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ORIGINAL ARTICLE

Mother's Awareness Regarding Air Pollution And Its Effects On The Health Of Their School Going Children

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Abstract:

Air pollution is the environmental factor with the greatest impact on health and is responsible for the largest burden of environmental related diseases. Pollutants in the air causing health risk to everyone particularly the children. Over a decade, a considerable number of research studies have reported adverse health effects associated with air pollution. The harm caused by air pollutants has been already recognized by medical practitioners, and researcher. There are basically two types of air pollutants, outdoor and indoor. Whatever may be the sources, the pollutant in the air can damage lungs at cellular levels, can reduce lung functions, increases the chances of respiratory illness and asthma ,increases sickness rates and may even increases the death rate. Children are the most vulnerable groups among us who are the worst sufferer of air pollution. Being concerned about the adverse effects of air pollution on children's health, the investigator conducted a study on the mothers of the primary school children of the greater Guwahati area of Assam on the basis of the following objectives – (1) To study the awareness of the mothers of primary school children of different age groups and education status regarding--- (a) Internal and (b) External sources of air pollution. (2) To study the effects of air pollution on the physical health of the children. (3) To study the impact of physical illness due to air pollution among the primary school children. A descriptive survey method was adopted. 150 mothers were selected on the basis of the full responses received from 10 selected city schools. Variables undertaken for the study was (1) Age and the (2) Educational status of the mothers. Self made questionnaire having (r = 0.64) was used for collecting data. Data were analyzed by simple percentages and chi square (X2) test. . The study reveals that, the mother's of the primary school children were aware about the external sources of air pollution, but most of them are not able to identify the different causes of the internal sources of pollution. It has also been observed that, our children of the primary schools of the greater Guwahati are suffering from different types of physical illness.

KEYWORD:

Environmental awareness, adverse ill effects, Air pollution.

INTRODUCTION

Air pollution is the environmental factor with the greatest impact on health and is responsible for the largest burden of environmental related diseases. Clean air means a balance of nitrogen and oxygen, with small amount of argon carbondioxide, neon, helium and other gases. On the other hand polluted air means the mixture of some pollutants like oxide of nitrogen and oxygen, carbon monoxide, sulphur dioxide, ozone and many hazardous hydrocarbons and metal compounds. Air pollutants have great health hazards. Some major effects of air pollution are it may develop cancer, asthma, chronic bronchitis, kidney

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and liver problem skin rashes, cough, throat irritation, damage the nervous system, developmental problems in children, birth defect etc. In most of the urban areas in India including Guwahati city of Assam, motor vehicles are the most important sources of air pollution. Different research studies confirmed that air pollution badly effects the health of human beings particularly children. The study carried out by the Centre for Northeast studies and policy research (CNES) under the sponsorship of the Foundation for Social Transformation (FST) confirmed that school children in Guwahati and Shillong are found to be the most susceptible to various diseases caused by air pollution as per the finding of a study on 'Impact of air pollution in specific areas of Guwahati and Shillong on vulnerable groups". Different researches have been done so far regarding the ill effects of air pollution throughout the globe.

Being concerned about the adverse effects of air pollution on children's health the investigator conducted a study on the primary school children of the greater Guwahati area of Assam on the basis of the following objectives:

1.To study the awareness of the mothers of primary school children of different age groups and education status regarding –
(a) Internal and (b) External sources of air pollution .
2.To study the ill effects of air pollution on the physical health of the children.
3.To study the impact of physical illness due to air pollution among the primary school children.

DESIGN OF THE STUDY:

Methodology: The present study adopted the descriptive survey method. The study was conducted in the greater Guwahati area of Assam, which was selected purposively as the traffic related pollution in these areas is large.

POPULATION AND SAMPLE:

All the children of vernacular medium primary schools comprise the population for the present study. A total number of 150 mothers and 150 children of the primary schools of Maligaon, Santipur, Panbazar, Uzanbazar, Latasil, Bhangagarh, Ulubari and Jalukbari were selected as a sample. The mothers were selected randomly on the basis of the full responses received from 10 selected schools. Accordingly the children's of those mothers (N=150) were selected for the present study.

