	23.6	14.2
	Unemployed	59.0	33.3	7.7
	Homemaker	36.8	42.1	21.1
	Others	75.0	10.4	14.6

3.6 Source for Accurate Information on AQI

Those respondents who either said they are aware and understood the relevance of AQI and those who stated being aware of AQI but did not understand its relevance were further asked to state where they came across the most accurate information about AQI in their respective cities. Majority of the respondents (69.5 percent, SA: 50.5 percent)) stated that they secured the accurate information about air quality index from newspapers. Another 36.4 percent (SA: 30.0 percent) reported mobile apps as their information source followed by government websites (26.0 percent, SA: 24.1 percent) and AQI Display boards (17.3 percent, SA: 32.2 percent).

Figure 3.8: *Respondent's opinion about availability of accurate information on AQI (Overall)*



Location-wise figures indicate that greater number of respondents from Pune (42.3 percent), Mumbai (36.5 percent) and Delhi/NCR (32.5 percent) relied on AQI display boards to seek information on the AQI. Likewise, mobile apps were used by maximum respondents from the cities of Calcutta (60.0 percent), Varanasi (54.9 percent), Patna (53.1 percent), Nagpur (47.6 percent) and Chandrapur (42.2 percent) to gather accurate information about AQI. Maximum respondents who relied on government websites for seeking information about AQI were from Lucknow (53.7 percent), Raipur (44.0 percent) and Patna (41.5 percent).

Table 3.14: *Respondent's opinion about availability of accurate information on AQI (Location wise)*

Multiple responses

Location	Percentage of respondents stating:				
	Govt. Website	Newspaper	Mobile app	AQI display boards	Others
Amritsar	10.3	74.5	39.1	6.5	2.2
Angul	2.1	96.6	11.7	2.8	0.0
Bangalore	25.8	59.5	35.6	20.9	4.9
Chandrapur	26.5	65.3	42.2	19.0	0.7
Chennai	17.3	69.0	33.0	10.7	10.7

Delhi & NCR	29.3	60.6	31.7	32.5	4.9
Dhanbad	17.4	74.3	27.5	6.4	0.0
Calcutta	28.8	91.3	60.0	12.5	0.6
Korba	2.8	98.6	15.3	4.2	0.0
Lucknow	53.7	64.6	17.0	15.6	0.0
Mumbai	25.8	47.8	28.3	36.5	7.5
Nagpur	26.7	70.1	47.6	25.1	3.2
Patna	41.5	62.1	53.1	9.8	0.0
Pune	28.2	59.1	32.7	42.3	2.3
Raipur	44.0	82.0	40.0	18.0	0.0
Singrauli	51.3	59.7	24.4	2.5	0.8
Varanasi	11.4	82.3	54.9	2.9	0.0

Not much difference was observed among men and women with regard to finding accurate information about AQI. Newspapers were the information source for 68.3 percent men (SA: 49.3 percent) and 70.9 percent women (SA: 53.2 percent). Around 29.1 percent men (SA: 23.4 percent) and 22.3 percent women (SA: 25.6 percent) stated relying on government websites to get information about AQI. Mobile apps were used by 34.8 percent men (SA: 30.0 percent) and 38.4 percent women (SA: 30.0 percent). Only 17.0 percent men and women stated seeking information about AQI from AQI display boards while in case of support agencies, 32.9 percent men and 30.0 percent women said they relied on AQI display boards.

Table 3.15: *Respondent's opinion about availability of accurate information on AQI (Gender wise)*

Sl. No	Location	Percentage of respondents stating:				
		Govt. Website	Newspaper	Mobile app	AQI display boards	Others
Overall-17 Locations	Men	29.1	68.3	34.8	17.4	3.4
	Women	22.3	70.9	38.4	17.2	1.7
Overall (SA) - Mixed Locations	Men	23.4	49.3	30.0	32.9	14.3
	Women	25.6	53.2	30.0	30.0	12.8
	Trans.	50.0	75.0	25.0	50.0	0.0

Among all the age groups, newspapers are the main source from which the respondents gathered information about AQI. Majority of the respondents in the above 60 years age group (86.0 percent, SA: 62.0 percent) read newspapers to seek accurate information about AQI followed by 46-60 years age group and below 18 years age group (74.0 percent each, SA: 46-60 yrs: 57.2 percent, Below 18 yrs: 44.4 percent). Likewise, government websites were accessed by maximum respondents in the age group of 46-60 years (31.7 percent, SA: 23.5 percent). Only 21.6 percent respondents (SA: 11.1 percent) who were below the age of 18 years and 19.4 percent senior citizens (SA: 27.2 percent) reported checking government websites to get information about the AQI. Mobile applications to check AQI was used by maximum respondents in the age group of 18 to 25 years old (39.6 percent, SA: 39.4 percent) followed by below 18 years (37.5 percent, SA: 39.4 percent). Only 11.8 percent senior citizens (SA: 25.9 percent) cited making use of AQI display boards to find information about AQI.

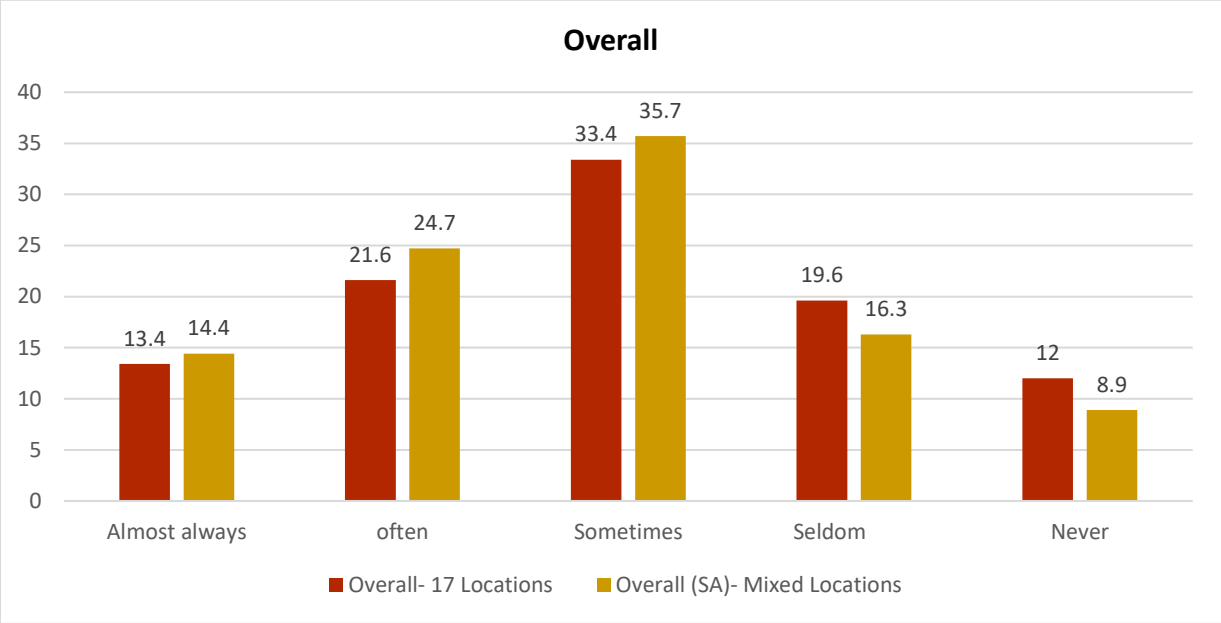
Table 3.16: *Respondent's opinion about availability of accurate information on AQI (Age group)*

	Age group	Percentage of respondents stating:				
		Govt. Website	Newspaper	Mobile App	AQI display boards	Others.
Overall -17 Locations	Below 18	21.6	73.6	37.5	16.2	0.9
	18 – 25 Years	24.0	62.5	39.6	17.7	3.6
	26 – 35 Years	27.2	67.3	40.6	18.0	3.3
	36 - 45 Years	29.5	70.3	33.6	16.9	2.0
	46 – 60 Years	31.7	73.7	25.2	19.8	4.6
	60 Years & above	19.4	86.0	25.8	11.8	0.0
Overall (SA)- Mixed Locations	Below 18	11.1	44.4	55.6	44.4	0.0
	18 – 25 Years	23.5	47.0	39.4	34.8	4.5
	26 – 35 Years	22.6	42.5	36.6	29.3	15.3
	36 - 45 Years	25.8	49.7	27.7	38.4	12.6
	46 – 60 Years	23.5	57.2	18.1	34.3	15.1
	60 Years & above	27.2	62.0	23.4	25.9	19.6

3.7 Frequency in Accessing Information about Air Pollution

An attempt was made to understand how frequently the respondents seek information about air pollution in their cities. The options given were “Almost always”, “Often”, “Sometimes”,” Seldom” and “Never”. Interestingly only 12.0 percent (SA: 8.9 percent) of the total sample respondents stated that they **never** made any attempt to seek information about the air quality in their cities. Around 19.6 percent respondents (SA: 16.3 percent) stated that they “**seldom”** seek information. Among the remaining 79.0 percent respondents, 13.4 percent respondents (SA: 14.4 percent) reported seeking information “**almost always”**, 21.6 percent respondents (SA: 24.7 percent) seek “**often”** while another 33.4 percent respondents (SA: 35.7 percent) seek information about air pollution “**sometimes”.**

Figure 3.9: *Distribution by frequency in accessing information about air pollution (Overall)*



Location-wise figures indicate that maximum respondents from Patna (32.7 percent), Raipur (26.0 percent), Calcutta (23.3 percent) and Singrauli (22.3 percent) stated seeking information about air quality almost always. Maximum respondents who seek information about air pollution often were from the cities of Kolkata (40.0 percent), Raipur (39.3 percent) and Amritsar (32.7 percent). Likewise, more than 20 percent respondents from Delhi/NCR, Chandrapur, Dhanbad, Nagpur, Patna, Pune and Varanasi stated they often seek information about air pollution. Surprisingly 36.7 percent respondents from Bangalore stated never seeking information about air quality.

Table 3.17: *Distribution by frequency in accessing information about air pollution (Location wise)*

Location	Percentage of respondents stating:				
	Almost always	Often	Sometimes	Seldom	Never
Amritsar	13.3	32.7	37.3	7.7	9.0
Angul	6.3	15.0	16.7	55.3	6.7
Bangalore	4.0	12.0	31.3	16.0	36.7
Chandrapur	13.7	29.3	29.7	13.3	14.0
Chennai	10.0	16.0	35.0	31.3	7.7
Delhi & NCR	14.7	24.3	45.0	9.0	7.0
Dhanbad	7.3	24.0	35.3	24.7	8.7
Calcutta	23.3	40.0	30.3	3.0	3.3
Korba	4.0	1.0	3.0	82.0	10.0
Lucknow	10.3	11.0	47.7	21.0	10.0
Mumbai	7.0	15.0	40.7	18.7	18.7
Nagpur	13.3	24.0	42.7	9.3	10.7
Patna	32.7	26.7	24.3	5.7	10.7
Pune	7.0	23.0	46.0	13.3	10.7
Raipur	26.0	39.3	23.7	1.3	9.7
Singrauli	22.3	6.0	52.7	10.3	8.7
Varanasi	8.7	20.7	17.0	32.0	21.7

Similar trend was observed in case of both genders with no much variations between men and women. Around 11.8 percent men (SA: 14.9 percent) and 15.4 percent women (SA: 13.4 percent) stated actively seeking information about air pollution almost always. Those who reported never trying to seek information about air quality constituted 9.6 percent men (SA: 8.0 percent) and 15.0 percent women (SA: 9.0 percent).

Table 3.18: *Distribution by Frequency in accessing information about air pollution (Gender wise)*

Sl. No	Location	Percentage of respondents stating:				
		Almost always	**often**	**Sometimes**	**Seldom**	**Never**
Overall – 17 Locations	Men	11.8	22.6	33.3	22.7	9.6
	Women	15.4	20.3	33.6	15.6	15.0
Overall (SA) – Mixed Locations	Men	14.9	25.4	35.2	15.7	8.8
	Women	13.4	22.8	36.9	17.9	9.0
	Trans.	0.0	25.0	50.0	0.0	25.0

Age group-wise figures reveal that the percentage of respondents who seek information “always” were maximum among the 18-25 years age group (15.6 percent, SA: 16.9 percent) followed by the 36-45 years age group (14.9 percent, SA: 14.4 percent). Maximum number of respondents who stated never seeking information about air pollution were the senior citizens (21.0 percent, SA: 11.1 percent).

Table 3.19: *Distribution by frequency in accessing information about air pollution (Age group)*

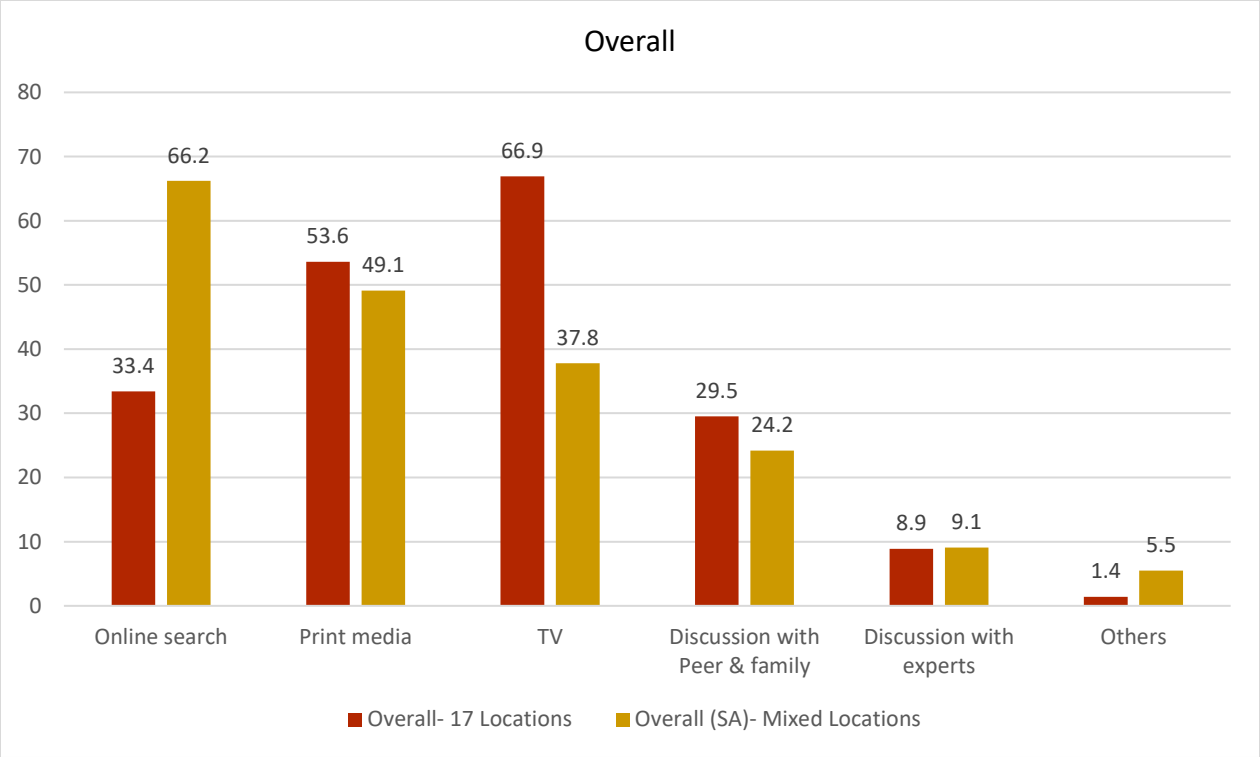
Sl. No	**Location**	**Percentage of respondents stating:**				
		Almost always	**often**	**Sometimes**	**Seldom**	**Never**
Overall- 17 Locations	Below 18	13.0	21.6	33.5	19.5	12.4
	18 – 25 Years	15.6	19.4	35.6	15.6	13.8
	26 – 35 Years	12.6	22.6	34.1	18.6	12.0
	36 - 45 Years	14.9	23.9	30.5	21.3	9.4
	46 – 60 Years	10.3	22.0	33.1	25.7	9.0
	60 Years & above	10.7	12.6	33.6	22.0	21.0
Overall (SA)- Mixed Locations	Below 18	9.1	9.1	54.5	18.2	9.1
	18 – 25 Years	16.9	23.6	40.5	12.8	6.1
	26 – 35 Years	10.5	22.1	40.1	18.9	8.4
	36 - 45 Years	14.4	22.2	37.2	17.2	8.9

	46 – 60 Years	15.3	29.2	30.2	15.3	9.9
	60 Years & above	18.9	28.4	27.4	14.2	11.1

3.8 Source of Seeking Information on Air Pollution

The respondents were asked to state the source (multiple) from where they seek information about air pollution in their cities. Majority of the sample respondents (66.9 percent, SA: 37.8 percent) stated television as the main source from where they got information about air pollution followed by print media (53.6 percent, SA: 49.1 percent). Around 33.4 percent (SA: 66.2 percent) reported collecting information about air quality online while another 29.5 percent (SA: 24.2 percent) stated they exchanged information about air pollution with their friends and family. Only 8.9 percent (SA: 9.1 percent) respondents stated that discussion with experts as a source of seeking information about pollution.

Figure 3.10: *Distribution of the respondents by source of seeking information on air pollution (Overall)*



Location-wise figures reveal that more than 80.0 percent respondents from the cities of Angul, Calcutta, Korba, Patna and Raipur depended on televisions for seeking information about air pollution. Maximum respondents who reported seeking information about pollution online were from Pune (58.2 percent), Delhi/NCR (55.9 percent), Bangalore (52.6 percent) and Mumbai (47.5 percent). Majority of the respondents from Korba (86.1 percent), Angul (82.1 percent), Patna and Raipur (80.0 percent each),

Lucknow (67.4 percent) and Kolkata (55.9 percent) relied on print media to seek information about air pollution. Around 66.0 percent respondents from Patna, Nagpur (43.3 percent) and from Chandrapur (41.9 percent) stated collecting information about air pollution from friends and family.

Table 3.20: *Distribution of the respondents by source of seeking information on air pollution (Location wise)*

Location	Source of information (% of respondents)					
	Online search	Print media	TV	Discussion with Peer & family	Discussion with experts	Others
Amritsar	36.6	50.9	65.2	29.3	5.1	1.8
Angul	6.4	82.1	92.1	9.3	3.9	0.0
Bangalore	52.6	39.5	48.9	21.6	4.2	3.2
Chandrapur	18.2	32.9	57.4	41.9	17.4	0.4
Chennai	51.3	27.8	67.1	16.2	2.2	2.5
Delhi & NCR	55.9	48.0	54.8	31.5	4.3	1.1
Dhanbad	15.7	42.3	60.6	26.6	12.8	0.4
Calcutta	36.9	55.9	81.7	28.6	3.1	0.0
Korba	11.7	86.1	97.2	36.7	1.1	3.3
Lucknow	27.8	67.4	62.2	17.8	1.1	1.5
Mumbai	47.5	43.9	44.3	20.9	4.1	2.9
Nagpur	24.6	47.0	57.5	43.3	22.0	2.2
Patna	36.9	79.5	86.9	66.0	26.5	0.0
Pune	58.2	49.6	50.7	37.7	9.0	4.5
Raipur	25.8	79.7	88.6	35.4	15.9	0.0
Singrauli	36.9	39.8	58.4	22.6	3.3	0.4
Varanasi	21.7	43.0	63.0	15.7	12.8	0.9

In the overall figures, not much variation was observed with regard to sourcing information about air pollution among men and women, although location-wise variations are observed. As compared to men

(25.1 percent, SA: 21.3 percent), a greater number of women (35.4 percent, SA: 32.2 percent) reported discussing the issue of air pollution with peers/family. Men respondents (56.8 percent, SA: 50.8 percent) relied more on print media as compared to women (49.5 percent, SA: 44.7 percent) to seek information on air pollution.

Table 3.21: *Distribution of the respondents by source of seeking information on air pollution (Gender wise)*

	Gender	Source of information (% of respondents)					
		Online search	Print media	TV	Discussion with Peer & family	Discussion with experts	Others
Overall-17 Locations	Men	33.2	56.8	67.3	25.1	9.7	1.3
	Women	33.6	49.5	66.2	35.4	7.7	1.5
Overall (SA)-Mixed Locations	Men	63.1	50.8	39.3	21.3	9.7	6.0
	Women	75.0	44.7	33.7	32.2	7.2	3.8
	Trans.	33.3	33.3	33.3	0.0	33.3	33.3

The age group wise figures indicate that television is the main source of information for the respondents in all the age groups. However, it is the senior citizens (73.4 percent, SA: 46.7 percent) who depended on television the most to gather information on air quality. Maximum respondents in the age group of 18-25 years (39.0 percent, SA: 79.9 percent) resorted to seeking information online followed by respondents below 18 years (35.7 percent, SA: 80.0 percent) and 26-35 years age groups (35.3 percent, SA: 76.5 percent). Only 11.2 percent (SA: 43.8 percent) of the respondents above the age of 60 years reported seeking information about air pollution online.

