



Research Article

EXPOSURE TO VEHICULAR POLLUTION AND RESPIRATORY IMPAIRMENT IN TRAFFIC POLICEMEN (BALGAMI MIZAJ) OF PUNE CITY

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ABSTRACT

The ambient air quality monitoring was carried out on the highways of some parts of Maharashtra (India). In Pune city, possible adverse effects was observed from pollution, emitted from motor vehicle. Based on this concern, it is believed that this type of air pollution resulting Asthma and BalgamiMezaj (Respiratory dysfunction). Traffic policemen in Pune city have high exposure to air pollutants. The present investigations were on the research of Balgamimezaj (Respiratory dysfunction) of traffic policemen and group of professionals exposed to inferior air quality. The investigation was done according to distribution of participants age, sex, duration of service, preventive practice, clinical examination and trouble in breathing etc between two groups. The present investigation reveals that traffic policemen suffer more than the professionals, from respiratory impairment, chest tightness, difficulty in breathing, sneezing, running nose and finally Asthma. The study suggests the compulsory use of PPE (Nose Mask) by the traffic Policemen during duty hours, This will help for protection from vehicular pollution. The regular periodic health check up is also required to understand the impact of vehicular pollution on the health of the Pune city policemen.

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INTRODUCTION

In *Unani Medicine*, the concept of Air pollution is known as *FizaiAaloodgi*. The Air is said to be *Alooda* [polluted] when it is mixed with *Dukhan* [smoke] or *Gubar* [dusty haze]. This *Dukhan* or *Gubar* is originated from different sources. Viz; *Ijamkebukharat* [foul smell emitted from dirty ponds and springs], *Murdakibaadboo*. [decomposition of scared], *Gubarkikasrat* [Dusty haze] and *Dhuwan or Dukhan* [smoke].

1. Breathlessness with cough and sputum triggered by exogenous agents and characterized by extremely ruining nose difficulty in breathing site of involvement depending on the age and Mizaj (behaviour) of the patient personal and familyhistory of allergic Rhinitis, Asthma, high fever increased ability to form IGE to common environmental allergens[1]
2. Difficulties in breathing due to cough (Balgam) that affect the large percentage of world population, Balgamimizaj people having running nose and coughing is very common around the world.

Air: Air is a mechanical mixture of gases

The phenomenon called pollution is an inescapable consequence of the presence of man and his activities. The term Air pollution presence signifies in the ambient [surrounding] atmosphere of substances e.g. Gases, Mixture of Gases, and particulate matter. Air pollution is one of the present day health problems throughout the world[2].

Respiration

Respiration in its broadest sense includes all those processes by which the oxygen of the external air is taken in to the blood and transported to the tissues and the CO₂ given off by the tissues is expelled from the body those portion of this complex mechanism that are concerned with the gaseous transportation and inter change between tissues and blood are spoken of an internal respiration, while those having to do with the gaseous interchange between the blood and the external air are referred to as external respiration. For both external and internal respiration the continuous removal of used air and the constant renewal of fresh air in the lungs are essential.

In urban areas mobile or vehicular pollution is predominant and significantly contributes to air quality problems. Road traffic produce volatile organic compounds, suspended particulate matter (SPM), oxides of Sulphur (SO₂), oxides of nitrogen (NO₂) and carbon monoxide (CO) which makes

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adverse health effects on the exposed population. The particles emitted from the vehicular exhausted of more than 10-micron size (PM 10), accumulates in the lung and produces respiratory abnormalities.

The prevalence of obstructive, restrictive and mixed type of functional impairment of lung was found to have direct relationship with the dust concentration and duration of exposure/ prolonged exposure to dust can result in chronic bronchi problems. Investigations of the respiratory health effects from vehicular pollution exposures are necessary in order to predict the risk factors that may cause an asthmatic response several research work has confirmed the effect of air pollutants on respiratory function of human being this study shows a link between exposure to vehicular exhausted and pulmonary functions. Studies have shown reversible decrement in pulmonary function in the population exposed to traffic pollution [14]. The communication vehicular exhaust inhalation can lead in the symptoms of lower respiratory tract such as cough; shortness of breath and pain with inspiration. Age included asthma was also reported in population by USNRC 1981" Williams 1986 and WHO 1997 cotes J.E reported decline in the perfusion of lung by increasing age prominent effect was observed above 60 years ago the age considered as age include asthma [31]. Sengupta (1974) has reported the age include asthma in the Indian population in the presence study is restricted to the policeman in the age group of 20-25 years Pune city is the trade and commercial of south central Maharashtra region India, City includes population groups;

- Young traffic policeman average age is 20-45 years
- There are nearly 400-500 vehicles are passing through RTO daily in this there are trucks, four wheeler, three wheeler, two wheeler.
- Traffic policemen are constantly exposed to these vehicular exhausts and thereby are of the social groups. Which is maximum risk of having adverse respiratory health out comes due to such exposure hence it was decided upon to study respiratory health status in terms of lung functions and symptom scores with the help of necessary equipment and a respiratory health questionnaire among the traffic policemen from Pune city.