VARIABLES UNDERTAKEN FOR THE STUDY:

Mothers have been classified on the basis of the two variables.

Age -
(i) Middle age group (31-45 years),
(ii) Younger age group (up to 30 years)
Educational Status- (i) Up to Higher Secondary
(ii) Above Higher Secondary

TOOLS:

The data was collected on the basis of a standard self made questionnaire. The questionnaire was consisted of two parts. Part A and Part B.

Part A has two sub parts.

(i) Questions on awareness regarding Internal sources of air pollution
(ii) Questions on awareness regarding external air pollution.

Part B comprises of two parts –

(a) Questions on physical illness.
(b) Questions on Impacts of physical illness due to air pollution

The reliability of the questionnaire has been determined by using test-retest method and the

reliability co-efficient was found by using Pearson product Moment Method (r = 0.64). The expert opinion was taken from the faculties of the Dept. of Environmental Science of Gauhati University to find out the validity of the questionnaire.

DATA ANALYSIS:

The collected data for the study was analyzed by using percentages and Chi square test.

DELIMITATION OF THE STUDY:

1.The study was delimited to 10 vernacular medium primary schools . 2. The greater Guwahati area was selected for the study. 3. Only 150 mothers and their children were selected on the basis of the full responses of the questionnaire received.

RESULT AND DISCUSSION:

The mothers awareness regarding the internal and external air pollution have been shown in the Table No 1 (a) and 1 (b) and discussion on the findings on both types of air pollution are done subsequently for awareness regarding both types of air pollution.

Table – 1 (A)
Percentages of Mothers having Awareness regarding Internal Air pollution of (Middle Age group and younger age group).

Sources of Internal Air pollution	M.A.G. (31-45 years) N=86	Y.A.G. (up to 30 years) N=64
Dust during cleaning	48.02%	56.26%
Smoke from kitchen	50.67%	67.70%
Smoke of cigarette	66.52%	70.02%
Gas emitted from refrigerator	15.04%	20.25%
Fires from LPG	34.65%	40.45%
Gas emitted from spray	07.67%	12%
Smell from mattresses	10.02%	11.08%
Mosquito repellent	45.96%	41.02%
Insecticide/Pesticides	20.52%	27.11%
Deodorizing sprays perfumes	0.7%	0.5%
Paint	10.25%	9.00%
Chemical cleaning agents	0.7%	2.20%
Dust particles from carpets	65.20%	56.80%

MAG = Middle Age Group YAG = Younger Age Group

The analyzed data regarding the awareness of mother about internal air pollution residing in the greater Guwahati areas reveal that 86 mothers were from middle age group and 64 of them are from younger age groups. Among these the groups , only 48.02% (MAG) and 56.26% (YAG) are aware about dust pollution which produced during cleaning. Regarding smoke from kitchen, only 50.67% (MAG) and 67.70% mothers are aware, 66.52% (MAG) and 70.02 (YAG) mothers are aware that smoke of the cigarette has

negative effects on health. It is pity to know that 15.05% (MAG) and 20.25% (YAG), 7.67% (MAG) and 12% (YAG) 10.02% (MAG) and 11.08% (YAG), 0.7% (MAG) and 0.5% (YAG), 0.7% (MAG) and 2.20% (YAG) mothers are aware about gas emitted from refrigerator ,emitted from spray, smell from mattresses, deodorizing, and sprays/perfumes respectively can create air pollution. Awareness regarding pollution from fires of LPG (MAG = 34.65%, YAG = 40.45%) mosquito repellent (MAG = 49.96%, YAG = 41.02% dust particle from carpets (MAG = 65.02%, YAG= 56.80%. respectively.

Table 1 (B)
Percentages of Mothers having awareness regarding external sources of air pollution. (M.A.G and Y.A.G.)