Table 3.22: *Distribution of the respondents by source of seeking information on air pollution (Age-group)*

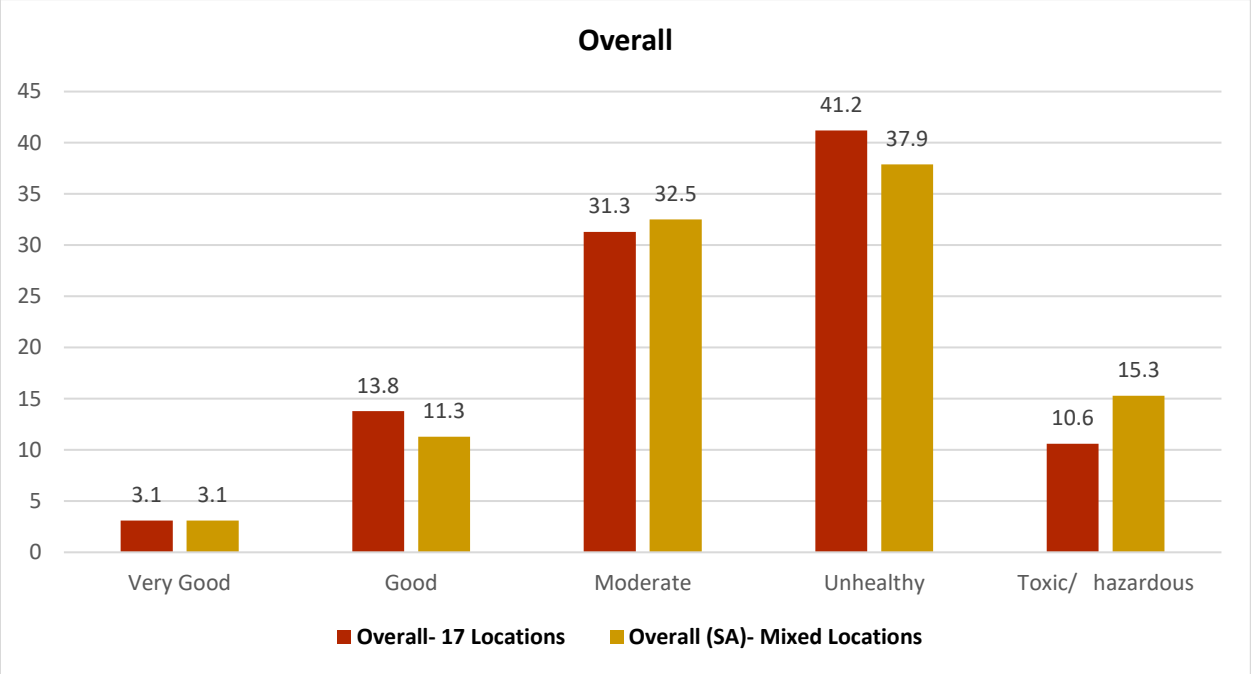
	Age group	Source of Information (% of respondents)					
		Online search	Print media	TV	Discussion with Peer & family	Discussion with experts	Others
Overall-17 Locations	Below 18	35.7	48.7	68.3	32.8	9.2	0.9
	18 – 25 Years	39.0	40.1	60.2	27.1	10.0	1.7
	26 – 35 Years	35.3	54.7	67.4	30.0	9.1	1.6
	36 - 45 Years	30.7	62.1	68.1	28.5	9.1	1.6

	46 – 60 Years	26.9	64.1	68.7	26.4	6.9	0.9
	60 Years & above	11.2	65.7	73.4	31.4	4.7	1.2
Overall (SA) - Mixed Locations	Below 18	80.0	50.0	20.0	50.0	10.0	0.0
	18 – 25 Years	79.9	41.0	35.3	30.2	6.5	1.4
	26 – 35 Years	76.5	39.0	34.3	23.2	9.5	6.0
	36 - 45 Years	67.1	48.8	39.0	26.8	9.1	7.3
	46 – 60 Years	57.1	57.7	37.4	22.5	6.6	4.4
	60 Years & above	43.8	65.7	46.7	18.9	13.0	7.7

3.9 Rating of Air Quality

The respondents were asked to rate the air quality in their respective cities against five parameters viz. Very good, Good, Moderate, Unhealthy and Toxic or hazardous. The overall figures reveal that only 3.0 percent respondents in the total sample stated that the air quality in their cities was very good. Respondents who felt that air quality is very good from the support agencies was also 3.0 percent. Those who stated that the air quality was good formed 13.8 percent (SA: 11.3) of the sample. Around 10.6 percent (SA: 15.3 percent) of the respondents believed that the air quality was toxic/hazardous while 41.2 percent respondents (SA: 37.9 percent) stated that the air quality in their cities was unhealthy. Around 31.3 percent respondents (SA: 32.5 percent) felt that the air quality was moderate in their respective cities.

Figure 3.11: *Rating of the overall air quality by the respondents (Overall)*



Location-wise figures indicated that it was maximum respondents of Patna (42.0 percent) who stated that the air quality in their city was toxic followed by Delhi (24.7 percent) and Varanasi (24.0 percent). More than 50.0 percent respondents from the cities of Amritsar, Angul, Delhi/NCR, Calcutta, Korba, Lucknow and Singrauli believed that the air quality in their respective cities is unhealthy. Only 1.0 percent or less than 1.0 percent respondents from Bangalore, Chennai, Delhi/NCR, Kolkata, Chennai, Mumbai and Pune rated the air quality in their cities as very good.

Table 3.23: *Rating of the overall air quality by the respondents (Location wise)*

Location	Percentage of respondents stating:				
	Very Good	Good	Moderate	Unhealthy	Toxic/ hazardous
Amritsar	2.0	8.7	23.7	50.0	15.7
Angul	0.0	1.3	2.0	85.0	11.7
Bangalore	0.7	11.7	36.0	37.3	14.3
Chandrapur	7.0	26.7	28.0	26.0	12.3
Chennai	0.7	7.7	59.0	29.7	3.0
Delhi & NCR	1.0	8.3	16.0	50.0	24.7
Dhanbad	12.7	17.0	38.0	29.0	3.3

Calcutta	0.7	7.0	37.7	51.7	3.0
Korba	6.5	3.5	28.0	62.0	0.0
Lucknow	0.7	0.3	33.3	64.3	1.3
Mumbai	0.3	14.3	44.0	38.3	3.0
Nagpur	4.0	39.0	37.0	14.3	5.7
Patna	1.3	6.7	8.7	41.3	42.0
Pune	0.7	19.3	53.7	24.0	2.3
Raipur	6.0	29.0	41.0	19.7	4.3
Singrauli	3.7	10.3	25.3	55.0	5.7
Varanasi	6.7	20.0	20.3	29.0	24.0

Gender-wise distribution revealed that 9.8 percent men (SA: 12.8 percent) and 11.5 percent women (SA: 22.4 percent) were of the view that the air quality in their cities is toxic. Another 39.7 percent men (SA: 37.9 percent) and 43.1 percent women (SA: 37.9 percent) rated the air quality as unhealthy. Only 4.3 percent men (SA: 2.9 percent) and 1.7 percent women (SA: 3.4 percent) believed the air quality to be very good.

Table 3.24: *Rating of the overall air quality by the respondents (Gender wise)*

	Gender	Rating of air quality (Percentage of respondents stating)				
		Very Good	Good	Moderate	Unhealthy	Toxic/ hazardous
Overall – 17 Locations	Men	4.3	16.0	30.2	39.7	9.8
	Women	1.7	11.0	32.8	43.1	11.5
Overall (SA)- Mixed Locations	Men	2.9	12.0	34.3	37.9	12.8
	Women	3.4	8.6	27.6	37.9	22.4
	Trans.	0.0	50.0	25.0	25.0	0.0

While analysing the figures by age groups, it was noticed that maximum respondents who rated the air quality as “very good” were in the age group of 18 to 25 years old (5.0 percent) against the overall

percentage of only 3.0 percent. Likewise, maximum respondents (20.9 percent, SA: 9.1 percent) who believed the air quality is good belonged to the age group of below 18 years. There was no much variation among the respondents who rated the air quality as moderate. Highest percentage of respondents who stated that the air quality is toxic & hazardous was in the age group of above 60 years old (15.9 percent, SA: 10.0 percent) while only 9.9 percent (SA: 17.6 percent) and 8.4 percent (SA: 27.3 percent) of the respondents in the age groups of 18-25 years and below 18 years respectively were of the view that the quality of air in their cities is toxic. Maximum respondents (47.5 percent, SA: 40.1 percent) who rated the air quality as unhealthy belonged to the age group of 46-60 years.

Table-3.25: *Rating of the overall air quality by the respondents (Age group)*

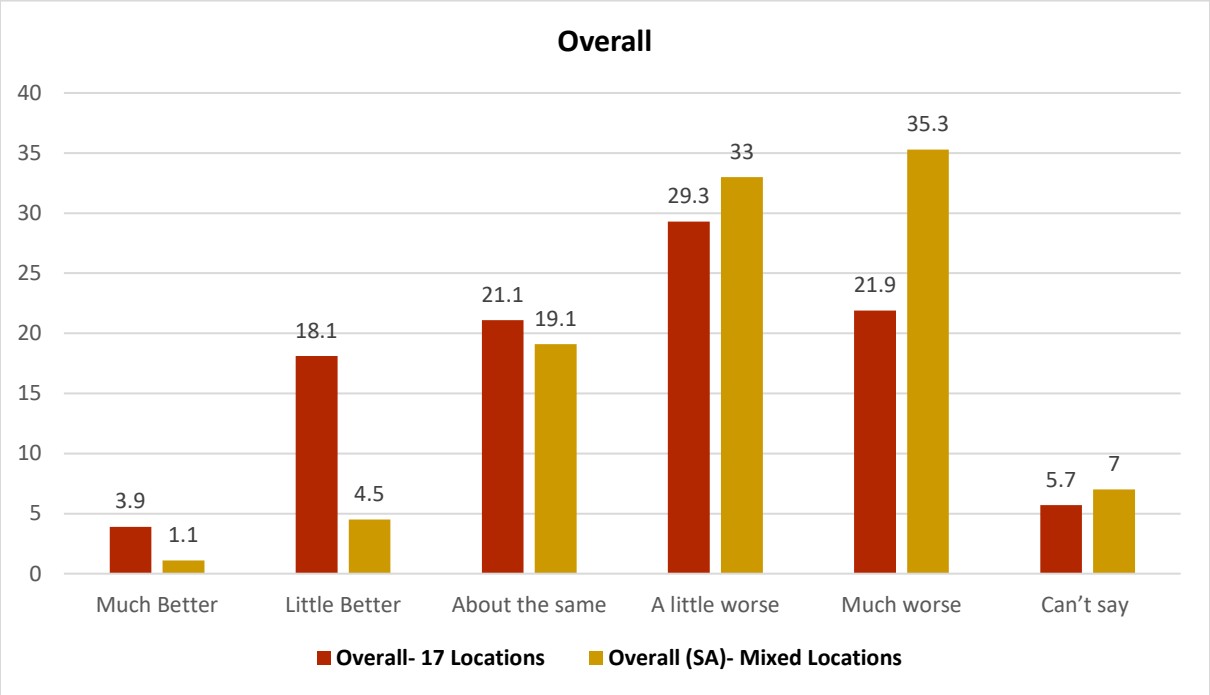
	Age group	Percentage of respondents stating:				
		Very Good	Good	Moderate	Unhealthy	Toxic/ hazardous
Overall – 17 Locations	Below 18	3.9	20.9	30.2	36.6	8.4
	18 – 25 Years	5.0	15.4	34.3	35.4	9.9
	26 – 35 Years	1.9	12.1	31.3	44.2	10.5
	36 - 45 Years	3.4	11.1	28.7	43.9	12.9
	46 – 60 Years	1.7	7.3	33.3	47.5	10.3
	60 Years & above	1.4	7.9	32.7	42.1	15.9
Overall (SA)- Mixed Locations	Below 18	0.0	9.1	45.5	18.2	27.3
	18 – 25 Years	0.0	13.5	37.8	31.1	17.6
	26 – 35 Years	1.5	8.7	33.4	39.5	16.9
	36 - 45 Years	1.7	6.7	30.6	43.3	17.8
	46 – 60 Years	5.9	11.4	29.2	40.1	13.4
	60 Years & above	6.8	18.4	31.1	33.7	10.0

3.10 Perception about Change in Air Quality during Last 2-3 Years

The respondents were asked how they have perceived the changes in air quality in their cities during the last three years. The options were categorised as “much better”, “little better”, “about the same”, “a little worse”, “much worse” and lastly “can’t say”. Only 3.9 percent (SA: 1.1 percent) of the total survey respondents said it is much better than before while another 18.1 percent (SA: 4.5 percent) stated it is a

little better. Around 21.1 percent (SA: 19.1 percent) were of the opinion that the air quality has remained the same in the last 2-3 years. The remaining 51.0 percent felt that the air quality has worsened in the last 2-3 years with 29.0 percent (SA: 33.0 percent) labelling it as "little worse" and 21.9 percent (SA: 35.3 percent) as "much worse".

Figure 3.12: *Distribution of the respondents on their perception about change in air quality during last 2-3 years (Overall)*



The location-wise figures indicate that more that 40.0 percent respondents from the cities of Angul, Delhi/NCR, Lucknow and Patna believed that the air quality had become much worse in the last 2-3 years. Maximum respondents from the cities of Chennai (42.7 percent), Raipur (42.3 percent), Mumbai (39.0 percent) Korba (39.0 percent), Pune (38.3 percent) opined that the air quality in their respective cities has become a little worse as compared to the last 2-3 years.

Table 3.26: *Distribution of the respondents on their perception about change in air quality during last 2-3 years (Location wise)*

Location	Percentage of respondents stating:					
	Much Better	Little Better	About the same	A little worse	Much worse	Can't say
Amritsar	2.0	7.7	16.3	31.7	35.3	7.0
Angul	1.0	2.7	1.3	35.0	60.0	0.0
Bangalore	1.7	6.0	19.7	26.0	36.0	10.7

Chandrapur	5.7	33.0	31.7	16.3	9.0	4.3
Chennai	3.7	8.0	26.3	42.7	15.0	4.3
Delhi & NCR	0.7	8.7	14.7	27.3	40.0	8.7
Dhanbad	10.7	43.7	21.7	17.0	6.0	1.0
Calcutta	1.0	22.7	50.3	15.7	8.0	2.3
Korba	10.0	47.0	3.5	39.0	0.0	0.5
Lucknow	2.0	10.0	12.0	27.3	43.7	5.0
Mumbai	2.3	9.3	24.7	39.0	14.0	10.7
Nagpur	5.3	28.0	31.7	23.7	7.0	4.3
Patna	0.3	2.0	20.0	29.3	47.3	1.0
Pune	2.3	17.7	17.3	38.3	11.0	13.3
Raipur	3.7	27.0	19.0	42.3	4.3	3.7
Singrauli	7.7	19.3	25.0	24.7	17.3	6.0
Varanasi	8.0	25.0	17.3	26.0	11.0	12.7

Gender-wise distribution showed only marginal variations in the perception of men and women with regard to air quality.

Table 3.27: *Distribution of the respondents on their perception about change in air quality during last 2-3 years (Gender wise)*

	Gender	Percentage of respondents stating:					
		Much Better	Little Better	About the same	A little worse	Much worse	Can't say
Overall – 17 Locations	Men	4.2	18.4	20.6	30.5	22.4	3.9
	Women	3.5	17.8	21.7	27.7	21.2	8.0
Overall (SA) – Mixed Locations	Men	0.9	5.0	18.3	36.1	32.5	7.2
	Women	1.7	3.1	21.0	24.8	42.8	6.6
	Trans.	0.0	0.0	25.0	25.0	50.0	0.0

Age group wise distribution of respondents indicated that maximum respondents who stated that the air quality is much worse was in the age group of 46-60 years (31.8 percent, SA: 31.2 percent) followed by the above 60 years age group (29.9 percent, SA: 27.9 percent). Only 16.1 percent (SA: 27.3 percent) and 16.5 percent (SA: 29.7 percent) respondents' in the age groups of below 18 years and 18-25 years age group felt that the air quality has worsened in the last 2-3 years. Maximum respondents in the above 60 years age group (33.2 percent, SA: 30.0 percent) felt that the air quality has become a little worse in the last 2-3 years.

Table 3.28: *Distribution of the respondents on their perception about change in air quality during last 2-3 years (Age-group)*

	Age group	Percentage of respondents stating:					
		Much Better	Little Better	About the same	A little worse	Much worse	Can't say
Overall – 17 Locations	Below 18	6.1	22.3	19.3	27.4	16.1	8.7
	18 – 25 Years	6.9	20.2	23.4	25.1	16.5	7.9
	26 – 35 Years	1.9	16.2	22.0	32.4	23.3	4.2
	36 - 45 Years	2.6	15.9	22.7	29.2	24.8	4.8
	46 – 60 Years	2.7	15.9	16.9	30.8	31.8	1.9
	60 Years & above	1.4	15.0	16.8	33.2	29.9	3.7
Overall (SA) – Mixed Locations	Below 18	9.1	0.0	18.2	36.4	27.3	9.1
	18 – 25 Years	0.7	4.7	16.9	36.5	29.7	11.5
	26 – 35 Years	1.5	3.8	13.7	34.6	39.0	7.6
	36 - 45 Years	0.6	3.3	18.9	26.7	46.1	4.4
	46 – 60 Years	0.5	4.0	23.3	36.1	31.2	5.0
	60 Years & above	1.6	7.4	26.3	30.0	27.9	6.8

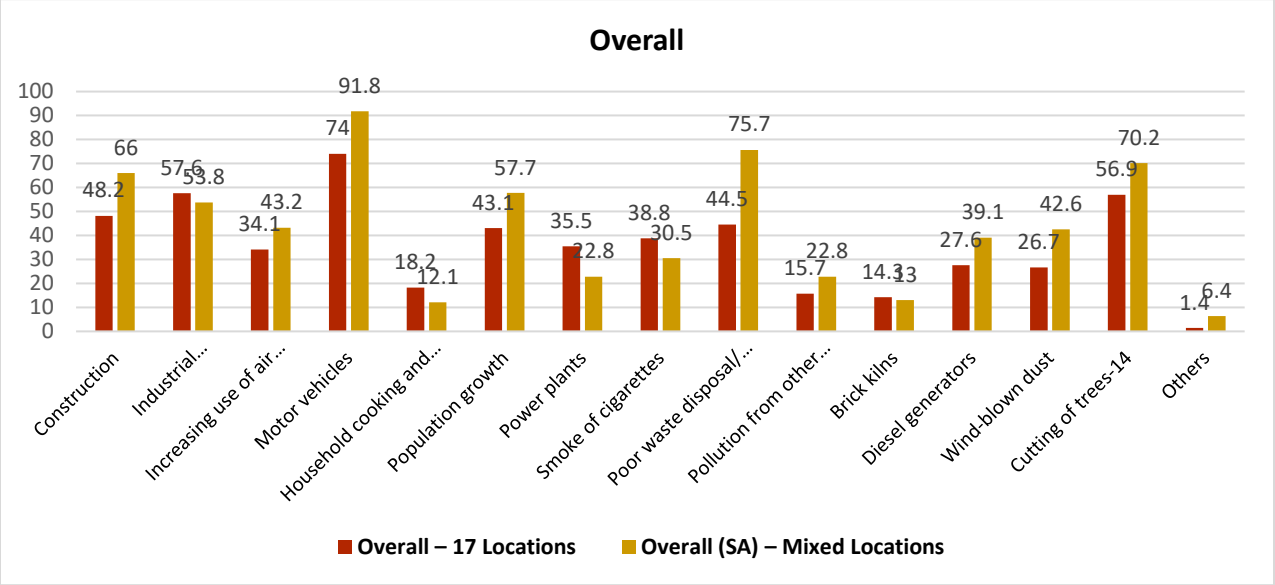
Section IV: Air Pollution: Causes, Effects & Precautions

This section focuses on attempting to understand whether the survey respondents are aware of the main causes of air pollution, whether they realise that pollution has a negative impact on human health, the extent to which air pollution is affecting them and the body parts that are most affected by pollution. Respondents were also probed on the precautionary measures if any taken by them when the air quality deteriorates in their cities.

4.1 Main Causes for Air Pollution

When asked about the main causes for air pollution in their cities, maximum number of respondents stated Motor vehicles (74.0 percent, SA: 91.8 percent) as the major cause followed by Industrial units (58.0 percent, SA: 53.8 percent), Cutting of trees (56.9 percent, SA: 70.2 percent) and Construction work (48.2 percent, SA: 66 percent) in the neighbourhood. About 44.5 percent (SA: 75.7 percent) respondents believed that poor waste disposal and burning of waste was a major reason for air pollution. Likewise increasing population was cited by 43.0 percent (SA: respondents: 57.7 percent). Smoke of cigarettes and Power plants contributing to poor air quality was endorsed by 38.8 percent (SA: 30.5 percent) and 36 percent (SA: 22.8 percent) of the sample respondents respectively. Increased use of air conditioners (34.1 percent, SA: 43.2 percent), diesel generators (27.6 percent, SA: 39.1 percent) and wind-blown dust (27.0 percent, SA: 42.6 percent) were also reasons suggested by the respondents. Only 15.7 percent (SA: 22.8 percent) and 14.3 percent (SA: 13.0 percent) respondents cited Pollution from other cities and brick kilns respectively as the possible reasons for pollution.

Figure 4.1: *Main causes for air pollution stated by the respondents (Overall)*



The location-wise figures reveal that more than 90.0 percent of the respondents from the cities of Lucknow, Patna and Pune were of the view that motor vehicles plying in their cities was a major factor contributing to poor air quality. Likewise, more than 80.0 percent respondents from Delhi/NCR, Bangalore, Mumbai and Raipur also felt that motor vehicles were a major source of air pollution. Cutting of trees being a major cause of air pollution was cited by more than 60.0 percent respondents from Amritsar, Angul, Chennai, Delhi/NCR, Calcutta, Korba, Mumbai, Patna, Pune and Raipur. Construction activities in cities was thought of as a major reason for air pollution by more than 50.0 percent respondents from Delhi/NCR, Bangalore, Calcutta, Mumbai, Patna, Pune and Raipur.

