ORIGINAL ARTICLE

Frequency of use of facemasks among population of Lahore during smog

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ABSTRACT

Background; Pakistan is one of the most urbanized country in South Asia. Its second-largest and polluted city is Lahore, growth rate of which is 4% per annum. Urban areas are frankly covered by smog in Asia and Lahore is also effected one. Lahore has been covered by heavy smog, wrapping the whole city and causing harm on lives of people.
Aim: To determine the frequency of use of face masks among population during smog at Lahore.
Methodology: Descriptive case series study was conducted at Lahore from 1st October 2019 to 31st March 2020. After taking informed consent, 390 subjects of 10 years or more from both sexes were included. 238 male and 152 female subjects were selected after convenient sampling. The data were entered and analyzed by SPSS vr 24.
Results: in this study 390 subjects participated, 238(61.03%) males and 152(38.97%) females.It was observed that 172(44.10%) participants in this study used facemasks but 218(55.90%) participants did not use facemasks during smog at Lahore. It was also observed that 111(46.64%) males and 61(40.13%) females used facemasks whereas 127(53.36%) males and 91(59.86%) females did not use facemasks during smog.
Conclusion: The tendency of use of facemasks among population of Lahore during smog was less than 50%. Majority of users belonged to young age group. Males were more prone to use facemasks as compared to females because males are more involved in outdoor activities.
Keywords: Blanket, Polluted, shrouding, urbanized, Wrapping

INTRODUCTION

Pakistan is one of the most urbanized country in South Asia[1,2]. Its second-largest and polluted city is Lahore, growth of which is at a rate of 4% per annum[3, 4]. Urban areas are frankly covered by smog in Asia[5] and Lahore is also effected one. Lahore has been covered by heavy smog, wrapping the whole city and causing harm on lives of people. The smoke released from vehicles, speedy urbanization and unchecked action of clearing a wide area of trees[6.7] has come up with this distress circumstances for several years. Smog causesa rapid fatal health situation like attacks of asthma, upper and lower respiratory tract infections, allergies, eye problems and cardiac issues causing premature death[8]. Sughis et al. pointed out a similar finding related to these conditions,high blood pressure among school children of Lahore and exposed to air pollution on high level[9]. This inference helps spotlight the harmful effects on the health of the public for a long time. The Pakistan Environmental Protection Agency and the provincial Environmental Protection Agencies are responsible for monitoring air pollution in Pakistan[10]. In 2010, the Pakistan Environmental Protection Agency prepared a preliminary version to the National Air Quality Standard for air quality.[11] The proposed annual mean levels for the ambient particulate matter, PM2.5 and PM10, were higher than the World Health Organization (WHO) guidelines, those are 10 µg/m3 and 20 µg/m3 respectively.[12]In the light of data, the levels of the ambient particulate matter observed in Lahore far exceed the recommended values according to both WHO guidelines and NEQS guidelines[13]. A study done in 1 1 Open Access Editorial; Existing Smog in Lahore, Pakistan: An Alarming Public Health Concern. Lahore for last 5 years, compare the level of fine particles with the previously mentioned guidelines, resulted that the annual average PM2.5 of the areas studied was 136.5± 34.1 µg/m3[14], those were roughly 14 times higher than the World Health Organization guidelines. The study also mentioned that the level of particular matter was comparable to one of the polluted hugecities of the world, Delhi;at 143.0 ± 17.8 µg/m3, [14]this illuminates the worse condition of air pollution in the Lahore city. Moreover, the fact that only around 1% of the country's industrial sector report their outpouring[15] increases distressing issues over the neglected air quality of the city and its effect on health of the public. Children are predominantly susceptible to these harmful results. A study showed that the long-term after effects of the great London Smog in 1952 resulted that exposure during the first year of life increased the risk of childhood asthma by 19·87%[16]. Most regulatory organizations of environments fall behind due to the shortage of specialized instruments, systemized guidelines, skilled staff, and funding[17]. The government could start by granting sufficient resources for keeping track on and minimizing harmful outflow, conducting countrywide programs, and shifting to renewable resources and funds[18]. In the last, the population needs to be conscious of the health issues those can be experiencedduring this environmental risks and warned in

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this ways those can protect themselves and prevent problems of pre-existing medical issues. Public service awareness messages on electronic, social media(Internet) and distribution of related literature can be a few of the effective ways for ensuring these steps. The main aim of this study was to know how many people used facemasks as a preventive measure during smog at Lahore.