Sl. No.	Sources of External Air pollution	M.A.G. (31-45 years) N=86	Y.A.G. (up to 30 years) N=64
1.	Exhausts emitted from industries	26.24%	36.67%
2.	Smoke and dust from construction of road	59.02%	58.06%
3.	Smoke and dust from construction of building	67.05%	64.62%
4.	Garbage in the road side	64.05%	62%
5.	Smoke from traffic and vehicles	67.02%	69.67%
6.	Pollen of flowers	12.00%	10.57%
7.	Drains	45.02	53.56%

MAG(31-45 years) =Middle Age Group, YAG (up to 30 years) =Younger Age Group

Among the 150 urban mothers residing in the greater Guwahati areas, 86 mothers were from middle age groups and 64 are from younger age groups. It has been observed that only (26.24% from MAG and 36.67% from YAG) are aware that exhaust emitted from industries which can generate air pollution. Regarding smoke and dust from construction of road, 59.02% (MAG), 58.06% (YAG), smoke and dust from construction of building, 67.05% (MAG) and 64.62% (YAG), garbage in the road side, 64.05% (MAG), 62% (YAG) smokes from traffic and vehicles 67.02% (MAG), 69.67% (YAG) drain 45.02% (MAG), 53.36% (YAG) are aware respectively. It is pity to know that only 12.00% (MAG) and 10.57% (YAG) are aware that pollen of flower can generate in pollution.

Table 2 (A)
Percentages of Mothers (H.S. or above H.S) having awareness regarding Internal sources of Air pollution.

Sl. No.	Sources of Internal Air pollution	Higher Secondary level (N=52)	Above Higher Secondary Level (N=98)
1.	Dust during cleaning	46.22%	52.52%
2	Smoke from kitchen	47.88%	58.20%
3.	Smoke of cigarettes	56.20%	67.00%
4.	Gas emitted from refrigerator	12%	22%
5.	Fires from LPG	32%	46.43%
6.	Gas emitted from spray	22,47%	22.30%
7.	Smell from mattresses pillow	10.23%	18.%
8.	Mosquito Repellant	22%%	42.90%
9.	Insecticide/pesticides	37.32%	37.78%
10.	Deodorizing sprays perfumes	32.76%	34.45%
11	Paint	12%	13%
12.	Chemical cleaning agents	32.76%	45.67%
13.	Dust particles from carpets	40.62%	58.%

H.S=Higher Secondary Passed, Above H.S=Above Higher Secondary Passed

Among the 150 urban mothers residing in the greater Guwahati areas, 52 are from higher secondary level and 98 are from above higher secondary groups. It has been observed that only (46.22 and 52.52% from HS) are aware that dust during cleaning can generate air pollution. Regarding smoke from kitchen 47.88% (HS), 58.20% (AHS), smoke, of cigarettes 56.20% (HS) and 67.00% (AHS,), fires from LPG (HS) 32%, 46.43%, AHS) insecticide/pesticides 37.32% (HS), 37.78% (AHS) deodorizing sprays perfumes 32.76% (HS) 34.45% (YAG), chemical cleaning agents 32.76% (HS)), 45.67% YAG).. Dust particles from carpets 40.62% (H.S), 58% (YAG), are aware respectively. It is pity to know that only 10.23% (HS) and18% (AHS), 10% (MAG) 22%% (HS), and42.90% (AHS) , 12% (HS), and 13% (AHS) are aware that, smell from mattresses /pillow mosquito, repellant and paint can generate pollution.

Table 2 (B)
Percentages of Mothers (H.S. or above H.S) having awareness regarding External sources of Air pollution.

Sl. No.	Sources of External Air pollution	Higher Secondary level (N=52)	Above Higher Secondary Level (N=98)
1.	Exhausts emitted from industries	42%	67.20%
2	Smoke and dust from construction of road	32.08%	59.06%
3.	Smoke and dust from construction of building	42.56%	70.00%
4.	Garbage in the roadside	59.86%	82.00%
5.	Smoke from traffic and vehicles	42.56%	75.00%
6.	Pollen of flowers	15.26%	25.06%
7.	Improper disposal of garbage	55.86%	62.06%
8.	Drainage system	70.26%	65.20%

H S=Higher Secondary, AHS= Above Higher Secondary

Among the 150 urban mothers residing in the greater Guwahati areas, 52 are from higher secondary levels and 98 are from above higher secondary levels. It has been observed that only (from HS 42% and 67.20% from (AHS) are aware that exhaust emitted from industries which can generate air pollution. Regarding smoke and dust from construction of road, 42.56% (HS), 70.00% (AHS), smoke and dust from construction of building , 67.05% (HS) and 64.62% (AHS), garbage in the road side, 59.86% (HS) 82.00% (AHS) smokes from traffic and vehicles 42.56% (HS), 75.00% (AHS) drain 70.26% (HS), 65.20% (AHS) are aware respectively. It is pity to know that only 15.26% (HS) and 25.06% (AHS) are aware that pollen of flower can generate air pollution .