Table-4.1 *Main causes for air pollution stated by the respondents (Location-wise)*

Location	Percentage of Respondents stating:														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Amritsar	39.7	55	39.3	74.7	7.3	34	11	33.7	47	10	7	30.3	20.3	67	2.3
Angul	32.3	75.7	14.3	71.7	6	21.3	78.7	10.7	36	3.3	22.3	5.7	77	91.3	0.3
Bangalore	58.7	62.7	44.3	80.3	27.3	48	20	38.3	43.7	8.3	4	23	19	46.3	1.3
Chandrapur	38.3	42.7	33.3	50.7	27	31.3	32.3	35	27.7	25.3	26.3	29	26.3	29	1.3
Chennai	31	67	47	79.3	16.7	42	33.7	41.7	49.3	17	10	22.3	16.3	61.7	0.7
Delhi & NCR	60.3	57	42.7	83.3	7.7	41.7	25	30.3	67	44.3	10.7	35.7	41	64.3	4.3

Dhanbad	25.3	52.3	24.7	41.7	21.3	38.7	31.3	37	18	14.3	25.7	30	27.3	32.3	0.7
Calcutta	72.3	48.7	35.7	82	23	57	45	49.7	25.3	16.7	14.3	21.7	31	67.3	1
Korba	46.5	75	5	73	1	51.5	74	62	3	2.5	4	22	3	78	0
Lucknow	71	50.3	61.7	93	28	58	14.3	52.7	66.7	13.7	13	42.3	13.7	52	1
Mumbai	53.3	61.3	34.7	82.3	9.7	39.7	18.7	31	50	16.3	7	20	22.7	60	5.3
Nagpur	34.7	44	29	59	22.7	40.7	38.7	39.7	37	17.3	17	23.7	19.7	33.7	1
Patna	54.3	63	48.3	91.7	48.3	66.3	33.7	81.3	77.7	31	54	70.3	55.3	70.3	1
Pune	62	58	45	94	13.7	58.7	22.7	44.7	65.3	22.3	8	38.3	24.7	62.3	1.3
Raipur	79	57.7	13.7	85	6.7	46	43.3	26.3	52.3	5	7	14	19.3	71	0
Singrauli	34.7	58.3	16	45.7	24.7	26.7	77.7	25.3	46.7	3.3	3	8.3	19.7	35.3	1
Varanasi	25.3	56.7	35.7	70	12	34	17	28.3	29.3	11.3	5.7	31	9.3	53.3	0.3

*(**Code:** Construction-1; Industrial sources/Manufacturing facilities-2; Increasing use of air conditioner-3; Motor vehicles-4; Household cooking and heating-5; Population growth-6; Power plants-7; Smoke of cigarettes-8; Poor waste disposal/ Burning of waste-9; Pollution from other cities/states-10; Brick kilns-11; Diesel generators-12; Wind-blown dust -13; Cutting of trees-14; Others-15)*

Not much of a difference was observed between the viewpoints of men and women regarding the probable causes of air pollution. Gender-wise figures reveal that 72.0 percent men (SA: 90.9 percent) and 76.4 percent women (SA: 94.1 percent) believed motor vehicles to be the main cause of air pollution followed by Industrial units stated by 60.5 percent men (SA: 53.1 percent) and 54.0 percent women (SA: 55.5 percent). Cutting of trees was cited by 59.7 percent women (SA: 73.4 percent) and 54.8 percent men (SA: 68.9 percent) as a reason for the deteriorating air quality in their cities.

Table 4.2: *Main causes for air pollution stated by the respondents (Gender-wise)*

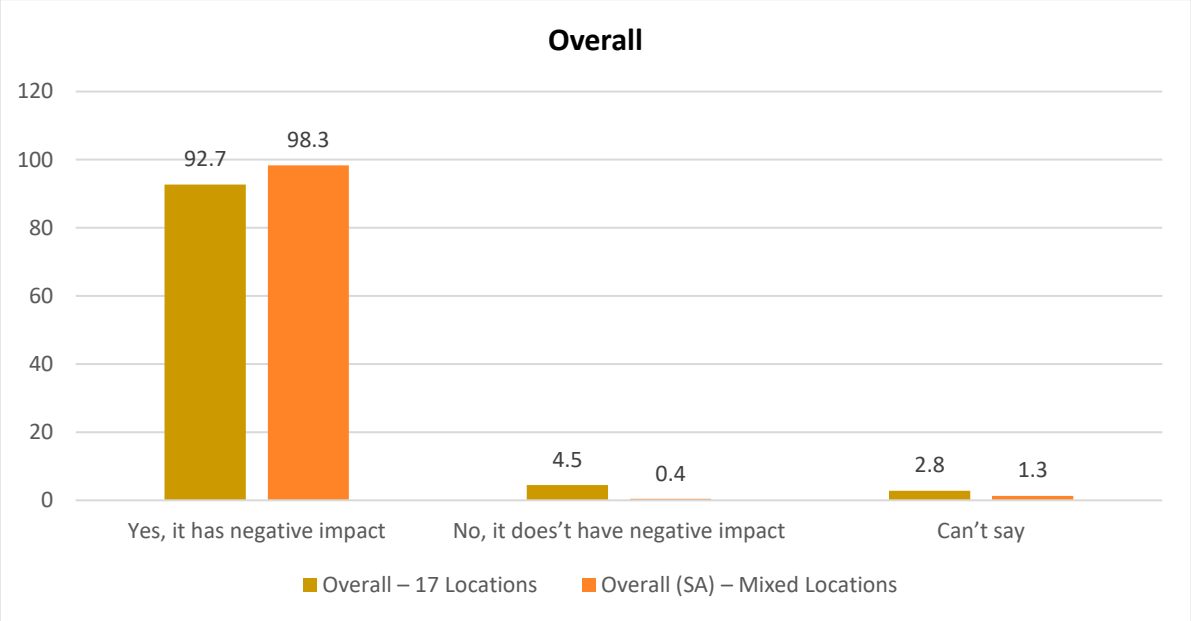
Gender		Percentage of respondents stating:														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Overall-17 Locations	Men	49.7	60.5	33.5	72.0	17.1	42.5	38.5	32.7	43.6	14.9	14.0	25.7	28.1	54.8	1.6
	Women	46.3	54.0	34.9	76.4	19.5	43.8	31.8	46.5	45.6	16.7	14.6	30.1	24.9	59.7	1.1
Overall (SA)- Mixed Locations	Men	65.2	53.1	40.2	90.9	11.4	56.1	21.9	30.2	75.5	20.5	14.1	38.5	41.6	68.9	5.8
	Women	67.6	55.5	51.0	94.1	13.4	62.4	25.2	31.0	75.9	29.0	10.3	40.3	45.2	73.4	8.3
	Transgende	100.0	50.0	50.0	100.0	50.0	25.0	25.0	50.0	100.0	25.0	0.0	50.0	50.0	100.0	0.0

*(**Code:** Construction-1; Industrial sources/Manufacturing facilities-2; Increasing use of air conditioner-3; Motor vehicles-4; Household cooking and heating-5; Population growth-6; Power plants-7; Smoke of cigarettes-8; Poor waste disposal/ Burning of waste-9; Pollution from other cities/states-10; Brick kilns-11; Diesel generators-12; Wind-blown dust -13; Cutting of trees-14; Others-15.*

4.2 Impact on Human health

The respondents were asked to state whether air pollution has a negative impact on human health. Around 92.7 percent (SA: 98.3 percent) respondents opined that air pollution causes a negative impact on human health. Around 4.5 percent (SA: 0.4 percent) said “No” and another 2.8 percent (SA: 1.3 percent) stated “Can’t say”.

Figure 4.2: *Distribution of the respondents stating negative impact of air pollution on health (Overall)*



Cent percent respondents from Korba stated that air pollution has a negative impact on human health. More than 98.0 percent respondents from the cities of Amritsar, Angul, Chennai, Delhi/NCR, Calcutta, Korba, Lucknow, Mumbai, Patna, Pune Raipur, Singrauli and Varanasi believed that air pollution negatively impacted human health. However, in Chandrapur and Nagpur only 61.3 percent and 59.3 percent respondents respectively said that air pollution is harmful for human health.

Table 4.3: *Distribution of the respondents stating negative impact of air pollution on health (Location wise)*

Location	Percentage of Respondents stating:		
	Yes	No	Can't say
Amritsar	98.3	1.3	0.3
Angul	98.3	1.7	0.0
Bangalore	91.3	4.3	4.3
Chandrapur	61.3	22.3	16.3
Chennai	97.7	1.3	1.0
Delhi & NCR	98.7	0.3	1.0
Dhanbad	92.3	3.0	4.7

Calcutta	98.7	0.3	1.0
Korba	100.0	0.0	0.0
Lucknow	99.3	0.0	0.7
Mumbai	98.3	1.3	0.3
Nagpur	59.3	30.3	10.3
Patna	98.0	0.7	1.3
Pune	99.0	0.7	0.3
Raipur	94.3	3.0	2.7
Singrauli	95.0	3.7	1.3
Varanasi	99.0	0.7	0.3

The age group-wise distribution revealed that around 95.8 percent (SA: 97.9 percent) of the senior citizens believed that air pollution has a negative impact on human health. No significant variation was observed among the other age groups as 92-93 percent respondents from all age groups believed that pollution has a major role to play in negatively impacting human health. The corresponding figures of the respondents of the support agencies was much higher among all the age groups.

Table 4.4: *Distribution of the respondents stating negative impact of air pollution on health (Age group)*

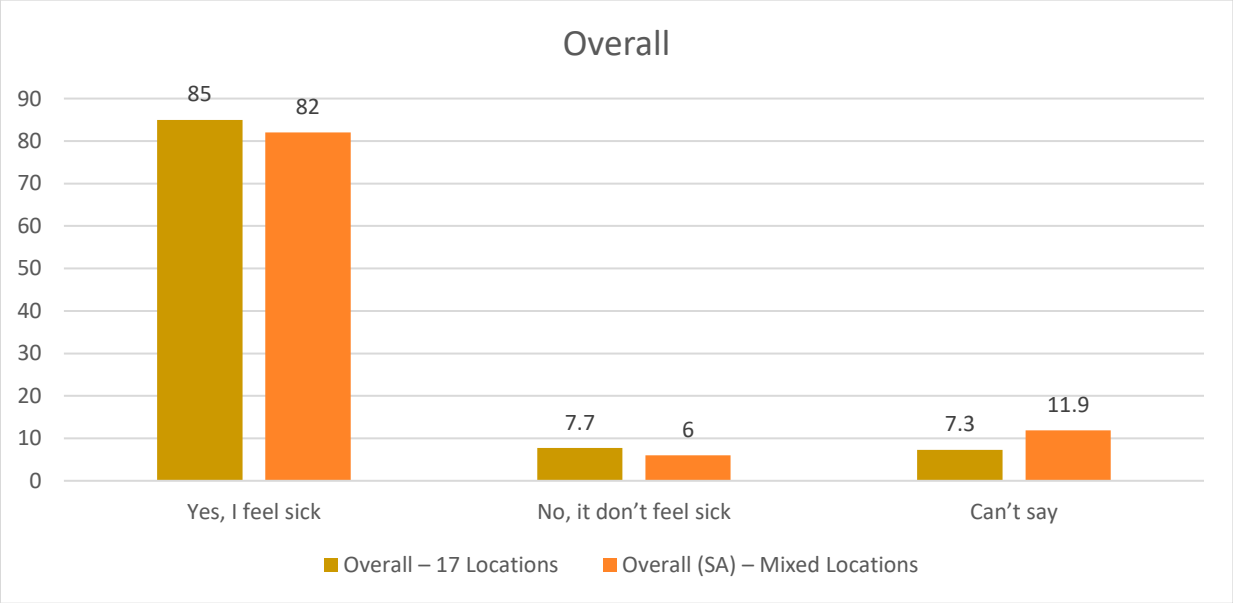
	Age group	Percentage of Respondents stating:		
		Yes	**No**	**Can't say**
Overall – 17 Locations	Below 18	93.3	3.5	3.3
	18 – 25 Years	92.4	5.2	2.4
	26 – 35 Years	92.0	5.1	2.9
	36 - 45 Years	92.8	5.2	2.0
	46 – 60 Years	93.1	3.6	3.3
	60 Years & above	95.8	1.9	2.3
Overall (SA) – Mixed Locations	Below 18	100.0	0.0	0.0

	18 – 25 Years	97.3	0.7	2.0
	26 – 35 Years	99.4	0.0	0.6
	36 - 45 Years	98.3	0.0	1.7
	46 – 60 Years	97.5	1.0	1.5
	60 Years & above	97.9	0.5	1.6

4.3 Incidence of Sickness & Discomfort due to Bad Air Quality

An attempt was made to find out from the respondents whether they feel sick or uncomfortable when the air quality gets bad. Around 85.0 percent (SA: 82.0 percent) of the sample respondents stated feeling sick and uncomfortable when the air quality worsens. Those who stated that they do not feel uncomfortable or sick due to bad air quality constituted only 7.7 percent (SA: 6.0 percent) of the total sample, while another 7.3 percent respondents (SA: 11.9 percent) stated "can't say".

Figure 4.3: *Distribution of the respondents stating sickness or discomfort due to bad air quality (Overall)*



Location-wise figures indicate that maximum respondents who stated that poor air quality makes them sick and uncomfortable were from cities of Angul (99.0 percent), Korba (99.5 percent), Patna (98.0 percent), Singrauli (95.3 percent), Varanasi (95.3 percent), Lucknow (93.3 percent), Dhanbad (91.7 percent), Calcutta (91.3 percent), Raipur (91.0 percent) Delhi/NCR (89.0 percent) Chennai (88.3 percent) and Amritsar (88.3 percent). Respondents who stated feeling sick and uncomfortable from all the four

cities of Maharashtra (Pune, Mumbai, Nagpur and Chandrapur) and Bangalore were comparatively less ranging from 52.0 percent to 79.0 percent.

Table 4.5: *Distribution of the respondents stating sickness or discomfort due to bad air quality (Location-wise)*

Location	Percentage of Respondents stating:		
	Yes,	No	Can't say
Amritsar	88.3	3.3	8.3
Angul	99.0	1.0	0.0
Bangalore	65.0	25.3	9.7
Chandrapur	52.7	21.3	26.0
Chennai	88.3	6.0	5.7
Delhi & NCR	89.0	3.3	7.7
Dhanbad	91.7	2.3	6.0
Calcutta	91.3	4.3	4.3
Korba	99.5	0.5	0.0
Lucknow	93.3	3.7	3.0
Mumbai	76.0	9.7	14.3
Nagpur	56.7	31.3	12.0
Patna	98.0	1.3	0.7
Pune	79.0	7.3	13.7
Raipur	91.0	2.7	6.3
Singrauli	95.3	2.7	2.0
Varanasi	95.3	3.0	1.7

Gender-wise distribution revealed that 87.5 percent women (SA: 88.3 percent) and 83.0 percent men (SA: 79.8 percent) in the overall sample stated that bad quality of air made them uncomfortable or sick. Around 8.4 percent men (SA: 13.2 percent) and 5.8 percent women (SA: 8.3 percent) responded can't say to the question whether bad air quality makes them sick.

Table 4.6: *Distribution of the respondents stating sickness or discomfort due to bad air quality (Gender-wise)*

	Gender	Percentage of Respondents stating:		
		Yes	No	Can't say
Overall – 17 Locations	Men	83.0	8.6	8.4
	Women	87.5	6.7	5.8
Overall (SA) – Mixed Locations	Men	79.8	7.0	13.2
	Women	88.3	3.4	8.3
	Trans.	75.0	0.0	25.0

The age group-wise figures revealed that maximum number of respondents in the age group of below 18 years old (87.4 percent, SA: 90.9 percent) reported feeling sick due to bad air quality followed by the 46-60 years age group and 36-45 years age group (86 percent). The corresponding figures in the case of the support agencies were 82.7 percent in the 46-60 years age group and 82.8 percent in the case of 36-45 years age group. Another 84.3 percent each respondents' in the 26-35 years age group (SA: 83.1 percent) and above 60 years (SA: 74.2 percent) also stated feeling uncomfortable when the air quality gets bad.

Table 4.7: *Distribution of the respondents stating sickness or discomfort due to bad air quality (Age-group)*

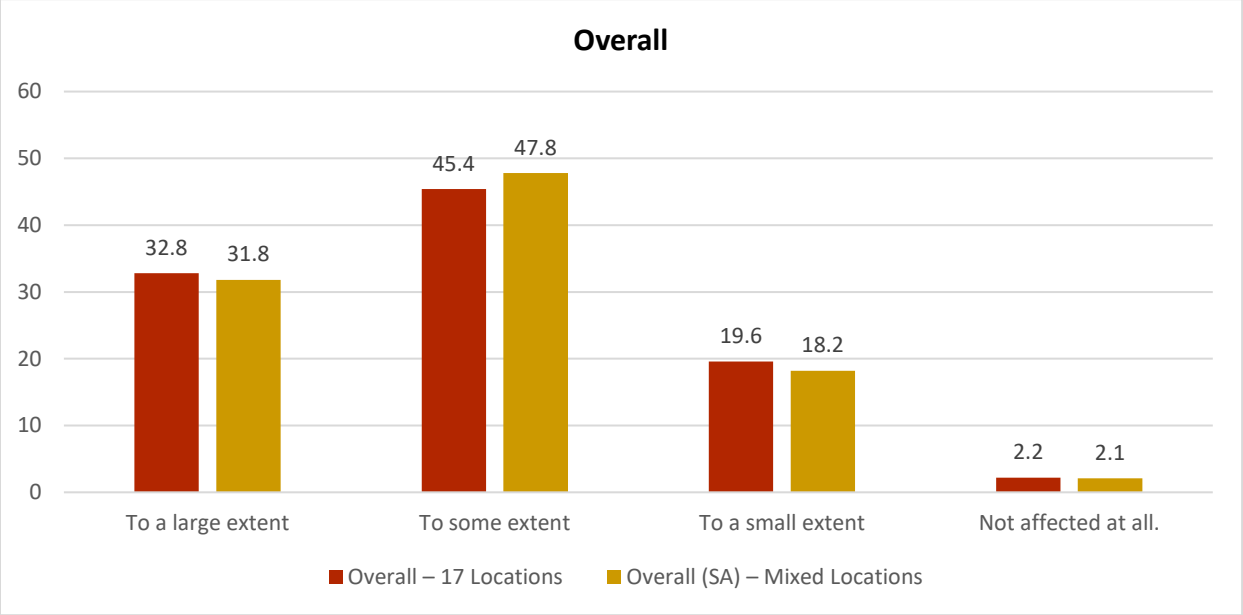
	Age group	Percentage of Respondents stating:		
		Yes	No	Can't say
Overall – 17 Locations	Below 18	87.4	6.9	5.7
	18 – 25 Years	82.2	9.4	8.4

	26 – 35 Years	84.3	9.1	6.6
	36 - 45 Years	85.6	6.4	8.0
	46 – 60 Years	85.8	6.3	7.9
	60 Years & above	84.1	5.1	10.7
Overall (SA) – Mixed Locations	Below 18	90.9	0.0	9.1
	18 – 25 Years	87.2	4.1	8.8
	26 – 35 Years	83.1	4.4	12.5
	36 - 45 Years	82.8	7.2	10.0
	46 – 60 Years	82.7	5.0	12.4
	60 Years & above	74.2	11.1	14.7

4.4 Extent of Sickness & Discomfort

Respondents who said that they felt sick or uncomfortable when the air quality gets bad were further asked to state as to what extent pollution affected them. The options were “to a large extent”, “to some extent”, “to a small extent” and “not being affected at all”. In the overall sample, 32.8 percent respondents (SA: 31.8 percent) reported feeling sick and uncomfortable to a large extent. Another 45.4 percent (SA: 47.8 percent) stated that they were affected to some extent while 19.6 percent respondents (SA: 18.2 percent) stated that the extent of discomfort was only to some extent. Only 2.2 percent respondents (SA: 2.1 percent) said that pollution did not affect them at all.

Figure 4.4: *Distribution of the respondents by extent of discomfort faced due to bad air quality (Overall)*



Huge variation was observed among the viewpoints of the respondents belonging to different cities as to the extent pollution affected them. For instance, in Korba, 90.5 per cent respondents stated being affected to a large extent followed by respondents from Angul (66.7 percent) and Patna (52.7 percent). In Chandrapur, Bangalore, Pune, Singrauli and Chennai only around 20.0 percent respondents each stated to be affected to a large extent.

Table 4.8: *Distribution of the respondents by extent of discomfort they face due bad air quality (Location-wise)*

Location	Percentage of Respondents stating:			
	To a large extent	To some extent	To a small extent	Not affected at all.
Amritsar	47.0	43.3	9.7	0.0
Angul	66.7	29.0	3.7	0.7
Bangalore	19.3	55.7	24.7	0.3
Chandrapur	19.7	39.7	34.0	6.7
Chennai	20.0	40.3	37.0	2.7
Delhi & NCR	39.0	45.3	15.0	0.7
Dhanbad	32.0	48.7	16.7	2.7

Calcutta	36.3	47.3	14.0	2.3
Korba	90.5	8.0	1.5	0.0
Lucknow	23.7	46.0	29.7	0.7
Mumbai	23.0	39.7	31.7	5.7
Nagpur	18.0	51.0	27.3	3.7
Patna	52.7	39.7	7.3	0.3
Pune	20.7	48.3	26.7	4.3
Raipur	26.0	56.3	14.0	3.7
Singrauli	20.7	58.0	19.7	1.7
Varanasi	22.0	63.3	14.3	0.3

The gender-wise figures revealed that 31.3 percent men (SA: 29.2 percent) and 34.8 percent women respondents (SA: 38.6 percent) stated that pollution affected them to a large extent. Likewise, 44.9 percent men (SA: 49.7 percent) and 46.1 percent women respondents (SA: 42.8 percent) said that air pollution affected them to some extent. Those who stated that they got affected only to a small extent were 21.5 percent men (SA: 19.1 percent) and 17.2 percent women (SA: 16.2 percent). Only 2.0 percent each men and women believed that air pollution did not affect them at all. Similar trend was observed in the case of respondents from the support agencies also.

Table 4.9: *Distribution of the respondents by extent of discomfort they face due bad air quality (Gender-wise)*

	Gender	Percentage of Respondents stating:			
		To a large extent	**To some extent**	**To a small extent**	**Not affected at all.**
Overall – 17 Locations	Men	31.3	44.9	21.5	2.4
	Women	34.8	46.1	17.2	1.9
Overall (SA) – Mixed Locations	Men	29.2	49.7	19.1	2.0
	Women	38.6	42.8	16.2	2.4
	Trans.	50.0	50.0	0.0	0.0

The age group-wise output figures indicate that it was maximum respondents in the above 60 years age group (40.7 percent, SA: 24.2 percent) who stated that air pollution affected them to a large extent followed by those in the age group of 36-45 years (34.1 percent, SA: 36.1 percent) and 26-35 years age group (32.8 percent, SA: 32.8 percent). Likewise, those who stated that they were affected to some extent were largely found in the age group of 18-25 years (47.9 percent, SA: 52.0 percent) followed by the age groups of below 18 years (SA: 45.5 percent) and 46-60 years old (47.0 percent each, SA: 33.2 percent). Those who stated that they have been affected to a small extent were found largely in the age groups of 36-45 years (SA: 16.1 percent) and above 60 years age groups (21.0 percent each, SA: 26.8 percent).