METHODOLOGY

Ethical clearance was obtained from the ethical committee of Z.V.M. Unani Medical College and Pune Traffic police commissioner. The aim of this study was respiratory impairment in BalgamiMizaj traffic policemen by vehicular pollution and the effect on their respiratory health status using various objectives test and a questionnaire to compare these control population for which non traffic policemen were selected.

Statistical Results

Table 1 The distribution of age between two study groups of Balgami Mizaj

Age (scars)	Group I (n=30)	Group II (n=30)	P-value
<=30	10(33.3%)	15 (50.0%)	0.400
30-40	15 (50.0%)	12 (40.0%)	
>40	5(16.7%)	3 (10.0%)	

Values are n P-value by Chi-square test.

Table 2 The distribution of sex between two study groups of BalgamiMizaj

Sex	Group I (n=30)	Group II (n=30)	P-value
Male	23 (76.7%)	24 (80.0%)	0.754
Female	7 (23.3%)	6 (20.0%)	

Values are n (%).

Table 3 The distribution of duration of service (in years) between two study groups of Balgami Mizaj

Duration of service (years)	Group I (n=30)	Group II (n=30)	P-value
< 4	11 (36.7%)	10 (33.3%)	0.164
4 — 8	15 (50.0%)	10 (33.3%)	
> 8	4 (13.3%)	10 (33.3%)	

Values are n (%).

Table 4 The distribution of preventive practice between two study groups of Balgami Mizaj

Preventive practice	Group I (n=30)	Group II (n=30)	P-value
Sun Glass	5 (16.7%)	8 (26.7%)	0.034
Face Mask	10 (33.3%)	2 (6.7%)	
None	15 (50.0%)	20 (66.7%)	

Table 5 The distribution of Clinical examination between two study groups of Balgami Mizaj

Clinical examination	Group I (n=30)	Group II (n=30)	P-value
Pulse (Per Min)	84.5 (10.2%)	77.7 (9.1%)	0.008
Respiratory Rate (Per Min)	31.3 (5.5%)	25.9 (3.7%)	0.000
Systolic BP (mmHg)	122.2 (13.1%)	119.8 (10.4%)	0.448
Diastolic BP (mmHg)	82.8 (13.6%)	79.3 (12.3%)	0.301

Values are Mean (SD).

Table 5 The distribution of respiratory symptoms between two study groups of BalgamiMizaj

Symptoms	Group I (n=30)	Group II (n=30)	P-value
Breathing Trouble	16(53.3%)	6(20.0%)	0.007
Chest Wheezing	14(46.7%)	7(23.3%)	0.058
Chest tightness	13(43.3%)	4(13.3%)	0.010
Attack of coughing	16(53.3%)	6(20.0%)	0.007
Asthma	14(46.7%)	4(13.3%)	0.005
Sneezing problem	27(90.0%)	14(46.7%)	0.00
Nose problem with itchy and watery eyes	26(86.7%)	9(30.0%)	0.000

DISCUSSION

1. Distribution of Participants according to age Distribution of

Mean age of Group I < 33.3%, 30-40 = 50.0%, >40 =16.7%
 Mean age of group II < 30= 50.0%, 30-40 =40.0%, > 40 =10.0%

Group I: mean value = 35.00 %,
 Group II: mean value = 33.33%

2. According to Distribution of sex between two participants

In group I male is 76.7%, Female is 23.3%
 In group II male is 80.0%, female is 20.0%.

The p-value is significantly different between two groups.

3. According to duration of service (in years) between two group

Duration of service in group I was ≤ 4 is 36.7%, 4-8 = 50.0%, >8=13.3%.

Duration of service in group II was ≤4 is 33.3%, 4-8 = 33.3%, >8=33.3%.

4. According to distribution of preventive practice between two groups

In group I: 16.7% use sunglasses, 33.3% use Face Mask, 50% participates not use preventive measure.

In group II: 26.7% use sunglasses, 6.7% use Face Mask, 66.7% participates not use preventive measure.