RESEARCH METHODOLOGY

Descriptive Case series study was conducted at Lahore from 1st October 2019 to 31st March2020. After taking informed consent, 390subjects of 10 years or more from both sexes were included through convenient sampling. 238 males and 152 females participated in this study. Data were collected on a specified questionnaire by a doctor and his team and required informations regarding the age group and use of facemask during smog were recorded after interviewing the participants. The data were entered and interpreted as frequency and percentage distribution. Only those subjects fulfilling the inclusion criteria were included in this study. The data were analyzed by SPSS version 24.

RESULTS

In this study 390 subjects participated, 238(61.03%) males and 152(38.97%) were females. All subjects were divided into five age groups to know which age group was more inclined to use facemasks during smog. 44(18.49%) males and 27(17.76%) females belonged to 10-17 years age group, 69(28.99%) males and 48(31.58%) females belonged to 18-30 years age group, 92(38.66%) males and 62(40.79%) females belonged to31-45 years age group, 28(11.76%) males and 13(08.55%) females belonged to 46-60 years, 05(02.10%) males and 02(01.31%) females belonged to 60 years or above age group (Table-1).

During this study, it was observed that from 10-17 years age group, 16(06.72%) males and 09(05.92%) females used facemasks whereas 28(11.76%) males and 18(11.84%) females did not use facemasks during smog. From 18-30 years age group, 27(11.34%) males and 18(11.84%) females used facemasks whereas 42(17.64%) males and 30(19.73%) females did not use facemasks. From 31-45 years age group, 49(20.59%) males and 27(17.76%) females used facemasks but 43(18.06%) males and 35(23.02%) females did not use facemasks. From 46-60 years age group, 17(07.14%) males and 07(04.60%) females used facemasks whereas 11(04.62%) males and 06(03.94%) females did not use facemasks. From 61 years or above age group, 02(00.84%) males used facemask and from this age group no female used facemasks whereas 03(01.26%) males and 02(01.31%) females did not use facemasks (Table-2).

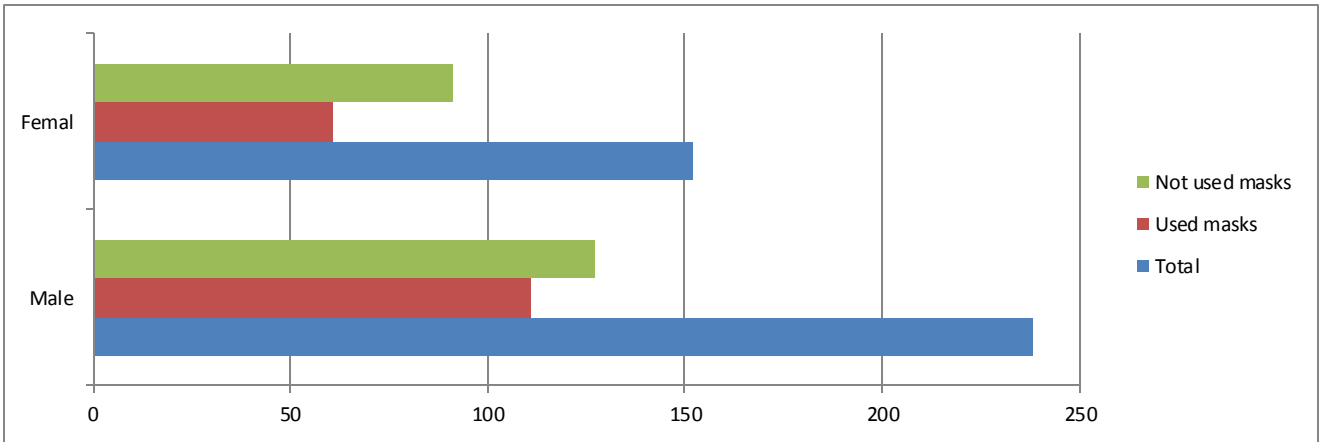
It was observed during this study that males and females from 10-45 years age group were more prone to use facemasks during smog at Lahore whereas males and females from 46-61 years or more age group were less prone to use facemasks during smog at Lahore. It was observed that 111(46.64%) males and 61(40.13%) females used facemasks whereas 127(53.36%) males and 91(59.86%) females did not use facemasks during smog. It was observed during this study that 172(44.10%) participants used facemasks but 218(55.90%) participants did not use facemasks during smog at Lahore.