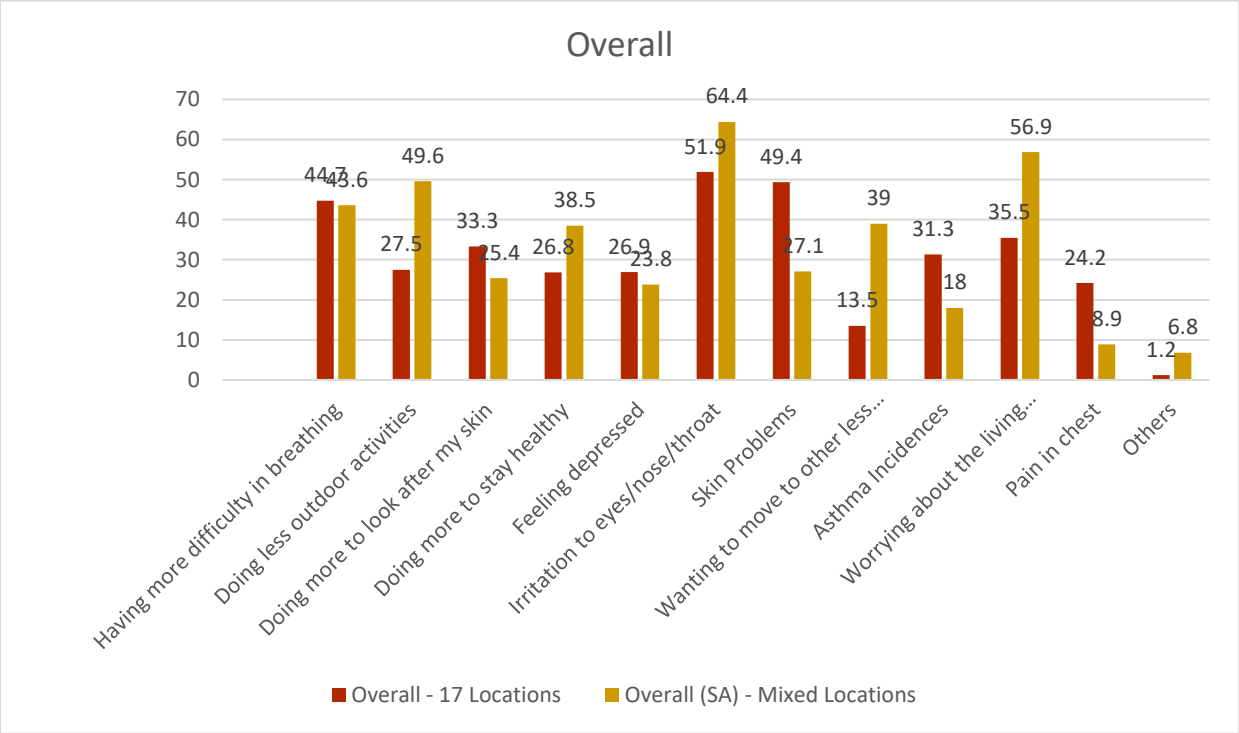
Table 4.10: *Distribution of the respondents by extent of discomfort they face due bad air quality (Age group)*

	Age group	Percentage of Respondents stating:			
		To a large extent	To some extent	To a small extent	Not affected at all.
Overall – 17 Locations	Below 18	31.6	46.9	19.2	2.3
	18 – 25 Years	32.1	47.9	18.5	1.5
	26 – 35 Years	32.8	44.9	19.6	2.7
	36 - 45 Years	34.1	43.2	20.5	2.2
	46 – 60 Years	30.8	47.1	20.1	2.1
	60 Years & above	40.7	37.4	20.6	1.4
Overall (SA) – Mixed Locations	Below 18	45.5	45.5	9.1	0.0
	18 – 25 Years	31.1	52.0	15.5	1.4
	26 – 35 Years	32.8	51.7	14.5	0.9
	36 - 45 Years	36.1	47.2	16.1	0.6
	46 – 60 Years	33.2	42.6	20.8	3.5
	60 Years & above	24.2	43.7	26.8	5.3

4.5 Impact of Air Pollution at Personal level

An attempt was made to find out how air pollution affected the respondents. Majority of the respondents (51.5 percent) (SA: 64.4 percent) pointed out that air pollution resulted in irritation to eyes, nose and throat. Another 49.4 percent respondents (SA: 27.1 percent) stated that they faced skin problems followed by 45.0 percent (SA: 43.6 percent) who said they had difficulty in breathing when the air quality worsened. Slightly more than 35.0 percent respondents (SA: 56.9 percent) said that they felt worried about the living environment for their children. Several respondents (33.3 percent, SA: 25.4 percent) stated that they were doing more to look after their skin while 31.3 percent respondents (18.0 percent) were of the view that bad air quality increased the incidences of Asthma. Around 27.5 percent (SA: 49.6 percent) of the sample respondents mentioned that they limited their outdoor activities when the air quality gets bad while 26.9 percent respondents (SA: 23.8 percent) stated feeling depressed and another 27 percent (38.5 percent) pointed out that they were trying to do more to stay healthy. Pain in chest due to air pollution was reported by 24.2 percent respondents (SA: 8.9 percent). Those who wanted to shift to less polluted cities constituted 14.0 percent (SA: 39.0 percent) of the overall sample.

Figure 4.5: *Distribution of the Respondents by ways they have been affected by air pollution (Overall)*



Greater number of women (39.1 percent, SA: 37.1) than men (28.7 percent, SA: 37.9) stated that due to poor air quality in their cities, they are doing more to take care of their skin. Likewise, skin problems due to air pollution was told by a greater number of women (55.2 percent, SA: 33.1) as compared to men (44.7 percent, SA: 25.0 percent). Irritation to eyes, nose and throat due to air pollution was pointed out by 49.8

percent men (SA: 62.7 percent) and 54.5 percent women (SA: 69.0 percent). With regard to other options, only slight variations were noticed in the responses of men and women.

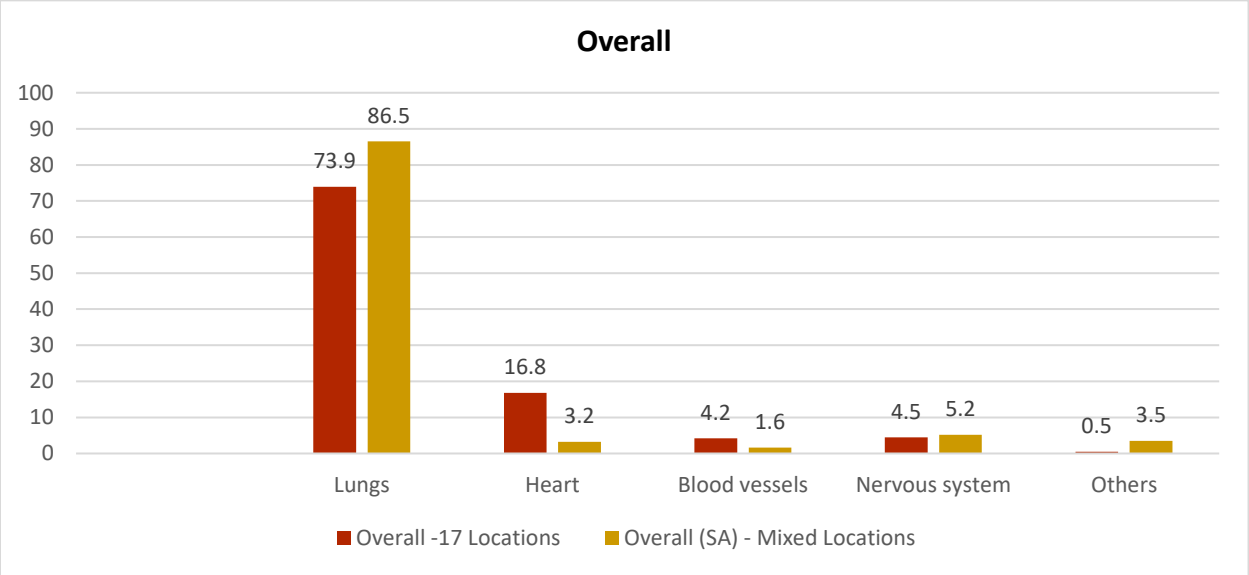
Table 4.11: *Distribution of the Respondents by ways they have been affected by air pollution (Gender wise)*

Gender	Percentage of Respondents stating:											
	Having more difficulty in breathing	Doing less outdoor activities	Doing more to look after my skin	Doing more to stay healthy	Feeling depressed	Irritation to eyes/nose/throat	Skin Problem	Wanting to move to other less polluted cities	Asthma Incidences	Worrying about the living environment for children	Pain in chest	Others
Men	42.8	27.1	28.7	25.4	26.6	49.8	44.7	12.7	31.7	33.8	26.6	1.0
Women	47.1	28.1	39.1	28.6	27.2	54.5	55.2	14.5	30.7	37.6	21.1	1.5
Men	42.0	48.5	20.6	36.2	23.8	62.7	25.0	36.1	16.4	56.1	7.8	5.6
Women	47.9	52.4	37.9	44.5	24.1	69.0	33.1	47.2	22.4	59.3	12.1	10.0
Trans.	50.0	50.0	50.0	50.0	0.0	50.0	0.0	0.0	25.0	50.0	0.0	0.0

4.6 Impact of Air pollution on Body Parts

Respondents were probed as to which part of the body will be most affected due to air pollution. It was observed that around 73.9 percent (SA: 86.9 percent) of the overall survey respondents believed that it is the lungs that will be most affected by pollution. Another 16.8 percent of the respondents (SA: 3.2 percent) were of the view that air pollution affects the heart. Only 4.5 percent (SA: 5.2 percent) of the total sample respondents felt that nervous system could be affected due to pollution while another 4.2 percent (SA: 1.6 percent) opined that pollution could also affect the blood vessels.

Figure 4.6: *Distribution of the respondents by parts of the body being affected due to air pollution (Overall)*



The location-wise data revealed that more than 80.0 percent of the respondents from the cities of Bangalore (89.0 percent), Chennai (86.0 percent), Delhi/NCR (83.3 percent), Mumbai (80.7 percent), Korba (94.5 percent), Patna (84.7 percent), Pune (86.7 percent) and Singrauli (82.0 percent) stated that it is the lungs that are the most affected due to pollution. The cities wherein less percentage of respondents reported that lungs are the worst affected body part due to pollution were from Angul (42.7 percent), Chandrapur (42.3 percent) and Nagpur (60.3 percent). The cities wherein more than 20.0 percent respondents opined that heart is the most affected part of the body were from Kolkata, Nagpur, Dhanbad, Chandrapur and Angul.

Table 4.12: *Distribution of the respondents by parts of the body being affected due to air pollution (Location-wise)*

Location	Percentage of Respondents stating:				
	Body parts				
	Lungs	**Heart**	**Blood vessels**	**Nervous system**	**Others**
Amritsar	79.0	15.0	2.3	2.3	1.3
Angul	42.7	53.0	1.0	3.0	0.3
Bangalore	89.0	7.7	1.7	1.3	0.3
Chandrapur	42.3	36.0	16.0	5.7	0.0
Chennai	86.0	9.0	0.3	3.0	1.7

Delhi & NCR	83.3	7.0	1.0	7.3	1.3
Dhanbad	61.7	23.0	8.0	7.3	0.0
Calcutta	63.7	25.0	6.3	5.0	0.0
Korba	94.5	3.5	1.0	1.0	0.0
Lucknow	75.7	13.3	6.3	4.7	0.0
Mumbai	80.7	11.3	3.3	3.7	1.0
Nagpur	60.3	22.0	12.0	4.3	1.3
Patna	84.7	11.0	0.3	4.0	0.0
Pune	86.7	6.7	2.0	3.3	1.3
Raipur	78.3	12.7	6.0	3.0	0.0
Singrauli	82.0	12.0	2.7	3.3	0.0
Varanasi	73.3	12.3	0.7	13.7	0.0

There was no much variation between the opinion of men and women on the most affected body part due to pollution. While only 73.1 percent men and 75.0 percent women opined that lungs was the most affected body part due to air pollution, in case of the respondents from the support agencies, greater number of both men (85.9 percent) and women (87.9 percent) stated the same.

Table 4.13: *Distribution of the respondents by parts of the body being affected due to air pollution (Gender-wise)*

Gender		Percentage of Respondents stating:				
		Body parts				
		Lungs	Heart	Blood vessels	Nervous system	Others
Overall – 17 Locations	Men	73.1	17.7	4.3	4.5	0.4
	Women	75.0	15.6	4.1	4.6	0.7
Overall (SA) – Mixed Locations	Men	85.9	3.7	1.8	5.1	3.5
	Women	87.9	1.7	1.0	5.5	3.8
	Trans.	100.0	0.0	0.0	0.0	0.0

The age group-wise figures reveal that the highest percentage of respondents reporting lungs as the most affected body part due to pollution were in the age group of above 60 years (80.4 percent, SA: 87.4 percent). Likewise, the highest percentage of respondents reporting heart as the most affected part of the body were in the age groups of below 18 years and 36-45 years age group (18.0 percent each, SA: 36-45 yrs: 2.2 percent). None of the respondents who were below the age of 18 years from the support agencies felt that heart could be affected by air pollution. The highest percentage (5.0 percent) of respondents stating blood vessel as the most affected body part were in the age groups of 18-25 and 26-35 years. Similarly, the highest percentage of respondents stating nervous system as the most affected body part were in the age groups of 18-25 (5.0 percent, SA: 4.7 percent) and 26-35 years (6.0 percent, SA: 5.2 percent).

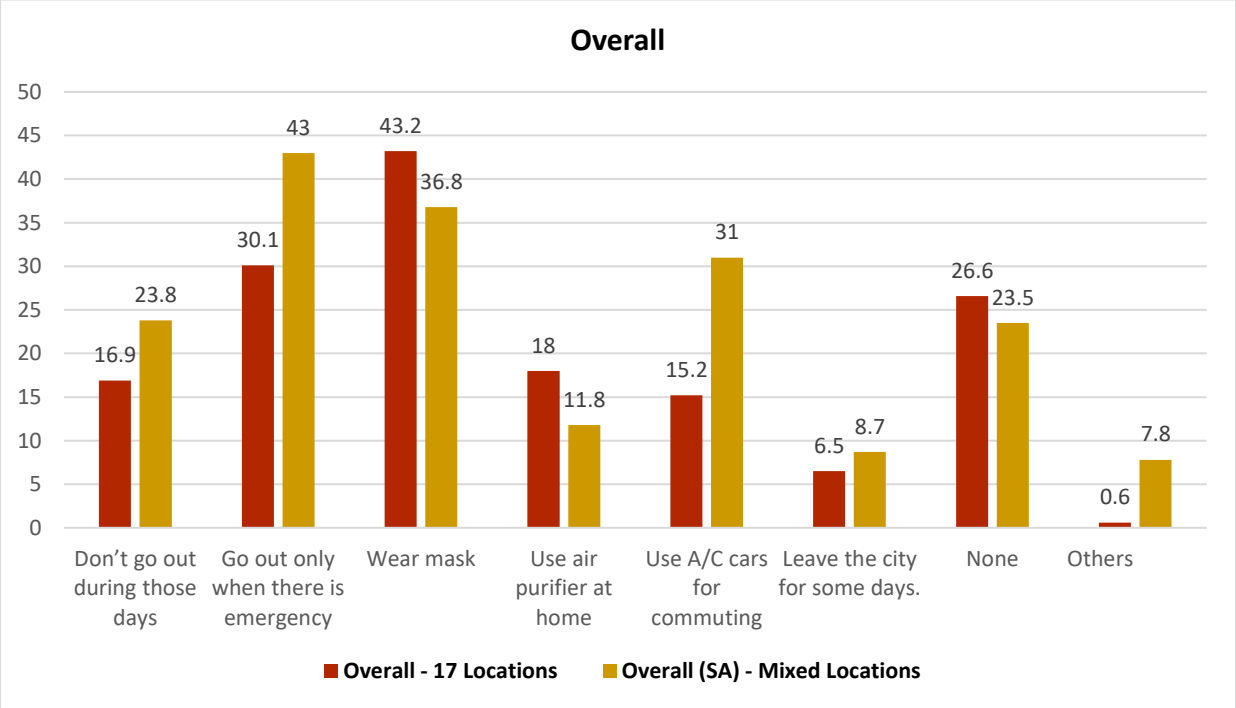
Table 4.14: *Distribution of the respondents by parts of the body being affected due to air pollution (Age-group)*

	Age-group	Percentage of Respondents stating:				
		Body parts				
		Lungs	Heart	Blood vessels	Nervous system	Others
Overall – 17 Locations	Below 18	73.7	18.2	3.7	3.8	0.5
	18 – 25 Years	72.5	16.1	5.4	5.1	0.8
	26 – 35 Years	72.7	15.8	5.2	5.9	0.4
	36 - 45 Years	74.4	17.8	4.1	3.4	0.3
	46 – 60 Years	77.0	15.7	2.1	4.4	0.8
	60 Years & above	80.4	15.9	1.4	2.3	0.0
Overall (SA) – Mixed Locations	Below 18	100.0	0.0	0.0	0.0	0.0
	18 – 25 Years	87.2	4.7	1.4	4.7	2.0
	26 – 35 Years	87.5	3.2	2.0	5.2	2.0
	36 - 45 Years	85.6	2.2	2.8	6.1	3.3
	46 – 60 Years	83.7	4.5	1.0	5.9	5.0
	60 Years & above	87.4	1.6	0.5	4.2	6.3

4.7 Safeguards Adopted to Avoid Effects of Air Pollution

The respondents were asked if they used any precautionary measures when there is bad air quality in their cities. The overall sample data revealed that majority (43.2 percent, SA: 36.8 percent) wore masks while going out followed by 30.1 percent (SA: 43 percent) stating that they go out only when there is emergency and another 18.0 percent respondents (SA: 11.8 percent) reported using air purifiers at homes. Around 16.9 percent respondents (SA: 23.8 percent) stated that they avoid going out on those days when there is bad quality while another 15.2 percent (SA: 31.0 percent) stated using air-conditioned cars for commuting. Those who do not take any precautionary measures for pollution constituted 26.6 percent (SA: 23.5 percent) of the sample. Only 6.5 percent respondents (SA: 8.7 percent) stated that they would prefer going out of the city for some days when there is bad air quality.

Figure 4.7: *Distribution of the Respondents by precautionary measures taken by them during bad air quality (Overall)*



Location-wise figures revealed that maximum respondents who used masks when the air quality gets bad were from Delhi (64.7 percent) followed by Amritsar (61.3 percent), Calcutta (59.0 percent), Nagpur (56.3 percent), Dhanbad (53.0 percent), Mumbai (52.7 percent). Only 18.5 percent respondents from Korba, Varanasi (17.0 percent) and Patna (16.3 percent) stated using masks as a precaution against air pollution. Maximum respondents who stated that they go out only during emergencies when the air quality gets bad were from Delhi (57.0 percent) followed by Calcutta (49.3 percent), Amritsar (48.7 percent), and Chandrapur (46.0 percent).

Table 4.15: *Distribution of the respondents by parts of the body being affected due to air pollution (Location-wise)*

Location	Percentage of respondents stating:							
	Don't go out during those days	Go out only when there is emergency	Wear mask	Use air purifier at home	Use A/C cars for commuting	Leave the city for some days.	None	Others.
Amritsar	23.7	48.7	61.3	10.7	10.7	2.7	10.7	0.7
Angul	4.0	3.7	34.3	1.7	1.7	0.7	60.7	0.0
Bangalore	16.7	21.7	39.3	8.0	13.0	5.3	39.0	2.7
Chandrapur	13.0	46.0	53.7	42.3	30.3	27.7	5.0	0.0
Chennai	19.3	23.3	38.0	9.3	12.3	11.0	36.7	1.3
Delhi & NCR	31.7	57.0	64.7	17.0	28.0	8.3	8.3	0.7
Dhanbad	18.7	25.0	53.0	20.3	9.0	2.3	13.3	0.0
Calcutta	14.3	49.3	59.0	36.3	23.3	10.0	11.0	0.0
Korba	20.5	39.5	18.5	44.5	11.5	0.0	5.0	0.0
Lucknow	11.3	16.3	43.0	8.0	9.0	2.0	44.0	0.3
Mumbai	18.0	27.7	52.7	12.0	18.7	6.3	21.3	1.0
Nagpur	14.0	34.7	56.3	29.3	26.7	13.3	9.3	0.3
Patna	10.3	19.7	16.3	15.3	17.0	0.0	44.7	0.7
Pune	19.7	32.0	48.0	15.0	29.7	9.3	19.0	2.0
Raipur	10.0	23.0	24.7	16.0	5.0	5.0	41.3	0.3
Singrauli	13.7	19.3	47.0	10.3	6.7	2.3	38.7	0.0
Varanasi	29.7	27.3	17.0	18.0	4.3	2.3	36.3	0.0

There were only slight variations between the responses of men and women with regard to taking precautionary measures against air pollution. Around 29.6 percent men and 30.6 percent women stated that they go out only during emergencies when the air quality is bad. However, in case of the respondents from the support agencies, 44.9 percent men and 36.9 percent women stated the same.

Table 4.15: *Distribution of the respondents by parts of the body being affected due to air pollution (Gender wise)*

	Gender	Percentage of respondents stating:							
		Don't go out during those days	Go out only when there is emergency	Wear mask	Use air purifier at home	Use A/C cars for commuting	Leave the city for some days	None	Others
Overall – 17 Locations	Men	16.3	29.6	42.3	16.7	13.8	7.0	28.5	0.6
	Women	17.7	30.6	44.4	19.5	16.9	5.9	24.1	0.5
Overall (SA) – Mixed Locations	Men	23.2	44.9	36.2	11.4	31.0	8.8	24.3	6.4
	Women	25.9	36.9	38.6	13.1	30.7	8.3	21.7	11.4
	Trans.	0.0	100.0	25.0	0.0	50.0	0.0	0.0	25.0

The age group-wise figures indicated that maximum respondents who wore masks to combat air pollution were in the 18-25 years age group (48.4 percent, SA: 45.3 percent) followed by the 26-35 years age group (47.2 percent, SA: 48.5 percent). Masks were least preferred by respondents in the age groups of above 60 years (28.0 percent, SA: 16.3 percent). Maximum number of senior citizens (36.9 percent, SA: 41.6 percent) reported they ventured out only during emergencies when there is poor air quality. Those who said they did not use any kind of precautions against air pollution were highest among the above 60 years age group (30.4 percent, SA: 25.8 percent).