5. According to distribution of Clinical examination between two groups

In group I: mean pulse rate (per min) was 84.5%, Respiratory Rate (per min) was 31.3%, Systolic BP (mmHg) 122.2%, Diastolic BP (mmHg) 82.8%

In group II: mean pulse rate (per min) was 77.7%, Respiratory Rate (per min) was 25.9%, Systolic BP (mmHg) 119.8%, Diastolic BP (mmHg) 79.3%.

There was highly significant difference between the two groups in respiratory rate (p-value=0.000).

6. According to distribution of Incidence of breathing trouble between two groups

In group I: 53.3% and

In group II: 20.0%

The difference between two groups was significant.

According to distribution of incidence of chest wheezing between two groups.

In group I: 46.7% and in group II: 23.3%. The difference between two groups was significant.

According to distribution of incidence of chest tightness between two groups

In group I: 43.3% and in group II: 13.3%.

The difference between two groups was significant.

According to distribution of incidence of shortness of breathing.

In group I: 53.3% and in group II: 13.3%.

The difference between two groups was significant.

According to distribution of incidence of attack of coughing.

In group I: 53.3% and group II: 20.0%.

The difference between two groups was significant.

According to distribution of prevalence of asthma between two groups

In group I: 46.7% and group II: 13.3%.

The difference between two groups was significant.

According to distribution of incidence of sneezing problems between two groups

In group I: 90.0% and group II: 46.7%. The difference between two groups was significant.

According to distribution of incidence of nose problem with Itchy watery eyes between two groups

In group I: 86.7% and group II: 30.0%

The difference between two groups was significant.

According to distribution of event of using inhaled medicines between two groups

In group I: 83.3 % and group II: 66.7%. The difference between two groups was significant.

After the analysis of collection of data it is found that there is a significant difference between Group I (Traffic Police) and Group II non traffic police. In these criteria related to respiratory treatment such as respiratory rate recurrent headache, attack of Asthma, attack of cough, running nose and

watery eyes.

It is concluded that the difference between traffic police and group of professionals after than traffic police is due to the exposure of traffic policeman to the vehicular pollution.

The present study suggests that traffic policeman suffer from respiratory impairment more than the after professional.

In recent decades there has been an increased concern about possible adverse effects of pollution emitted from motor vehicles. Among these concerns has been a belief that this type of air pollution may aggravate asthma and other respiratory disorders. 152 Pune City beats of having the largest number of four wheelers is rising rapidly. This has contributed to increasing levels of ambient air pollution in the city, with vehicular exhaust as major sources. Traffic policemen monitoring various junctions in Pune City, as a cohort are exposed, on a regular basis to high levels of vehicular air pollutants. The aim of study is "exposure to vehicular pollution and respiratory impairment in traffic police men of Pune City."

Summary

The Balgami Mizaj of Traffic policeman from Pune City are constantly exposed to high levels of vehicular exhaust air pollution on a regular basis. The aim of this study was respiratory impairment in traffic police men by vehicular pollution and the effect on their respiratory health status using various objective tests and a questionnaire to compare these control population for which non traffic policemen were selected.

A total of 30 traffic policemen and 30 non traffic policemen were recruited in to the test after the necessary permission were obtained from the ethical committee of Z.V.M. Unani medical college and Pune traffic police commissioner.

The main observations noted in the study include.

The respiratory health questionnaire data revealed that traffic police showed higher risk of presence of.

1. Trouble with breathing.
2. Wheezing and whistling in the chest.
3. Chest tightness
4. Shortness of breath
5. coughing
6. Asthma
7. Sneezing and runny nose.