Table 3
Effects of Air pollution on the physical health of the children of primary schools.

Sl. No.	Effects	No of children Suffering	Percentages of children suffering	Frequencies			X^2 value	Significant level
				A	F	S		
1.	Irritation in Eyes/Nose/throat	125	82.5	35	65	25	20.79	**
2.	Headache	66	43.56	12	35	19	12.62	**
3.	Nausea	56	39.96	15	23	18	1.74	N.S
4.	Vomiting	47	23.76	16	21	10	3.87	N.S
5.	Suffocation	32	21.12	4	13	15	1.47	N.S
6.	Sneezing	77	50.82	22	40	15	12.95	**
7.	Asthma	94	62.04	34	46	14	16.65	**
8.	Skin irritation	36	31.02	6	16	14	6.33	N.S
9.	Chest infection	75	49.5	26	42	07	24.56	**
10.	Respiratory tract infection	80	52.8	09	45	26	23.21	**
11.	Chronic cough	64	42.24	22	29	13	6.02	*
12.	Chronic breathing problem	60	39.06	21	12	27	5.70	N.S

A =Always F= Frequently S= Sometimes

df= (r-1) (c-1) = (3-1) (2-1)=2 X2= 5.99 at 0.5% level, X2 = 9.210 at 0.1% level

From the table it has been observed that that X2 value are found to be highly significant regarding the symptoms like irritation in eyes/nose/throat , sneezing ,headache, asthma, chest infection and respiratory tract infections. Thus it can be said that due to air pollution the children of the primary schools suffers from the above mentioned physical symptoms.

Table – 4
Impact of illness due to air pollution (N=150)

Sl. No.	Impacts of illness	Total	Percentages
1.	Medication for chronic cough	55	36.3%
2.	Medication for allergic reaction	62	40.92%
3.	Medication for respiratory distress	42	40.92%
4.	Hospitalization due to respiratory distress	07	4.62%
5.	Remain absent from school due to respiratory distress	65	42.9%
6.	Remain absent from school due to other illness	24	15.85%

Table 4 reveals that among the 150 children of the primary school children 36.3% , 40.92% and 40.92% are using medicine for chronic cough, allergic reaction as well as for respiratory distress respectively 4.62% have been hospitalized due to severe respiratory distress, 42.9% have to remain absent from schools due to respiratory distress ,15.85% have to remain absent due to other types of illness

CONCLUSION

From the present study, it can be concluded that, the mother's of the primary school children were aware about the external sources of air pollution, but most of them are not able to identify the different causes of the internal pollution such as fumes from gas stove, gas emitted from sprays, perfumes, smell from pillows mattress, paints, fumes emitted from household pesticides etc. Few of them are aware that mosquito repellent is harmful for their

From the above study, it has also been observed that, our children of the primary schools of the greater Guwahati are suffering from different types of physical illness as a result they have to be hospitalized and thereby remain absent from school for a longer period of time. From the present study, it can be concluded that, the mother's of the primary school children were aware about the external sources of air pollution, but most of them are not able to identify the different causes of the internal pollution such as fumes from gas stove, gas emitted from sprays, perfumes, smell from pillows mattress, paints, fumes emitted from household pesticides etc. Few of them are aware that mosquito repellent is harmful for their

It is to be noted that if the investigator would able to cover more areas covering more schools of the greater Guwahati area it could be possible to give more clear picture about the health effects of air pollution on the children of Assam.

Children are the precious citizen of our state. Hence, the mothers should be made aware about the different sources of air pollution as well as the control measures which could be incorporated at family level to curtail air pollution. Government should come forward to deal with these important issues. Mass media especially Doordarshan can play an effective role in developing environmental awareness. School health check should be made compulsory for the children in every school to protect them from major health problems.

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