Table 4.16: *Distribution of the respondents by parts of the body being affected due to air pollution (Age-group)*

Sl. No	Location	Percentage of respondents stating:							
		Don't go out during those days	Go out only when there is emergency	Wear mask	Use air purifier at home	Use A/C cars for commuting	Leave the city for some days.	None	Others.
Overall - 17 Locations	Below 18	21.4	30.2	40.9	18.3	12.2	3.7	26.1	0.5
	18 – 25 Years	19.1	29.5	48.4	17.9	15.9	7.5	24.7	0.2
	26 – 35 Years	16.5	29.9	47.2	16.9	14.8	7.7	27.4	0.7
	36 - 45 Years	11.4	29.2	41.6	21.2	17.0	8.1	25.1	0.9

	46 – 60 Years	14.2	29.9	37.7	15.1	18.0	6.7	29.9	0.8
	60 Years & above	17.3	36.9	28.0	15.4	15.9	1.9	30.4	0.0
Overall (SA) – Mixed Locations	Below 18	18.2	27.3	18.2	9.1	36.4	9.1	36.4	0.0
	18 – 25 Years	26.4	45.3	45.3	8.1	18.2	4.1	26.4	2.7
	26 – 35 Years	26.7	41.9	48.5	12.5	26.5	11.0	24.1	4.9
	36 - 45 Years	23.9	43.9	39.4	12.2	38.3	12.2	17.8	5.0
	46 – 60 Years	22.8	44.6	28.7	13.9	35.6	7.4	22.8	10.4
	60 Years & above	17.9	41.6	16.3	11.1	36.8	5.8	25.8	17.4

4.8 Ranking of Environmental Issues

The respondents were asked to rank eight environmental issues that affects their personal health or well-being. The issues were Air pollution, drinking polluted water, garbage and waste disposal, liquid waste, global warming & climate change, loss of green areas in the city, surface water pollution and unsafe food.

The data revealed that in the overall sample, maximum number of respondents (46.4 percent, SA: 40.1 percent) ranked air pollution as their highest concern followed by drinking polluted water (19.5 percent, SA: 17.4 percent), global warming and climate change (12.2 percent, SA: 17.2 percent), liquid waste (6.9 percent, SA: 1.2 percent), garbage and solid waste (5.1 percent, SA: 4.8 percent), loss of green areas in the city (5.0 percent, SA: 10.1 percent), unsafe food (2.9 percent, SA: 4.9 percent) and surface water pollution (2.0 percent, SA: 4.2 percent).

More than 50.0 percent respondents from the cities of Singrauli (67.0 percent), Dhanbad (66.0 percent), Korba (59.0 percent), Angul (57.0 percent), Varanasi (57.0 percent), Chennai (52.0 percent) and Kolkata (52.0 percent) felt that air pollution was the gravest concern that will affect their personal health and well-being as compared to the other environmental issues.

Table 4.17: *Ranking of the 'Environmental Issues' affecting personal health or well- being (Overall)*

Overall	Environmental Issues	Air pollution Ranking from "I" (Issue receiving highest number of responses) to "VIII" (Issue receiving lowest number of responses)							
		I	II	III	IV	V	VI	VII	VII
Overall - 17 Locations	Air pollution	46.4	20.4	10.9	9	6.6	3	1.9	1.7
	Drinking polluted Water	19.5	31.8	15.3	9.9	7.5	6.1	4	5.9
	Garbage and solid waste	5.1	13.2	24.5	17.1	13.5	10.8	9.4	6.4
	Liquid waste	6.9	7.6	10	24.9	13.3	9.9	13.3	14.2
	Global warming and climate change	12.2	11	13.8	10.5	25.2	10.1	9.6	7.5
	Loss of green areas in the city	5	5.1	11.4	11.3	12.8	31.9	13.7	8.8
	Surface water (river, lakes) pollution	2	5.7	5.8	9.3	13.3	13.3	35	15.5
	Unsafe food	2.9	5.1	8.4	8	7.8	14.7	13.2	40
Overall (SA) - Mixed Locations	Air pollution	40.1	23.1	15	8	5.6	4.1	2.2	2
	Drinking polluted Water	17.4	30.9	14.7	11.8	7.9	6	6.2	5.1
	Garbage and solid waste	4.8	9.2	18.7	12.8	24	10.7	15	4.7
	Liquid waste	1.2	2.1	7.2	21.4	14.3	24.6	15.4	13.8
	Global warming and climate change	17.2	7.5	8.9	11.3	12.7	11.6	11.4	19.2
	Loss of green areas in the city	10.1	10.5	12.4	15.5	18.2	15.2	12.6	5.5
	Surface water (river, lakes) pollution	4.2	7.5	11.6	12.5	10.3	17.4	28.7	7.8
	Unsafe food	4.9	9.1	11.5	6.6	6.9	10.5	8.5	42

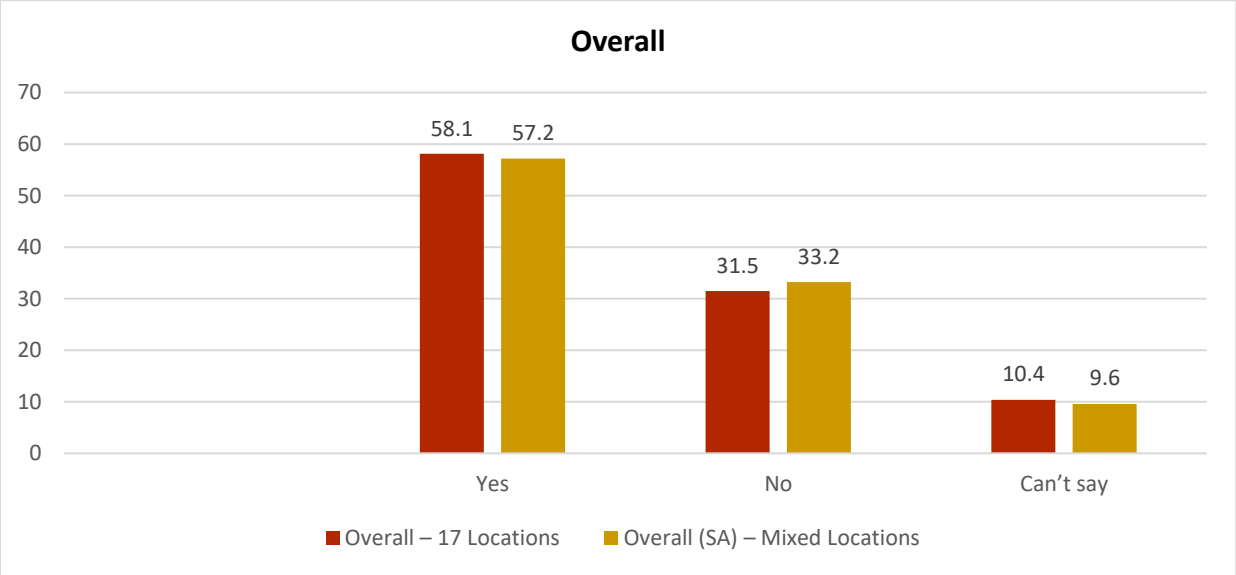
Section V: Controlling Air Pollution & Improving Air Quality

This section focuses on whether the respondents are aware of any actions taken by the government or civil society organisations to mitigate the impact of bad air quality, whether they are satisfied with the actions taken by the government and the steps taken by them on their individual capacity to mitigate the effects of bad air quality. An attempt was also made to find out if the respondents are aware of any NGOs/CBOs that work for air pollution in their cities and if they would be interested in securing more information about air quality.

5.1 Awareness about Government Initiatives

When the respondents were asked if they are aware about any initiatives taken by the Government and Civil society organisations to curb air pollution and mitigate the negative impact of bad air quality, 58.1 percent (SA: 57.0 percent) stated that they are aware while 31.5 percent (SA: 33.2 percent) were unaware. Remaining 10.4 percent respondents (SA: 9.6 percent) were ignorant about the issue and said "can't say".

Figure 5.1: *Distribution of the respondents stating awareness about the actions taken by the government/CSOs to mitigate the impact of bad (Overall)*



The location-wise responses indicated that the highest percentage of respondents who stated that they were aware of government initiatives taken to mitigate the effects of pollution were from Delhi/NCR & Chennai (76.0 percent each) followed by Lucknow, Patna and Nagpur (75.0 percent each). Least awareness

about government initiatives were observed among the respondents of Korba (34.5 percent) and Angul (39.3 percent).

Table 5.1: *Distribution of the respondents stating awareness about the actions taken by the government/CSOs to mitigate the impact of bad (Location wise)*

Location	Percentage of respondents stating		
	Yes	**No**	**Can't say**
Amritsar	66.3	24.7	9.0
Angul	39.3	56.3	4.3
Bangalore	40.3	54.7	5.0
Chandrapur	43.7	31.7	24.7
Chennai	76.0	20.3	3.7
Delhi & NCR	76.0	18.7	5.3
Dhanbad	41.7	38.7	19.7
Calcutta	67.7	27.3	5.0
Korba	34.5	41.5	24.0
Lucknow	75.7	17.7	6.7
Mumbai	57.3	30.0	12.7
Nagpur	75.3	20.7	4.0
Patna	59.7	28.7	11.7
Pune	61.7	28.0	10.3
Raipur	48.7	30.3	21.0
Singrauli	69.0	29.3	1.7
Varanasi	46.3	40.7	13.0

The age-group-wise data results revealed that maximum number of respondents who stated being aware of the initiatives taken by the government and civil society organisations were in the age groups of 46-60

years age groups (63.2 percent, SA: 60.4 percent). Awareness about government initiatives was least among the senior citizens (55.1 percent, SA: 68.4 percent).

Table 5.2: *Distribution of the respondents stating awareness about the actions taken by the government/CSOs to mitigate the impact of bad (Age group)*

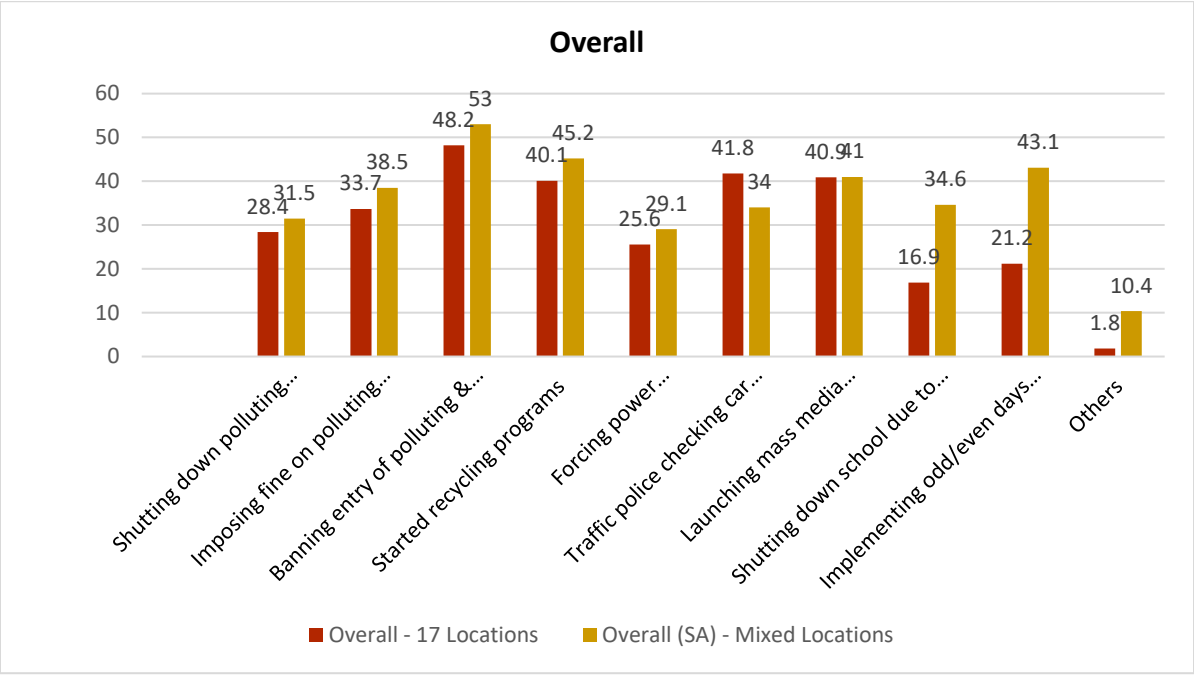
	Age group	% of respondents stating		
		Yes	No	Can't say
Overall – 17 Locations	Below 18	57.4	31.7	10.8
	18 – 25 Years	60.3	29.5	10.2
	26 – 35 Years	56.5	33.1	10.3
	36 - 45 Years	57.0	31.2	11.7
	46 – 60 Years	63.2	29.3	7.5
	60 Years & above	55.1	34.6	10.3
Overall (SA) – Mixed Locations	Below 18	54.5	27.3	18.2
	18 – 25 Years	56.1	38.5	5.4
	26 – 35 Years	50.9	39.5	9.6
	36 - 45 Years	55.0	37.8	7.2
	46 – 60 Years	60.4	26.2	13.4
	60 Years & above	68.4	21.1	10.5

5.2 Type of Actions

Ten initiatives were identified as the major steps being taken by the Government for mitigating the impact of bad air quality. The respondents who stated awareness about actions taken by the government/civil society organisations were further asked to state what actions have been taken. Majority of the respondents (48.2 percent, SA: 53 percent) were of the view that the major action taken by the government to improve air quality was to put a ban on the entry of polluting and old vehicles in the cities followed by traffic police being more alert and checking vehicles for car emissions more frequently (41.8 percent, SA: 34.0 percent). Around 40.9 percent respondents (SA: 41.0 percent) reported that the government has taken the initiative of launching mass media campaigns by putting hoardings/banners

and advertisements on TV/radio against air pollution. Starting recycling programs was stated by 40.1 percent (SA: 45.2 percent) of the respondents while another 33.7 percent respondents (SA: 38.5 percent) reported that government has begun imposing fine on the polluting companies. About 28.4 percent respondents (SA: 31.5 percent) believed that government has started shutting down polluting companies. Implementing the odd-even scheme for cars and shutting down of schools due to bad air quality were mentioned by 21.2 percent (43.1 percent) and 16.9 percent (34.6 percent) of the respondents respectively.

Figure 5.2: *Distribution of the respondents by type of actions taken by the government/CSOs for controlling air pollution (Overall)*



The location-wise figures indicated that maximum respondents from the cities of Patna (65.4 percent), Amritsar (55.3 percent), Lucknow (51.1 percent) and Bangalore (50.4 percent) were of the view that traffic police checking car emissions was the major initiative taken by the government to curb pollution. Likewise, maximum respondents from Pune (70.3 percent), Bangalore (57.9 percent) and Mumbai (57.6 percent) stated that the government has started recycling programs to curb pollution. Around 67.5 percent Delhi/NCR respondents stated that the major initiative taken by the government was implementing the odd-even scheme for cars. Banning the entry of old and polluting vehicles in the cities was stated as a major initiative taken by the government by maximum respondents from the cities of Lucknow (76.2 percent), Raipur (70.5 percent), Calcutta (67.0 percent) and Nagpur (48.2 percent).

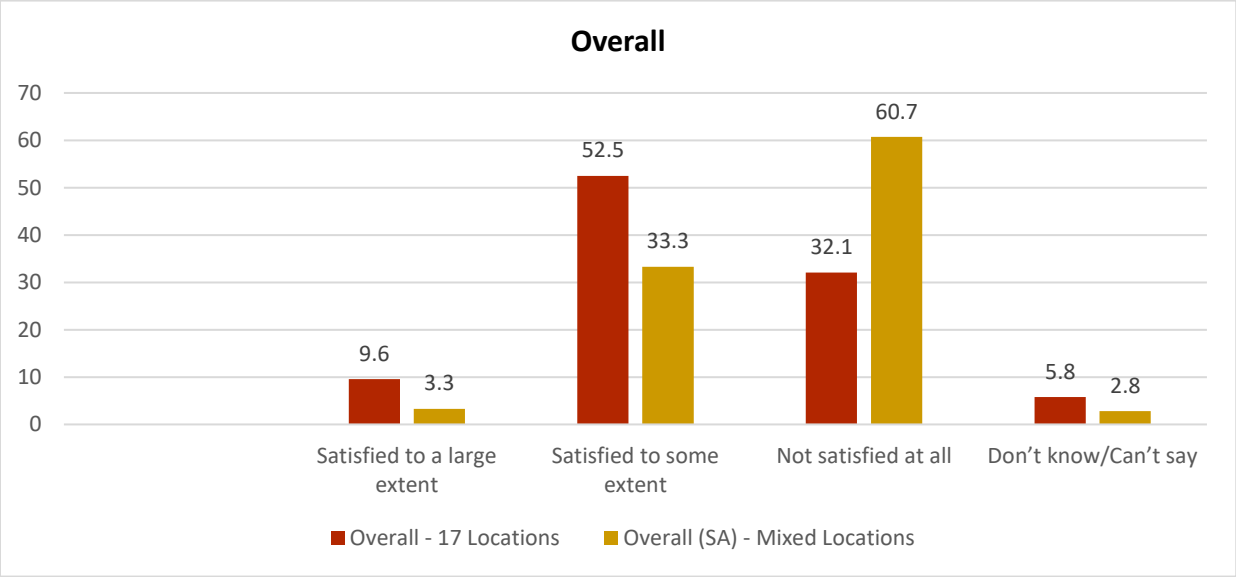
Table 5.3: *Distribution of the respondents by type of actions taken by the government/CSOs for controlling air pollution (Location-wise)*

Location	Percentage of respondents stating:									
	Shutting down polluting companies	**Imposing fine on polluting companies**	**Banning entry of polluting & old vehicles entering the city.**	**Started recycling programs**	**Forcing power stations/factories to adopt cleaner processes.**	**Traffic police checking car emissions**	**Launching mass media campaign through banners, adertisements and media**	**Shutting down school due to bad air quality**	**Implementing odd/even days for cars.**	**Others**
Amritsar	42.7	24.6	31.7	45.7	14.1	55.3	25.6	18.6	16.6	6.5
Angul	13.6	9.3	10.2	9.3	6.8	8.5	78.8	7.6	11.9	0.0
Bangalore	33.9	51.2	40.5	57.9	28.1	50.4	38.8	14.9	30.6	3.3
Chandrapur	18.3	37.4	53.4	40.5	38.2	48.9	45.0	23.7	22.9	0.8
Chennai	41.7	23.7	47.4	31.6	30.3	40.8	34.6	13.2	10.1	1.8
Delhi & NCR	33.3	34.2	64.0	37.7	26.8	33.3	44.3	57.9	67.5	2.2
Dhanbad	24.0	32.0	34.4	32.0	12.8	34.4	18.4	7.2	4.0	0.0
Calcutta	33.5	48.3	67.0	56.2	41.4	46.3	54.7	21.7	18.2	0.0
Korba	31.9	10.1	49.3	10.1	14.5	20.3	21.7	1.4	33.3	0.0
Lucknow	18.5	53.3	76.2	26.9	17.6	51.1	29.5	6.2	7.0	0.4
Mumbai	31.4	34.3	40.7	57.6	24.4	38.4	41.3	11.0	20.3	5.8
Nagpur	18.1	33.6	48.2	43.4	39.4	41.6	42.5	26.5	11.5	2.2
Patna	16.2	20.7	30.7	11.7	20.7	65.4	52.5	8.4	12.8	0.0
Pune	30.8	40.0	39.5	70.3	27.6	47.6	49.2	16.8	32.4	4.9
Raipur	30.1	21.2	70.5	47.3	29.5	31.5	47.9	6.2	51.4	0.7
Singrauli	14.5	47.3	46.9	36.7	24.6	44.4	23.7	8.2	5.8	0.0
Varanasi	50.4	24.5	42.4	47.5	20.9	20.9	51.1	10.8	8.6	0.0

5.3 Level of Satisfaction with Government Initiatives

The respondents were asked as to what extent they are satisfied with the actions taken by the government to control air pollution. The overall data showed that only around 9.6 percent (SA: 3.3 percent) of the total sample expressed that they were satisfied to a large extent. Those who stated that they were satisfied to some extent constituted 52.5 percent (SA: 33.3 percent) of the total sample. Around 32.1 percent (SA: 60.7 percent) expressed their disappointment with the initiatives taken by the government and stated that they were not satisfied at all. Around 5.8 percent (2.8 percent) of the sample respondents did not give any opinion.

Figure 5.3: *Distribution of the respondents by their level of satisfaction with government initiatives (Overall)*



The location-wise figures revealed that maximum respondents who expressed dissatisfaction with the actions taken by the government to control pollution were from the cities of Angul (62.7 percent) followed by Chennai (50.4 percent), Bangalore (48.8 percent), Patna (43.6 percent) and Delhi & NCR (41.7 percent). Maximum respondents who expressed satisfaction to a large extent were from the cities of Chandrapur (20.6 percent) Chennai (16.7 percent) and Amritsar (16.1 percent).

Table 5.4: *Distribution of the respondents by their level of satisfaction with government initiatives (Location-wise)*

Location	Percentage of Respondents stating:			
	Satisfied to a large extent	Satisfied to some extent	Not satisfied at all	Don't know/Can't say
Amritsar	16.1	51.8	29.6	2.5
Angul	12.7	24.6	62.7	0.0
Bangalore	5.8	34.7	48.8	10.7
Chandrapur	20.6	33.6	34.4	11.5
Chennai	16.7	30.3	50.4	2.6
Delhi & NCR	3.1	48.7	41.7	6.6
Dhanbad	15.2	48.8	33.6	2.4
Calcutta	15.3	63.1	17.7	3.9
Korba	10.1	76.8	13.0	0.0
Lucknow	3.1	69.2	12.8	15.0
Mumbai	6.4	55.2	32.0	6.4
Nagpur	9.7	46.5	35.8	8.0
Patna	5.6	49.7	43.6	1.1
Pune	5.9	57.3	33.5	3.2
Raipur	14.4	69.2	13.7	2.7
Singrauli	4.3	65.2	21.3	9.2
Varanasi	4.3	69.8	20.1	5.8

The age group wise figures indicate that the maximum percentage of respondents stating satisfaction to a large extent with the initiatives to curb air pollution was in the age group of 18 -25 years (12.2 percent, SA: 1.2 percent). Only 3.4 percent (SA: 3.8 percent) of the senior citizens expressed satisfaction to a large extent with the government initiatives. Maximum respondents who were not satisfied at all with the government initiatives were from the age group of 36-45 years (SA: 61.6 percent). More than 60,0 percent

respondents belonging to all age categories from the support agencies stated that they were not satisfied with the government initiatives to control air pollution.