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References

1. Maddison, David, "A Meta- analysis of Air pollution Epidemiological studies. London, Centre for Economic Research on the Global Environment, University College London, 1997.
2. Bell ML, Davis DL, Reassessment of the lethal London fog of 1952: Novel indicators of acute and chronic consequences of acute exposure to air pollution. *Environ health perspectives* 2001; 109 (Suppl 3): 389-394.
3. Nemery B, Hoet PH, Nemmar A. The Meuse Valley fog of 1930: an air pollution disaster *Lancet* 2001; 357:704-708.
4. Firket J Fog along the Meuse Valley. *Trans Faraday Soc* 1936; 32 :1192-1197.
5. Atkinson R W, Anderson H R, Sunyer J, *et al.* Acute effects of particulate air pollution on respiratory admissions: results from APHEA 2 project. *Air pollution and health: A European approach cardiovascular diseases.*
6. A Le tertre, S medina, E Samoli, *et al.*: Short term effects of particulate air pollution on cardiovascular diseases in eight European cities. *J Epidemiol Community Health.*
7. Touloumi G, Katsouyanni K, Zmirou D, *et al.* Short-term effects of ambient oxidant exposure on mortality: a combined analysis within the APHEA project. *Air pollution and Health: a European approach.* *AM J Epidemiol* 1997; 146: 177-185.
8. Samet JM, Dominici F, Zeger SL, Schwartz J Dockery DW. The National Morbidity, Mortality, and Air pollution Study. Part-1: methods and methodologic issues. *Res Rep health EffInst* 200; 75:5-14.
9. Samet JM, Dominic F, Curriero FC, Coursac I, Zeger SL. Fine particulate air pollution and mortality in 20 US cities, 1987-1994. *N Engl J Med* 2000; 343: 1742-1749.
10. Zanobetti A, Schwartz J, Dockery DW. Airborne particles are a risk factor for hospital admissions for heart and lung disease. *Environ Health perspect* 2000; 108: 1071-1077
11. Schwartz J Particulate air pollution and daily mortality in Detroit. *Environ REs.* 1991; 56: 204-213.
12. Schwartz J Dockery DW. Increased morality in Philadelphia Associated with daily air pollution concentration. *Am Rev Respir Dis* 1992; 145: 600-604.
13. Schwartz J Sletter D Tarson TV, Pierson WE, Koenig JQ. Particulate air pollution and hospital emergency room visits for asthma in Seatele. *AM Rev Respir Dis* 1993; 147: 826-831.
14. Schwartz J. Air pollution and daily mortality. Review and meta-analysis. *Environ Res* 1994; 64: 36-52.
15. Dockery DW. Pope CA III, Xu X, *et al.* *NEJM* 1993; 329: 1753-1759.
16. Pope CA III, Thun MJ, Mamboodiri MM, Dockery DW, Evans JS, Speizer FE. Particulate air pollution as a predictor of mortality in a prospective study of US adults. *AJRCCM* 1995; 151: 669-674.
17. Gauderman J, Edward Avol. The Effect of air pollution on Lung development from 10 to 18 years of age *NEJM* 2004; 351: 1057-1067.
18. BruneKreef B, Jansonn NAH, Hartog J, Harssema H, Nep M, VonVilet P. Air Pollution from truck traffic and lung function in children living near motorways. *Epidemiology* 1997; 8(3): 298-303.
19. Gielen MH, van der Zee, SC, Van Wijen JH, van Steen CJ. Acue effects of summer air pollution on respiratory health of asthmatic children. *Am J respire Crit Care Med* 1997; 155: 2105-2108.
20. Brunekreef B, Holgate ST. Air pollution and health. *Lancet.* 2002 Oct. 19; 306 (9341): 1233-1242.
21. Weiland SK, Mundt KA, Ruckmann A, Keil U. Self-reported wheezing and allergic rhinitis in children and traffic density on street of residence. *Ann Epidemiol.* 1994 May; 4 (3): 243-247.
22. Pope CAIII, Dockery DW. Acute health effects of PM10 Pollution on symptomatic and asymptomatic children. *Am Rev Respir Dis* 1992; 145: 1123-1128.
23. Van Vliet P, Knape M, de Hartog J, Janssen N, Harssema H, Brunekreef B Motor vehicle exhaust and chronic respiratory symptoms in children living near freeways. *Environ Res* 1997; 74(2): 122-132.
24. World bank report, South Asia Region, Dhaka August 9 2000; News Release no 99 / SAS.
25. World Bank. Philippine Environment monitor, 2002 (November); Philippines. www.emb.gov.ph.
26. Kan H. Chen B. Particulate air pollution in urban areas of Shanghai, China: health-based economic assessment. *Sci Total Environ.* 2004 Apr; 25, 322(1-3) : 71-79.
27. Pope CA 3rd. Elementary school absences and PM10 pollution in Utah Valley. *Environ Res.* 1992 Aug; 58(2): 204-219.
28. BNERhane, K; Rappapor, E.B; Thomas, D.C; Avol E; Gauderman, W.J. London, S.J.; Margolis, H.G.; McConnell, R.; Islam. K.T.; Peters, J.M. The Effects of Ambient air pollution on School Absenteeism Due to Respiratoryss Illnesses. *Epidemiology* 2001; 12:43-54.
29. United Nation. Prospects of world urbanization 1988, Population studies No. 112; New York, 1989.
30. Airborne Particles 1999 Source apportionment of airborne particulatematter in UK. Dep. Environ. Transport and the regions, London.
31. Sopan T Ingle, *et al.*, 2005 exposure to vehicular pollution and Respiratory impairment of Traffic Policemen in Jalgaon City India, *Industrial Health*, 2005 Volume 43 Issue 4 Pages 656-662.

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