Table 5.5: *Distribution of the respondents by their level of satisfaction with government initiatives (Age group)*

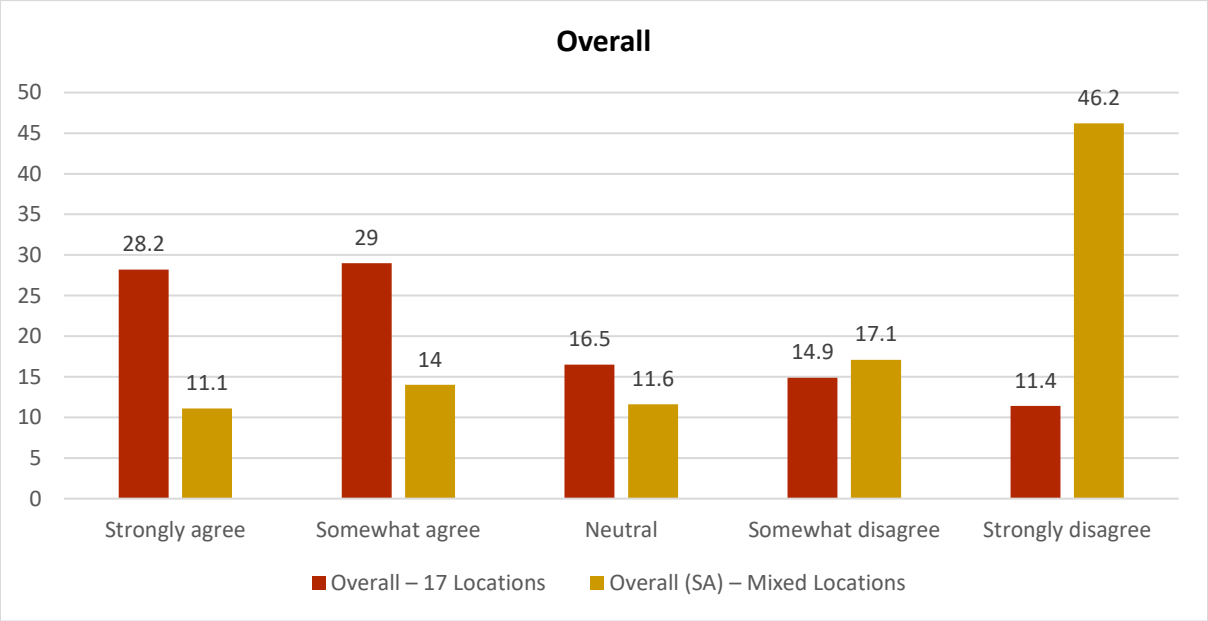
Sl. No	Location	Percentage of Respondents stating:			
		Satisfied to a large extent	Satisfied to some extent	Not satisfied at all	Don't know/Can't say
Overall – 17 Locations	Below 18	8.9	53.5	30.2	7.5
	18 – 25 Years	12.2	49.9	32.4	5.5
	26 – 35 Years	10.0	54.0	31.1	4.8
	36 - 45 Years	9.3	49.3	36.4	4.9
	46 – 60 Years	8.6	57.0	29.5	5.0
	60 Years & above	3.4	52.5	33.9	10.2
Overall (SA) – Mixed Locations	Below 18	0.0	16.7	66.7	16.7
	18 – 25 Years	1.2	34.9	61.4	2.4
	26 – 35 Years	3.4	27.4	66.9	2.3
	36 - 45 Years	3.0	32.3	61.6	3.0
	46 – 60 Years	4.1	36.1	57.4	2.5
	60 Years & above	3.8	39.2	53.8	3.1

5.4 Statements Related to Air Pollution – Agree / Disagree

Eleven statements related to air pollution were posed to the respondents and they were asked to classify it into five categories viz. Strongly Agree, Somewhat agree, Neutral, Somewhat disagree and strongly disagree.

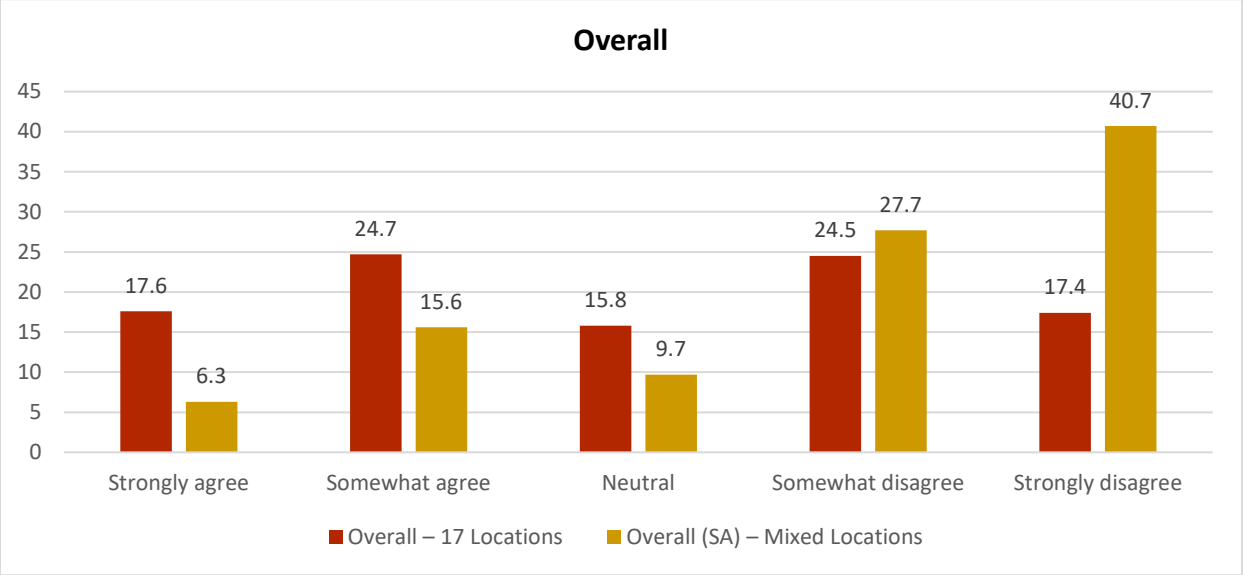
Statement 1: Focusing on air pollution may negatively influence growth and employment opportunities in the area: Around 57.2 percent respondents agreed to the statement of which 28.2 percent expressed complete agreement and another 29.0 percent agreed to it partially. In contrast, only 24.0 percent of the respondents from the support agencies expressed their agreement. Those who remained neutral and neither agreed nor disagreed constituted 16.5 percent (SA: 11.6 percent) of the sample. About 26.3 percent respondents disagreed with the statement (Somewhat disagree: 14.9 percent, Strongly disagree: 11.4 percent). Respondents from the support agencies who disagreed with the statement constituted 63.3 percent of the sample.

Figure 5.4: *Statement 1: Focusing on air pollution may negatively influence growth and employment opportunities in the area*



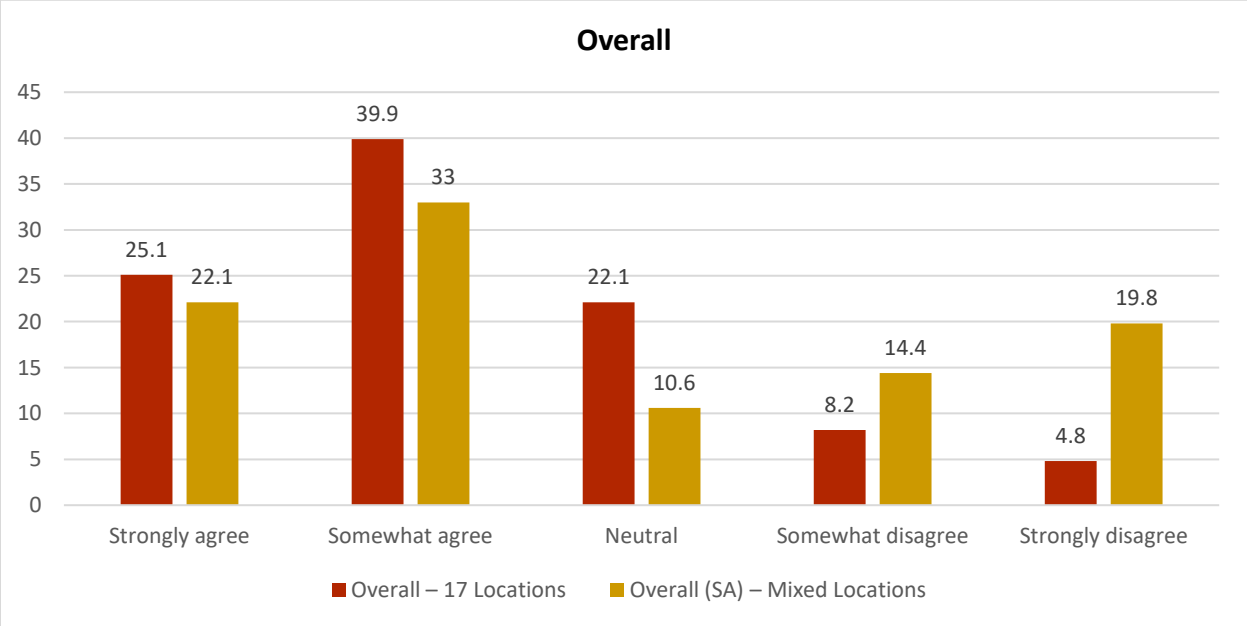
Statement 2: Air pollution has gone out of control and nothing can be done now: The statement found agreement among 42.3 percent respondents (Strongly agree: 17.6 percent, Somewhat agree: 24.7 percent) while 15.8 percent (SA: 9.7 percent) remained neutral. Only 21.9 percent respondents of the support agencies agreed with the statement. Around 41.9 percent of the sample respondents (SA: 68.4 percent) disagreed with the statement of whom 24.5 percent (27.7 percent) disagreed to some extent while 17.4 percent (40.7 percent) expressed strong disagreement to the statement.

Figure 5.5: *Statement 2: Air pollution has gone out of control and nothing can be done now*



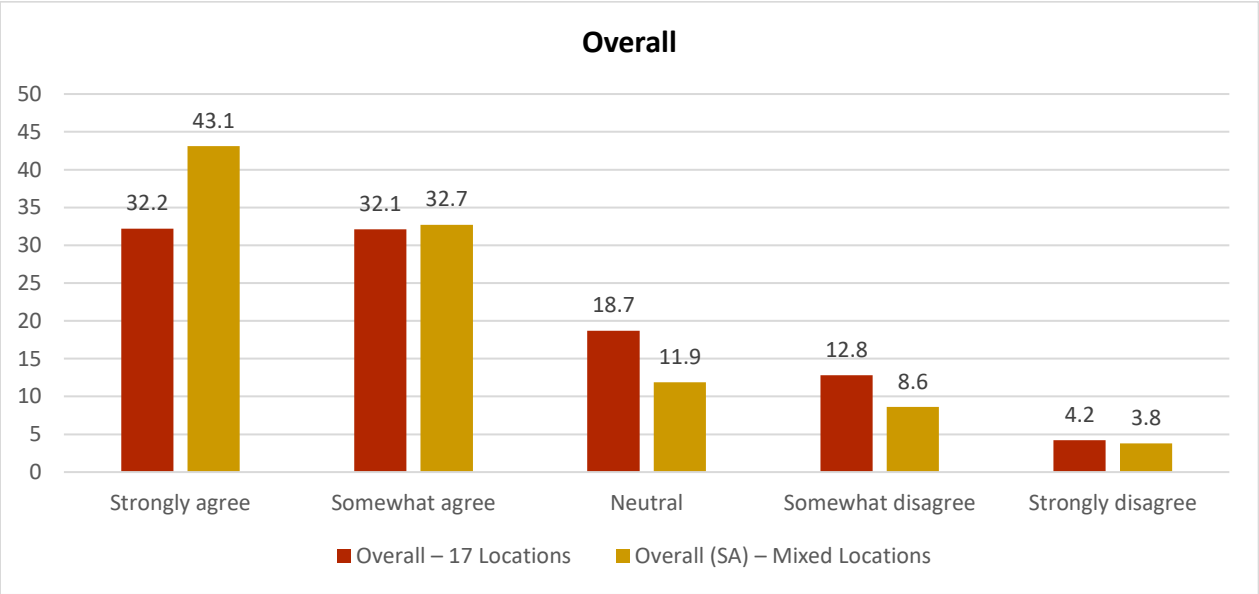
Statement 3: There is always a conflict between economic development and protecting the environment: Around 65.0 percent (SA: 55.1 percent) of the respondents agreed with the statement (Strongly agree: 25.1 percent, Somewhat agree: 39.9 percent) while 13.0 percent (SA: 34.2 percent) expressed their disagreement. Respondents who neither agreed nor disagreed constituted 22.1 percent (SA: 10.6 percent) of the sample.

Figure 5.6: *Statement 3: There is always a conflict between economic development and protecting the environment*



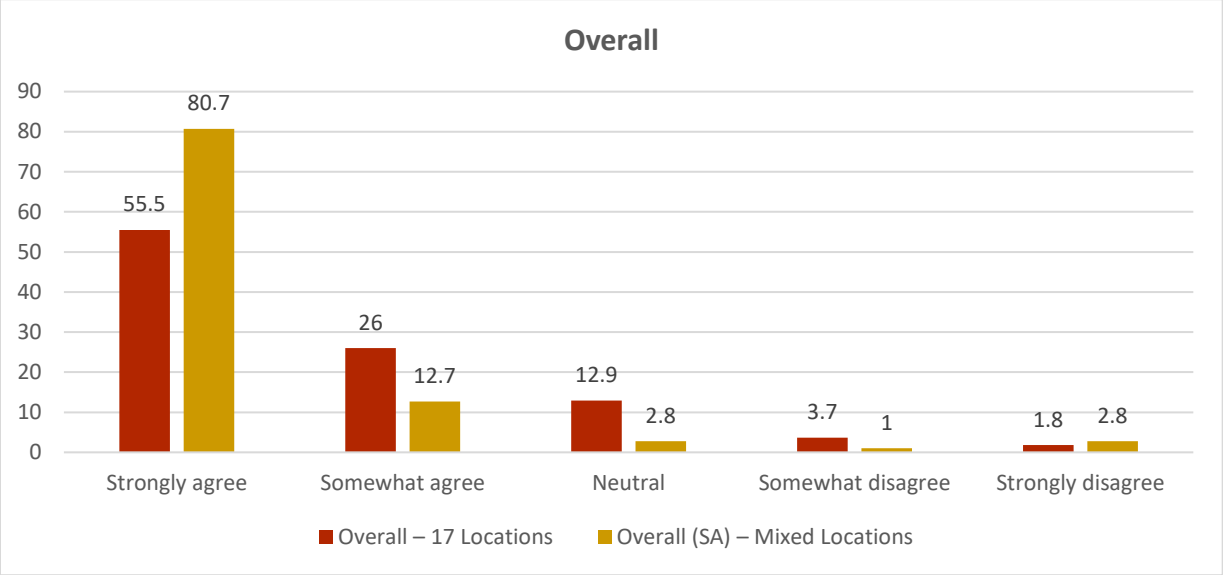
Statement 4: Government should shut down the polluting companies in the city even if it puts some jobs at risk: The statement was agreed upon by 64.0 percent (SA: 75.8 percent) respondents (Strongly agree & Somewhat agree: 32.0 percent each). Around 18.7 percent respondents were neutral (SA: 11.9 percent) while 17.0 percent (SA: 12.4 percent) disagreed with the statement.

Figure 5.7: *Statement 4: Government should shut down the polluting companies in the city even if it puts some jobs at risk*



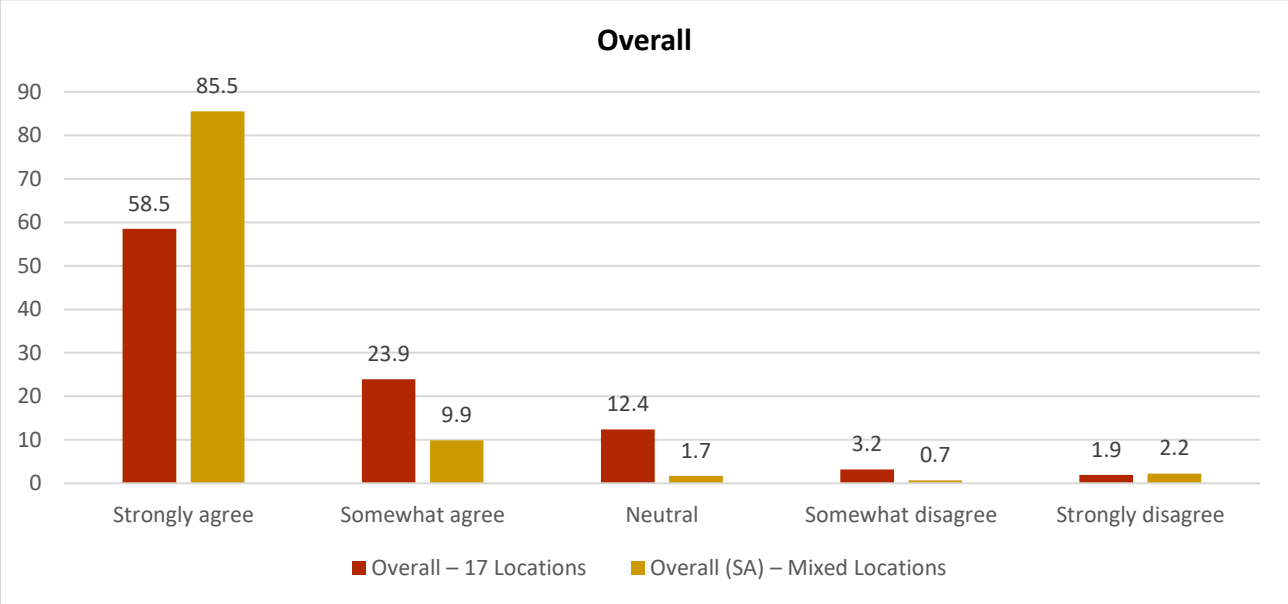
Statement 5: Polluting companies should be fined as per the provision in our laws: More than 80.0 percent respondents agreed to the statement with 55.5 percent strongly agreeing and another 26.0 percent somewhat agreeing to it. Around 93.4 percent respondents from the support agencies agreed to the statement (Strongly agree: 80.7 percent, Somewhat agree: 12.7 percent) Only 5.5 percent (3.8 percent) respondents expressed their disagreement while 13.0 percent (SA: 2.8 percent) remained neutral to the statement.

***Figure 5.8**: Statement 5: Polluting companies should be fined as per the provision in our laws*



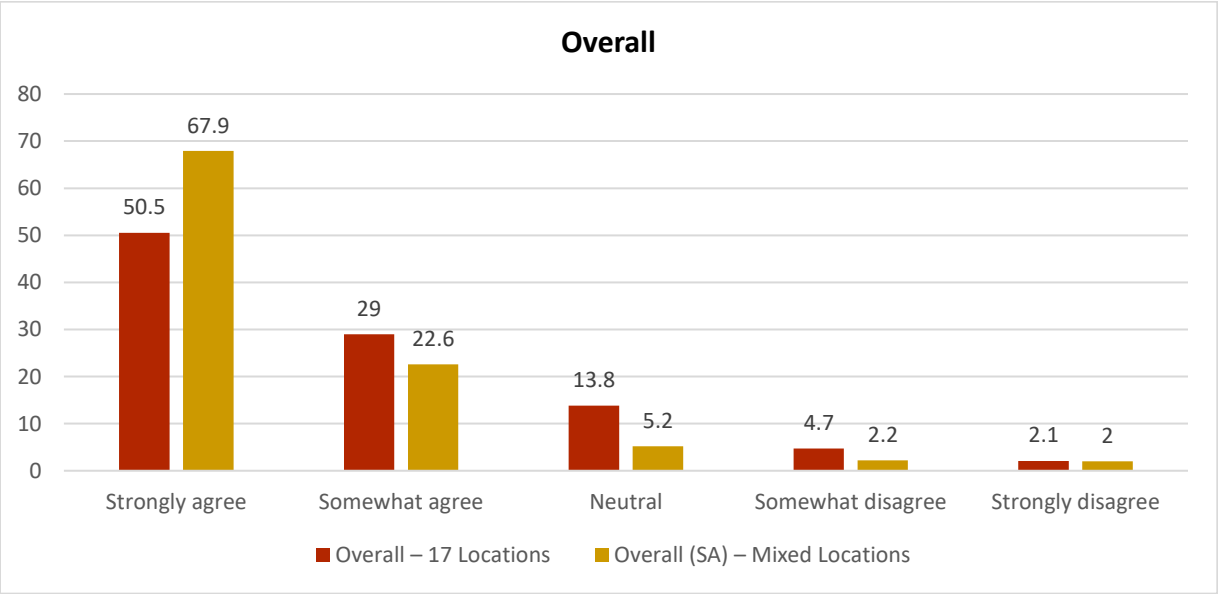
Statement 6: Government needs to bring new and strict laws to mitigate and control air pollution: The statement found strong agreement with 58.5 percent (SA: 85.5 percent) respondents while another 23.9 percent (9.9 percent) somewhat agreed to it. Respondents who disagreed with the statement were only 5.1 percent (2.4 percent) of the sample. Those who neither agreed nor disagreed with the statement were 12.4 percent (1.7 percent) of the total sample.

***Figure 5.9:** Statement 6: Government needs to bring new and strict laws to mitigate and control air pollution*



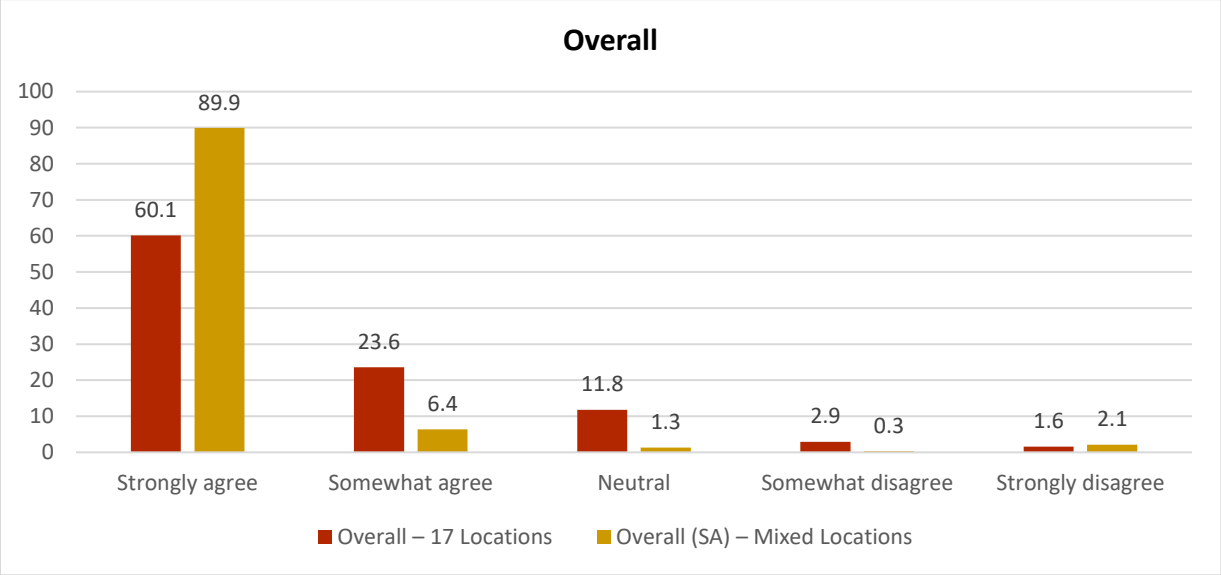
Statement 7: Completely ban the entry of polluted vehicles/old vehicles in the city: Slightly more than 80.0 percent respondents agreed with the statement (Strongly agree: 50.5 percent, SA: 67.9 percent, somewhat agree: 29.0 percent, SA: 22.6 percent) while 13.8 percent (SA: 5.2 percent) were neutral to the statement. Around 7.0 percent (SA: 4.2 percent) of the sample respondents expressed their disagreement over the statement.

Figure 5.10: *Statement 7: Completely ban the entry of polluted vehicles/old vehicles in the city*



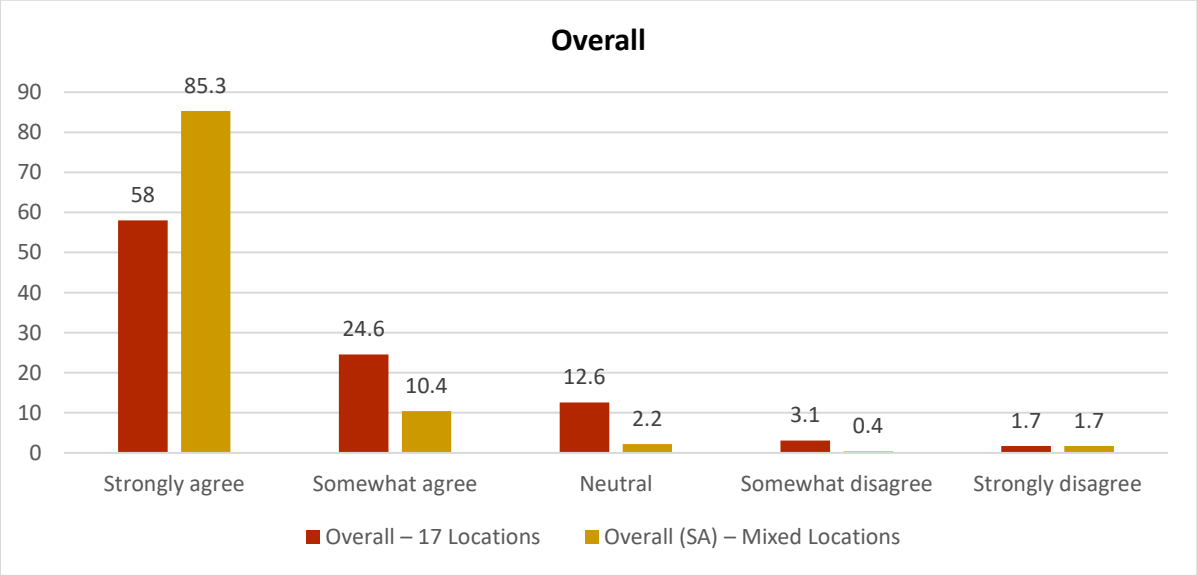
Statement 8: Government should initiate recycling programs and promote it across the cities: The statement was strongly agreed upon by slightly more than 60.0 percent (SA: 89.9 percent) respondents while another 24.0 percent (6.4 percent) partially agreed to it. Around 5.0 percent (SA: 2.4 percent) expressed their disagreement to the statement while 12,o percent (1.3 percent) chose to remain neutral.

Figure 5.11: *Statement 8: Government should initiate recycling programs and promote it across the cities*



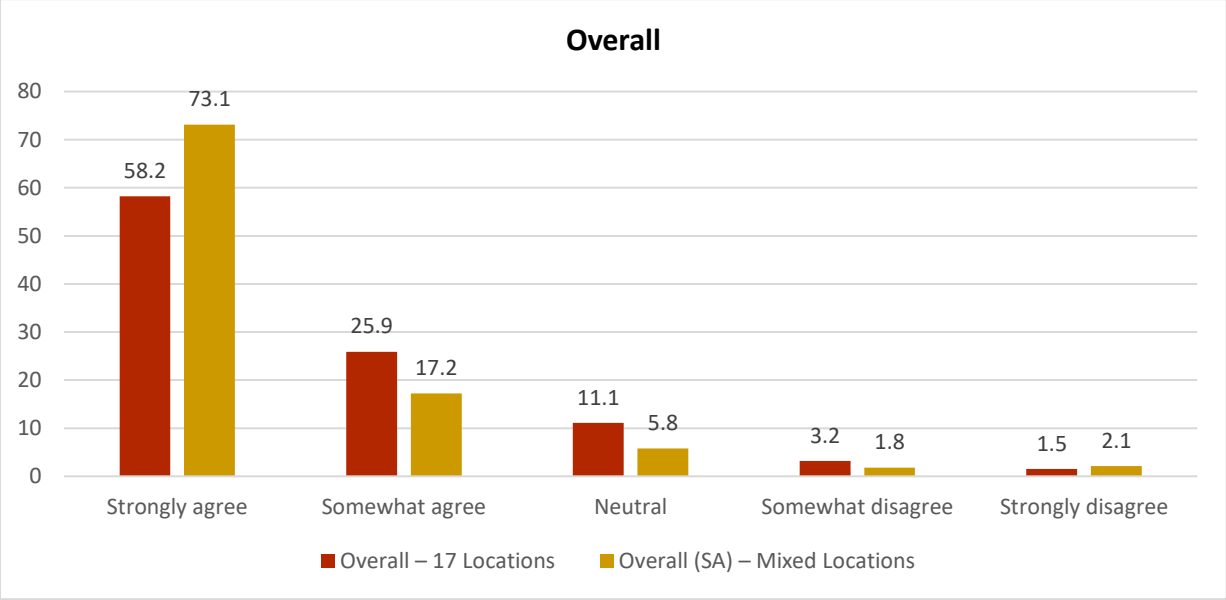
Statement 9: Government may pressurize power stations and factories to switch to cleaner processes: Those respondents who agreed with the statement constituted 83.0 percent (SA: 95.7 percent) of the sample of whom 58,0 percent (SA: 85.3 percent) strongly agreed and another 25.0 percent (10.4 percent) somewhat agreed with the statement. Around 12.6 percent (SA: 2.2 percent) neither agreed nor disagreed while 4.8 percent (SA: 2.1 percent) respondents expressed their disagreement to the statement.

Figure 5.12*: Statement 9: Government may pressurize power stations and factories to switch to cleaner processes*



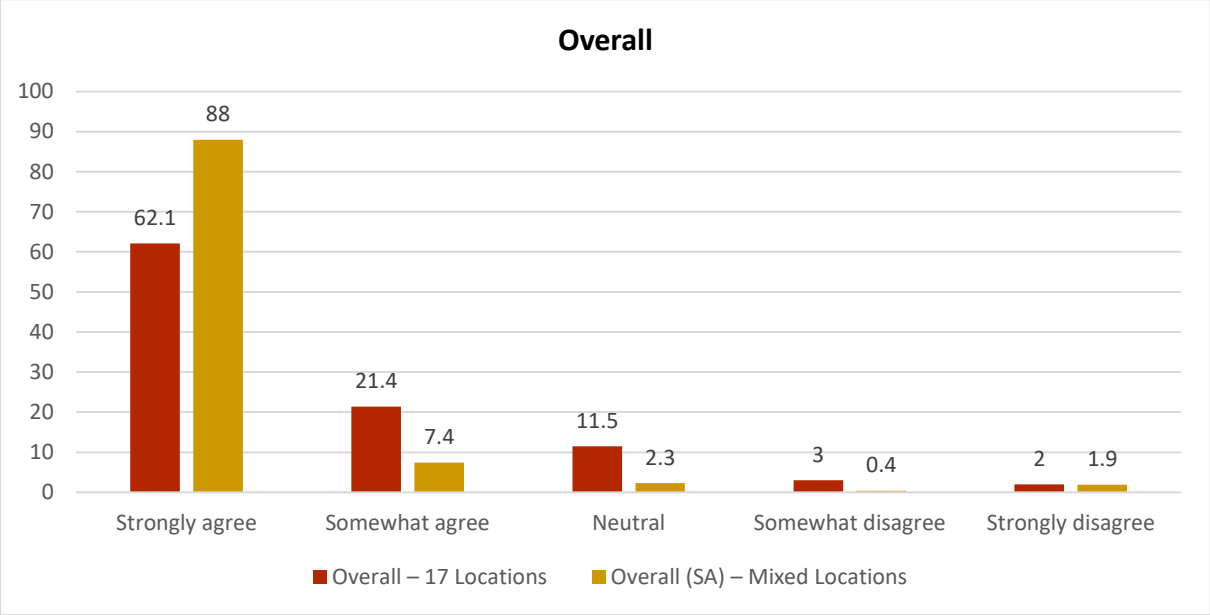
Statement 10: Government can launch the mass media campaign throughout the city by putting hoardings/banners in the city and giving advertisement in TV/Radio to sensitize citizens about AQ: Around 84.0 percent (SA: 90.3 percent) agreed with the statement (Strongly agree: 58.2 percent, Somewhat agree: 25.9 percent) and slightly less than 5.0 percent (SA: 3.9 percent) disagreed while 11.1 percent (SA: 5.8 percent) neither agreed nor disagreed with the statement.

Figure 5.13: *Statement 10: Government can launch the mass media campaign throughout the city by putting hoardings/banners in the city and giving advertisement in TV/Radio to sensitize citizens about AQ*



Statement 11: Government should introduce/improve public transportation system: The statement found strong agreement among 62.1 percent respondents (SA: 88.0 percent) while another 21.4 percent (SA: 7.4 percent) partially agreed with then statement. Around 11.5 percent (SA: 2.3 percent) respondents chose to remain neutral while 5.0 percent (SA: 2.3 percent) disagreed with the statement.

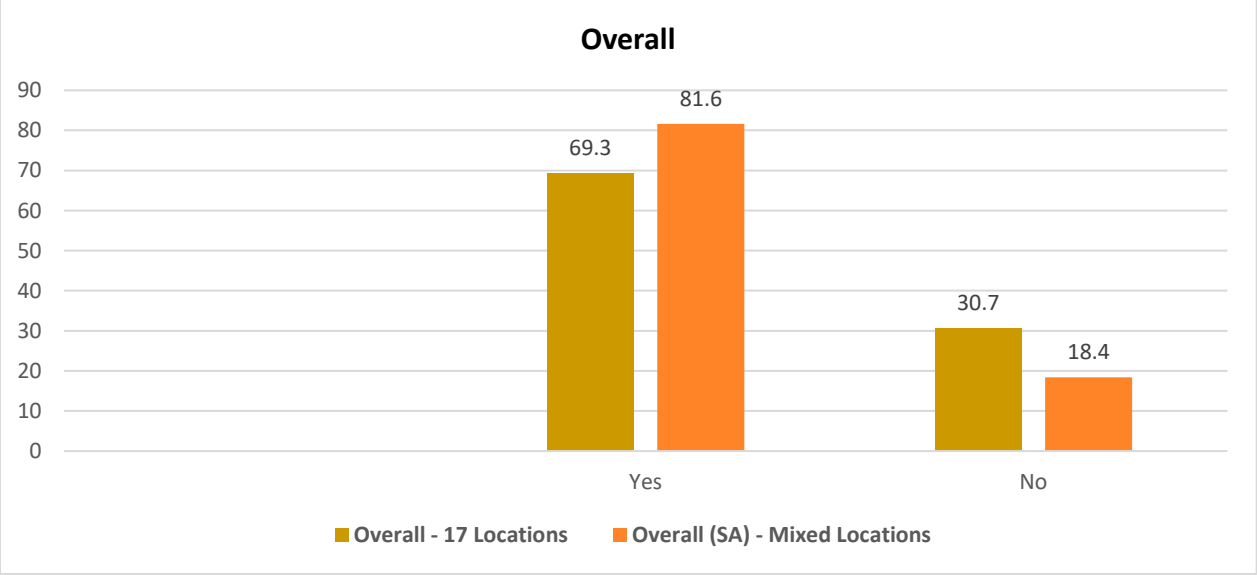
Figure 5.14: *Statement 11: Government should introduce/improve public transportation system*



5.5 Initiatives taken by the Respondents to Mitigate the Effects of Bad AQ

The respondents were asked whether they have taken any steps on their own to mitigate the effects of bad air quality in their respective cities. Around 69.3 percent (SA: 81.6 percent) of the overall respondents stated that they had taken some initiatives on their own to reduce the effect of air pollution.

Figure 5.15: *Distribution of the respondents by steps taken on individual basis to mitigate the effects of bad air quality (Overall)*



The city-wise figures reveal that maximum respondents who reported taking initiatives on their own to mitigate the effect of bad air quality were from the cities of Amritsar (83.7 percent), Delhi/NCR (79.7 percent), Lucknow (78.7 percent) and Mumbai (75.0 percent). Less than 50.0 percent respondents from the cities of Bangalore (47.3 percent) and Kolkata (48.7 percent) stated taking initiatives on their own to reduce air pollution.

Table 5.6: *Distribution of the respondents by steps taken on individual basis to mitigate the effects of bad air quality (Location-wise)*

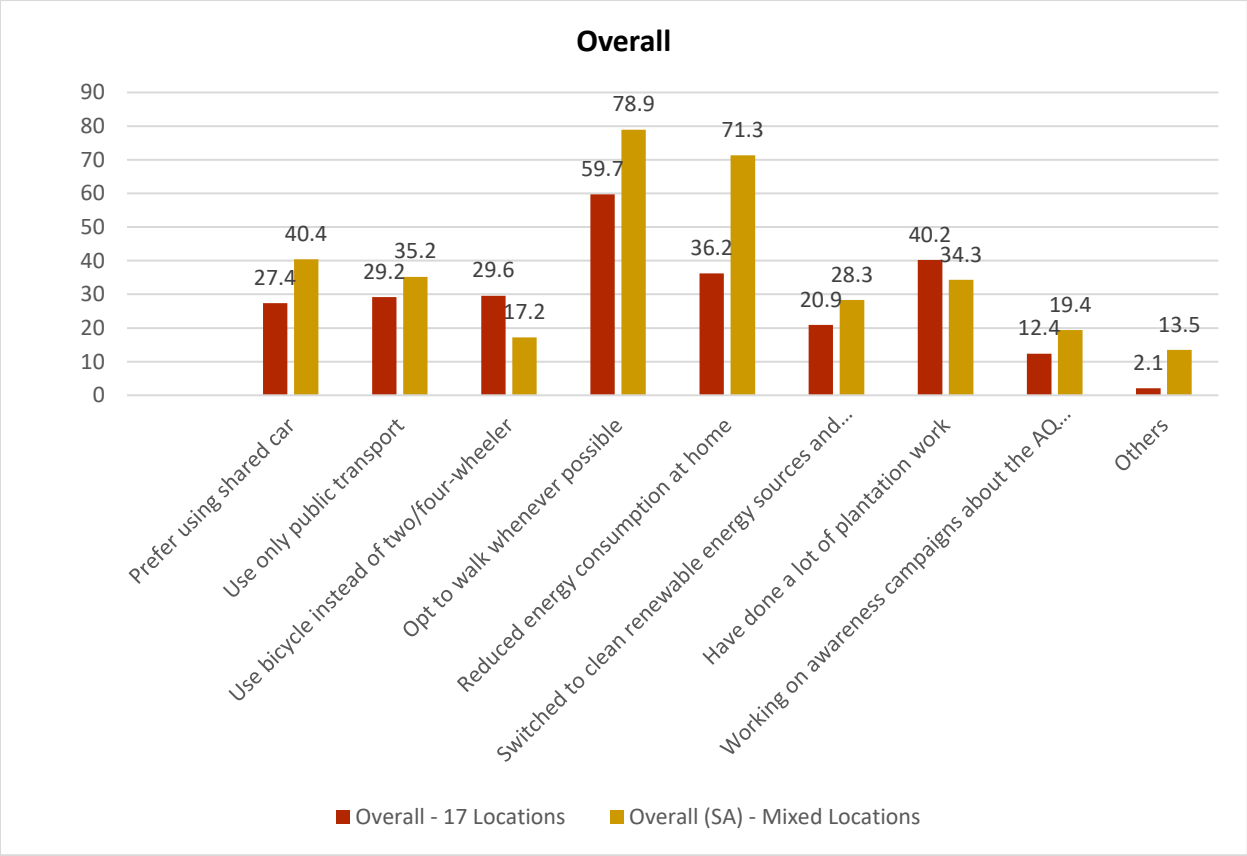
Sl. No	Location	Percentage of respondents stating	
		Yes	No
1	Amritsar	83.7	16.3
2	Angul	53.7	46.3
3	Bangalore	47.3	52.7
4	Chandrapur	79.3	20.7
5	Chennai	60.7	39.3
6	Delhi & NCR	79.7	20.3
7	Dhanbad	69.0	31.0
8	Calcutta	48.7	51.3
9	Korba	64.0	36.0
10	Lucknow	78.7	21.3
11	Mumbai	75.0	25.0
12	Nagpur	68.7	31.3
13	Patna	76.7	23.3
14	Pune	74.7	25.3
15	Raipur	71.7	28.3
16	Singrauli	73.0	27.0
17	Varanasi	71.3	28.7

5.6 Type of Steps taken by the Respondents

The respondents who reported that they were taking steps in their individual capacity to mitigate the effects of bad air quality were further probed as to what steps they had taken or are still taking to clean up the environment.

It was observed from the overall sample that 59.7 percent respondents (SA: 78.9 percent) stated that they opt to walk whenever possible followed by 40.2 percent (SA: 34.3 percent) who said that they have done a lot of plantation to improve the air quality. Around 36.2 percent respondents (SA: 71.3 percent) stated trying to reduce energy consumption at homes while another 29.6 percent (SA: 17.2 percent) have started using bicycle instead of four/two-wheelers while going to work or shopping. Those who stated that they use only public transport and completely stopped using their own vehicles constituted 29.2 percent (SA: 35.2 percent) of the total sample while another 27.7 percent (SA: 40.4 percent) reported using shared vehicles for commuting. About 20.9 percent (28.3 percent) stated that they have made a switch to clean renewable energy sources instead of burning solid fuels and 12.4 percent respondents (19.4 percent) stated that they are working on awareness campaigns to orient the masses about air quality".

Figure 5.7: *Distribution of the respondents by type of steps taken for cleaning up the environment (Overall)*



Location-wise data indicated that maximum respondents who stated using shared cars to mitigate the effect of bad air quality were from the cities of Raipur (57.2 percent), Pune (54.5 percent) and Delhi/NCR (51.5 percent). Likewise, maximum respondents from Chandrapur (63.4 percent) pointed out that they have started commuting by public transport followed by Korba (56.3 percent) Dhanbad (44.4 percent) and Varanasi (41.6 percent). Those who stated using bicycle for commuting was reported by maximum respondents from Korba (81.3 percent), Chandrapur (66.0 percent) and Varanasi (46.0 percent). Respondents stating that they have started walking whenever possible was seen to a large extent in the cities of Pune (81.7 percent), Patna (78.7 percent), Korba (75.8 percent) and Raipur (74.0 percent). Reducing energy consumption at home was reported by maximum percentage of respondents in Pune (67.4 percent), Lucknow (58.9 percent) and Delhi (56.9 percent). Respondents shifting from burning solid fuels to renewable energy sources were found maximum in Chandrapur (40.8 percent), Nagpur (38.8 percent) and Kolkata (34.2 percent). Those who said they have started a lot of plantation work were mostly from the cities of Angul (77.6 percent), Korba (67.2 percent) and Kolkata (58.9 percent). Likewise, maximum respondents who stated working on awareness campaigns to change the mindset of the masses were largely from the cities of Kolkata (35.6 percent), Dhanbad (33.3 percent) and Chandrapur (21.0 percent).

Table 5.16: *Distribution of the respondents by type of steps taken for cleaning up the environment (Location wise)*

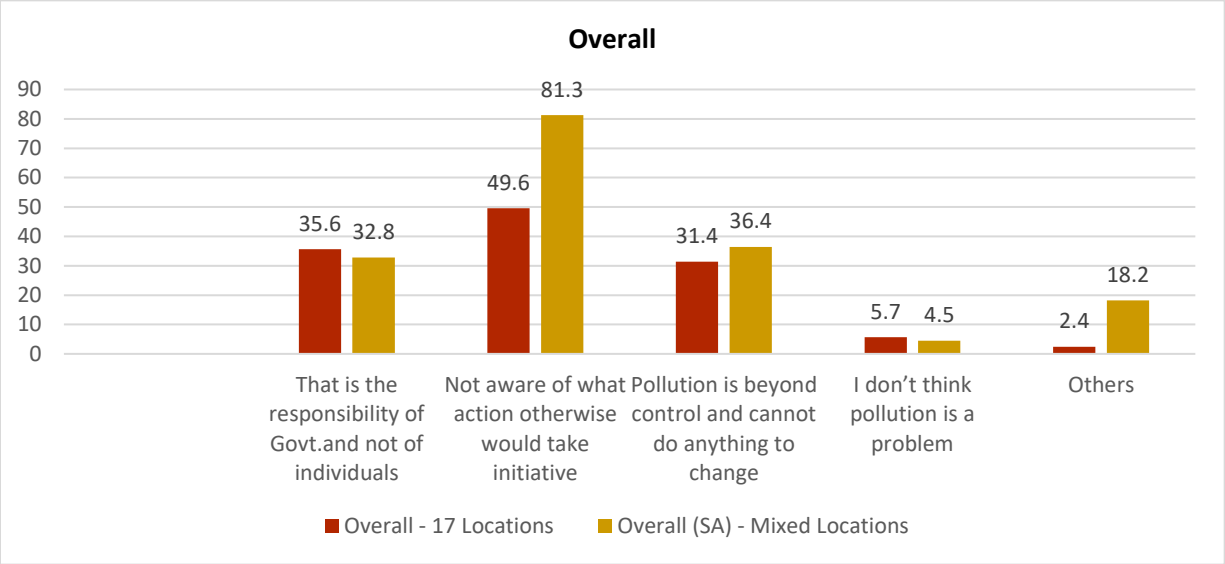
Location	Percentage of respondents stating:								
	Prefer using shared car	Use only public transport	Use bicycle instead of two/four-wheeler	Opt to walk whenever possible	Reduced energy consumption at home	Switched to clean renewable energy sources and stopped burning solid fuels	Have done a lot of plantation work	Working on awareness campaigns about the AQ among the masses	**Others**
Amritsar	31.5	21.9	27.1	60.6	34.7	10.0	46.6	6.0	2.4
Angul	9.9	8.1	8.7	34.8	11.8	3.7	77.6	18.0	0.0
Bangalore	43.0	28.2	18.3	70.4	47.9	22.5	35.9	6.3	2.1
Chandrapur	18.9	63.4	66.0	27.3	19.3	40.8	40.8	21.0	0.4
Chennai	27.5	36.8	27.5	53.8	34.1	16.5	32.4	5.5	4.4
Delhi & NCR	51.5	31.8	14.2	70.3	56.9	24.7	27.2	10.0	1.7

Dhanbad	10.1	44.4	24.2	8.7	11.1	15.5	31.4	33.3	0.0
Calcutta	30.8	40.4	39.7	69.9	42.5	34.2	58.9	35.6	0.0
Korba	8.6	56.3	89.1	75.8	5.5	2.3	67.2	7.0	0.8
Lucknow	11.4	10.2	20.3	72.5	58.9	15.3	55.5	6.8	1.3
Mumbai	33.3	32.0	20.9	64.9	45.8	20.0	35.1	12.4	12.4
Nagpur	24.3	31.1	31.1	56.3	37.9	38.3	43.7	15.5	1.5
Patna	18.7	5.7	16.5	78.7	36.5	23.0	17.8	6.1	0.9
Pune	54.5	16.5	33.0	81.7	67.4	27.7	40.2	12.9	6.3
Raipur	57.2	29.8	25.6	74.0	39.5	12.1	37.2	9.8	0.0
Singrauli	5.9	10.5	12.8	61.2	31.5	12.3	51.6	4.6	0.5
Varanasi	21.5	41.6	46.3	56.1	15.9	29.4	7.5	5.1	0.0

5.7 Reasons for not Taking Initiatives

Those respondents who stated that they have not taken any steps in their individual capacity to mitigate bad air quality were asked to state the reasons for not doing so. Maximum respondents (49.6 percent) stated not taking any action as they are not aware on how to contribute to a cleaner environment and if they knew what to do, they would take action. The corresponding figure for the Support agency was 81.3 percent. Those respondents who said pollution is beyond their control and therefore nothing can be done to change it constituted 31.4 percent of the total sample (SA: 36.4 percent). Another 35.6 percent respondents (SA: 32.8 percent) believed that it is the government's responsibility to take action and not the individuals. Around 5.7 percent (SA: 4.5 percent) of the sample respondents stated that they don't think of pollution as a problem.

Figure 5.8: *Distribution of the respondents by reasons for not taken initiatives for improving air quality (Overall)*



Location-wise data revealed that more than 70.0 percent respondents from the cities of Delhi/NCR, and Lucknow pointed out that they are not aware on what action they need to take to reduce air pollution and that if they knew they would take action. Maximum respondents from Angul (95.0 percent) believed that it is the government and not the individual who should take action followed by Kolkata (54.5 percent). Likewise, maximum respondents from Angul (46.8 percent), Chennai (45.8 percent), Dhanbad (43.0 percent) believed that pollution is beyond control and nothing can be done to change the situation. Around 17.7 percent respondents from Chandrapur, 13.6 percent from Kolkata and 12.8 percent from Nagpur did not think of pollution as a problem.

Table 5.17: *Distribution of the respondents by reasons for not taken initiatives for improving air quality (Location wise)*

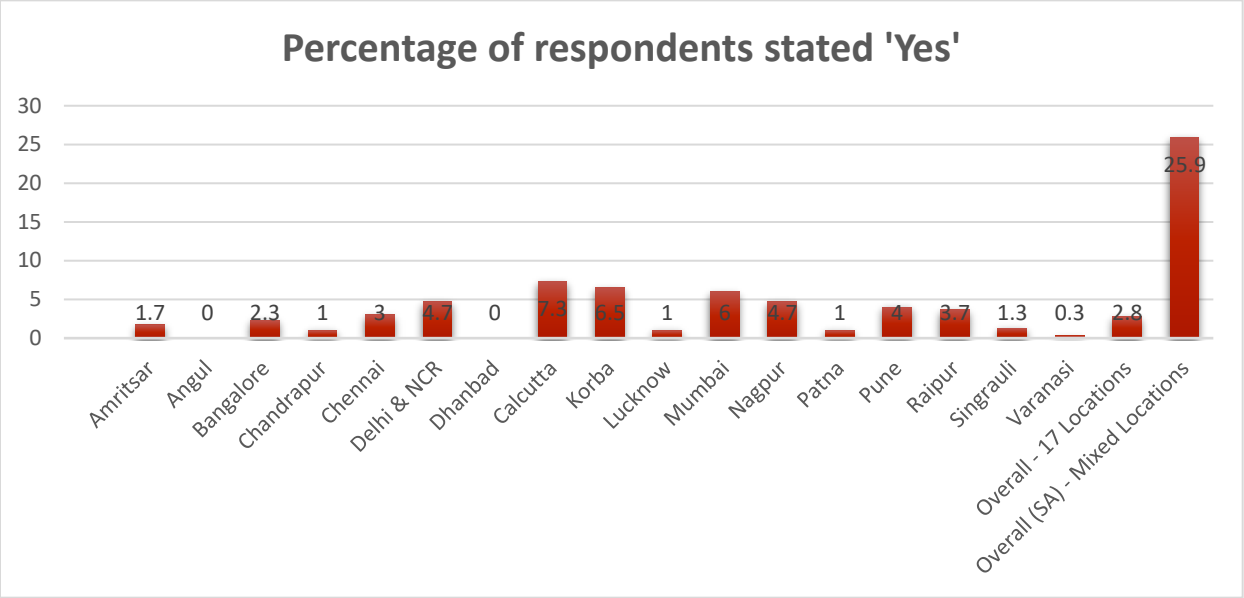
Location	Percentage of respondents stating:				
	It is the responsibility of Govt. and not of individuals	Not aware of what action otherwise would take initiative	Pollution is beyond control and cannot do anything to change	I don't think pollution is a problem	Others
Amritsar	28.6	57.1	32.7	8.2	0.0
Angul	95.0	8.6	46.8	1.4	0.0
Bangalore	27.8	58.2	28.5	3.2	1.3
Chandrapur	29.0	45.2	33.9	17.7	0.0

Chennai	16.1	41.5	45.8	5.1	0.8
Delhi & NCR	18.0	75.4	31.1	4.9	6.6
Dhanbad	19.4	46.2	43.0	2.2	0.0
Calcutta	54.5	57.1	39.6	13.6	0.0
Korba	41.7	55.6	4.2	0.0	0.0
Lucknow	26.6	81.3	14.1	0.0	0.0
Mumbai	24.0	49.3	20.0	1.3	22.7
Nagpur	24.5	47.9	29.8	12.8	5.3
Patna	42.9	61.4	5.7	4.3	4.3
Pune	21.1	55.3	26.3	0.0	5.3
Raipur	40.0	52.9	12.9	3.5	0.0
Singrauli	17.3	60.5	34.6	7.4	0.0
Varanasi	29.1	27.9	50.0	9.3	1.2

5.8 Awareness about NGOs/CBOs Working for Improving Air Quality

Respondents were asked if they are aware about any NGOs or CBOs that are working on air pollution in their cities. Only around 3.0 respondents stated that they were aware of such NGOs/CBOs. None of the respondents in the cities of Angul and Dhanbad stated awareness of any NGOs or CBOs functioning in their areas. In contrast, 25.9 percent of respondents from the support agencies stated that they were aware of NGOs/CBOs working on air pollution. The names some of the NGOs/CBOs specified by the respondents are VOA Sunshine, youth club, CSC, Green plantation, Isha Foundation, Say trees, Indian pollution control Association, Chintan, Clean Air Asia, Harajeevan, PCRA, SNM, TERI, CEE, Paryavaran Mitra, We mean to clean etc.

Figure 5.9: *Distribution of the respondents by their awareness about the NGOs/CBOs who are working on air pollution (Overall)*



5.9 Seeking Knowledge about Air Quality

The respondents were asked whether they would be interested in securing more information about air quality. Overall 85.5 percent (SA: 86.5 percent) respondents stated that they would be interested in accessing more information about the air quality. Cities where more than 90.0 percent respondents expressed keen interest in securing more information about air pollution were Korba, Singrauli, Patna, Angul, Dhanbad, Chennai and Mumbai.

Table 5.18: *Distribution of the respondents by their willingness in securing more information about air quality (Location wise)*

Location	% of respondents stating Yes.	% of respondents stating No.
Amritsar	87.3	12.7
Angul	99.3	0.7
Bangalore	63.0	37.0
Chandrapur	82.7	17.3
Chennai	92.7	7.3
Delhi & NCR	87.3	12.7

Dhanbad	93.7	6.3
Calcutta	66.3	33.7
Korba	99.5	0.5
Lucknow	98.0	2.0
Mumbai	90.7	9.3
Nagpur	85.3	14.7
Patna	99.0	1.0
Pune	88.3	11.7
Raipur	64.7	35.3
Singrauli	96.3	3.7
Varanasi	63.3	36.7
Overall – 17 Locations	**85.5**	**14.5**
Overall (SA) – Mixed Locations	**86.5**	**13.5**

Section VI: Outcome of Focus Group Discussions

As a part of the study, two focus group discussions were conducted at two different locations of Delhi to understand if the respondents were aware of the impact of polluted air on their health, whether they knew about the steps taken by the government/NGOs/CBOs to mitigate the effects of air pollution and what would trigger them to take personal action against air pollution.

The first FGD was conducted in Deshbandhu college, Kalkajee with students from different streams and both genders while the second FGD was carried out in Harinagar involving working professionals, college students, homemakers and businessmen. The findings of the FGDs are summarised below:

6.1 Awareness about Air Pollution

All respondents were well aware of air pollution and their source of information was television, newspapers, internet, books, school textbooks etc. The students of Deshbandhu college stated that they have a compulsory course on air pollution in the first year of college. The course is called AECC (Availability enhancement compulsory course). Some of the students also pointed out that they could actually see the smog during winter and could feel the physical effects of polluted air.

Most respondents said air pollution was a common topic of discussion at homes, among friends and colleagues. Few of them stated that they advise their children to use masks while venturing out, while one respondent from Harinagar was thinking of getting air purifier installed in his home. A respondent was of the view that air pollution is talked about only in winter when the pollution levels are quite high. According to him it is not a topic that is discussed on a regular basis even on the television.

Of the 20 respondents who were a part of the survey, 9 (slightly less than 50 percent) of them reportedly had heard about PM 2.5 and PM 10. When asked what exactly PM 2.5 and PM 10 was, a respondent explained that it was the size of the particulate matter and breathing it is very harmful and could cause respiratory problems and hole in the lungs. He also pointed out that as compared to PM 10, PM 2.5, is more harmful and therefore a more serious health concern.

Around 60 percent respondents were aware about air quality index. Few respondents stated seeing the air quality index displayed at Connaught place, Dhaula Kuan, AIIMS, metro lines and airport. A respondent said that it is a scale to measure the air quality. According to another respondent, if the air quality index displays less than 100, the air quality is good. If it is between 100-200, it is moderate. If it is 200-300, the air quality is bad and above 300, it is at a danger level.

Some respondents pointed out that the air quality index is displayed only when the pollution levels get out of control.

6.2 Perception about Change in Air Quality in Recent Years

All respondents without any exception were of the opinion that the air quality in Delhi is very poor. Few of them pointed out that the air quality is worst in winter season while during the rainy season, it is a lot better. One of them opined that the reason for bad air quality during winter could be due to burning of firewood to protect from the cold. They also believed that during Diwali season, the air gets toxic due to bursting of crackers. Crop burning in Haryana and UP were also some of the reasons cited for air quality worsening during winter.

Respondents agreed that during the last 2-3 years, the air quality has become worse in Delhi. According to them the possible reasons are polluting industries, increase in the number of vehicles, construction activities on the rise, increase in population, climate change, global warming, cutting of trees, increase in the number of air conditioners, increased production and use of nuclear items etc. A respondent pointed out that a major source of bad air quality in Delhi is also the garbage dumps as it releases methane and CO2 which is a major source of pollution. Few of them observed that people are not willing to do car-pooling and a single household own 3-4 vehicles. Respondents also believed that the trucks entering Delhi also emit smoke resulting in pollution. They felt the trucks should be diverted so that it does not enter Delhi.

6.3 Effects of Air Pollution

Respondents stated feeling uncomfortable when the pollution levels are high. The major health problems faced by them are irritation or burning sensation in the eyes, breathing problems, throat infections, skin irritation etc. A respondent believed that people who are asthmatic are affected more. Another student from Deshbandhu college pointed out that when the pollution levels increases, the nerves in the eyes weakens affecting vision. Respondents also stated feeling suffocated and sick when the air quality worsens. They also pointed out that the number of asthma patients have been steadily increasing and more and more children are suffering from respiratory problems.

When asked if pollution affects different age groups differently, students of Deshbandhu college were of the view that senior citizens and adolescents are most affected by air pollution. Others believed that children, the elderly and people with weak immune systems are more affected. According to a respondent, these days most people have poor immune systems due to eating a lot of unhealthy food or junk items.

6.4 Precautionary Measures

When questioned on the precautions they usually take against air pollution, respondents stated using masks or handkerchiefs especially around winter and Diwali season. Few homemakers stated planting saplings outside their homes and keeping indoor plants especially tulsi to increase oxygen levels. A student stated that there are 9 air purifier plants of which he has 6 of them at home. Few said they restrict their children from burning crackers. Others suggested sprinkling water outside their homes so that mud and dirt do not fly, servicing their two and four wheelers from time to time so that they don't emit smoke, keeping away from construction sites and garbage dumping areas, avoiding own vehicles and using public transport and metros, eating jaggrey as it will lessen the effects of air pollution etc.

6.5 Awareness about Government Initiatives

A respondent stated that the government plans to purchase 1000 electric buses by the year 2019 so as to reduce vehicular pollution. Cluster buses have already been introduced. The government also makes attempts to completely ban plastic (polythene) usage but people do not follow it. Majority of the respondents pointed out that the government has started a huge plantation drive across the city to mitigate the effects of pollution to some extent. Other steps taken by the government as stated by the respondents are implementing the odd-even car scheme, recycling and introducing several booths to check the pollution levels of vehicles. A respondent who is a homemaker from Harinagar said that blue and green dustbins were distributed in Motinagar area free of cost by the government to segregate waste. According to a student in the second year of graduation, the government has plans of introducing electric trains. Another student mentioned that government has been trying to rely more on solar energy and to reduce the dependence on coal. He stated that the government also gives subsidies for using solar panels.

None of the respondents were aware of any NGOs/CBOs working for the betterment of air quality in the city.

6.6 Individual Steps to Mitigate the Effects of Bad Air Quality

Majority of the respondents stated doing a lot of plantation work especially growing air purifier plants in and around their homes to lessen the effects of pollution. Many also stated using public transport and metro for travelling instead of using their own vehicles. A homemaker said she would be interested in properly managing the household waste as in her locality the waste management system is not adequate. Few students stated that they have completely stopped burning crackers during Diwali and also advise their friends to do the same.

6.7 Suggestions

When asked what actions can be taken to create awareness about bad air quality, a respondent pointed out that the newspapers should make a mention about the air quality index on a daily basis. Likewise, in the news sections, television could also display the quality of air to create awareness. Another respondent was of the view that free air purifier plants should be distributed to people to encourage them to start planting saplings/plants. Few respondents stated that the government has to ensure that there are no industries in residential areas and also industries should be forced to switch over to cleaner processes. Another viewpoint was that the Government should make advertisements on the bad effects of pollution which can be put on u-tubes.

Section VII: Suggestions and Recommendations

Respondents were asked to state that what specific actions they would you like the government to take in order to mitigate the effects of bad air quality. Some of the feedback and suggestions offered by them are presented below;

- Government should take strict and stringent action against motor vehicles that cause pollution such as fixing a penalty against polluting vehicles and banning old vehicles that emit carbon monoxides and nitrogen oxides. Also, limit the use of diesel vehicles and promote electric vehicles. Limit the licenses given to two wheelers and four wheelers every year. Also need for checking the adulteration of fuel.

- Encourage the use of hydrogen economy instead of electric economy as Hydrogen economy is more sustainable and cheaper while electricity is expensive. If hydrogen reactors are distributed among the masses, it can run their vehicles. Give more incentives to electric and hybrid vehicles, solar energy, energy from waste, compost from waste etc. Build the infrastructure to support electric vehicles. Promote electric vehicles and subsidise them. Use vehicles that can run on ethanol as it will reduce pollution.

- Strengthening and introduction of more public transport system so as to reduce the number of private vehicles on road. Government needs to develop the infrastructure for attracting citizens to use the public transport.

- Cutting of trees should be discouraged and increase the green cover in the city. The government could provide free saplings to people. Enforce wide roads and plantation on either side of roads. Every residential societies should be given task to grow trees depending upon how big their area is. If it is a very big society then at a least 100-500 trees should be grown in each society.

- The location of the industries should be at a distance from residential areas. Factories producing solid waste and harmful air effluents should be shifted from the cities and residential areas to the outskirts.

- Strict penalty should be enforced on companies that cause pollution and force them to switch to cleaner processes. Make polluting companies adhere to pollution laws. Strong legislative measures should be imposed on factories construction sites and vehicles plying on road.

- Seminars/workshops could be organised to make people aware about air pollution and steps that need to be taken to mitigate the impact of bad air quality. NGOs could also be involved to create public awareness regarding pollution.

- People could be encouraged to use the bicycles as a mode of transport and accordingly focus should be to develop proper cycle tracks in the cities.

- There should be a proper system developed for waste management and garbage disposal. Government should engage more resources to clean the city and for garbage collection. All household waste needs to be segregated as bio degradable waste and non-bio-degradable wastes that are dangerous to the environment. It is better to always use bio degradable products and make it affordable for the common man to purchase and use it instead of other non-degradable products.

- Ensure that construction activities are carried out in the night and dispose the construction debris in a proper manner. Likewise, all constructions areas and vehicles plying in and out of construction sites should be air cleaned in a unit before it reaches the main road.

- It was suggested by a respondent from Bangalore that Bangalore is growing at a fast pace and its natural resources are under pressure by the ever-growing population. Main reason for this is that most employment opportunities are centered in Bangalore. Thus, the increasing number of job seekers invariably puts more strain on natural resources. Government needs to focus on developing other tier 1 and tier 2 cities and divide the employment opportunities equally so that there is less strain on the resources of one place there by reducing the number of job commuters through jam packed roads.

- Odd-even car scheme should be implemented in all cities so that there will be less number of vehicles plying on roads. Also limit the licenses given to two wheelers and four wheelers every year. There should be some restrictions on the number of vehicles people can purchase.

- Awareness about pollution, its causes and precautions that needs to be taken against to take against air pollution should begin in schools so that children become responsible citizens. There should be a compulsory class on environment science in schools and colleges wherein the students should be taken outside and taught about tree plantation and the impact of planting certain plant species on the environment.

- Instead of completely depending on the government, individual initiation is required for better and less polluted air. The fight against air pollution has to be a mass movement. Individuals should also be made accountable and frame policies that will involve the citizens. Pollution damage can be mitigated by all parties (government, industries, citizens, construction companies, etc.) It is the

responsibility of every individual and organisation to be mindful of their actions and responsibly undertaking counter measures/initiatives to balance the damage already caused due to pollution.

- Prevent crop burning in states of Haryana and UP as it leads to pollution in Delhi. The residues of crops after harvesting could be used to make bio gas instead of burning them and causing pollution.
- Government should ban diesel shared autos and promote CNG autos. Traffic police should be stricter in implementing the pollution related laws and impose fines or seize vehicles of people who do not abide rules.
- Decongesting of the major cities could be done by increasing satellite towns and dispersion of job opportunity to these satellite towns.
- Increase the amount of production of renewable energy sources, construction of solar plants, compulsory implementation of solar energy in all households.
- Transport industry including aviation industry is responsible for 13 percent of total Green House Gas emissions. While rearing animals for food makes animal agriculture responsible for as much as 51% of total greenhouse gas emission. To meet the vast demand of animal products for food, these farm animals are bred and killed in billions every week. These animals especially cows release methane in huge quantity and methane is 20 times more dangerous than carbon dioxide. So, government should promote Vegan diet.
- Utilize city waste for thermal production, treat sewage and utilize it in the form of fertilizers.
- Environmental aspects should be considered while planning the expansion and development of the city. Sufficient open space in the form of parks, multilane roads able to accommodate the growing traffic, flyovers on busy crossings, multilevel parking, phasing out of very old vehicles could be some of the steps to stop further deterioration of the air quality.
- Protect the water bodies from industrial/animal/human waste.

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