Table-1: Age groups in years

Gender	Age groups in years				
	10-17	18-30	31-45	46-60	61 or more
Male(n=238)	44(18.49%)	69(28.99%)	92(38.66%)	28(11.76%)	05(02.10%)
Female(n=152)	27(17.76%)	48(31.58%)	62(40.79%)	13(08.55%)	02(01.31%)

Table-2 Use of facemasks according to age groups

Gender		Use of facemasks according to age groups in years					
		10-17	18-30	31-45	46-60	61 Or more	Total
Male (n=238)	Yes	16(06.72%)	27(11.34%0	49(20.59%)	17(07.14%)	02(00.84%0	111(46.63%)
	No	28(11.76%)	42(17.64%)	43(18.06%)	11(04.62%)	03(01.26%)	127(53.36%)
Female (n=152)	Yes	09(05.92%)	18(11.84%)	27(17.76%)	07(04.60%)	Nil	61(40.13%)
	No	18(11.84%)	30(19.73%)	35(23.02%)	06(03.94%)	02(01.31%)	91(59.86%)



DISCUSSION

Smog has been reported at Lahore since the past few years.According to Deutchewelle website this city has been listed among the top ten cities affected from smog.[19] Residents of Lahore had experienced a dense blanket of smog that resulted low visibility, respiratory and eye ailments in addition to other problems. A few deaths alsoreported during this smog among people who were also patients of chronic obstructive pulmonarydiseases (COPD). In the past few years the phenomenon of smog has grown worse due to increasingly high polluted environment due to the establishment of large number of factories, extraordinary construction work, heavy traffic, and unchecked cutting of trees due to urbanization.[19] On the other hand main reason of smog is burning of crop waste by the farmers in new Delhi.Lahore is situated very near to the Indian bordertherefore this could be one of the reason for thicker smog in Lahore. The changes in the wind flow directions also retard the dispersal of foul clouds whose persistence pollute the environment and form smog. The visibility up to 20-25 meters reduced due to smogin Lahore. Serious breathing ailments and eye irritation and infection are caused in many people who were visiting or living the city resulting in increased patientload in clinics andhospitals. Important sign and symptoms were heavy breathing, burning eyes, sneezing, wheezing and cough. Smog is also harmful for cardiovascular system. There are no safe levels of smog because even fine ozone particles are dangerous.[20] Ozone layer found higher in the atmosphere though there is protection from ultra violet rays but it acts as a pollutant at ground levels. Its long-term high ground levels may damage the lung tissue on permentant basis[19].

In this study participants were majority of males as compared to females. All subjects were divided into five age groups. The purpose of division of participants in different age group was to assess which age group was more prone to use facemask during smog. Majority of males from 18 to 45 years were more prone to use facemasks during smog whereas females from this age group were very less. Equal number of males and females from 10-17 years age group used facemasks during smog. A few number of old age males and females used facemasks during smog. Those who didn't use facemasks gave excuse that they face difficulty in breathing when they use facemasks.

Heart, lung and the brain may be affected when exposed to air pollution, less or over the long term. It is observed that there are 3 million excess deaths worldwide each vear due to outdoor pollution. Introduction of policies have been imposed by a number of cities those are aimed at including congestion charges in London, reducing urban air pollution, sharing of bike in Paris and an "environmental police force" in Beijing.[21]

During study, it was observed that tendency of use of facemasks was common among those participants those were allergic to cold and dust. Majority of the motor cyclist used helmets so they didn't use facemasks during smog. Asthmatic and heart patients wished to use facemasks but reluctant to use due to difficulty in breathing. A few number of male senior citizens used facemasks whereas no female senior citizen used facemasks. Use of facemasks among educated participants was more. It was also observed that diseased participants were more prone to use facemasks during smog as compared to healthy participants.

Air pollution consists of specks and gases. Gases include carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide and different chemicals constitute volatile organic compounds. Gases may have dangerous effects, study showed that concern should be related to negative impacts on health by fine particles; the size of those is under 2.5 microns. Here is the question that facemasks are useful in reduction or prevention of exposure of air pollution. The ability of facemasks to minimize effect depends upon the type of pollutant, itself and how to use it. Protection factor which is assigned by masks is percentage of a pollutant that the masks do not remove. A protection factor of 10 is meant that there will be 10% filtrationof the pollutant by the mask with the assumption that there is tight fitting of mask on the face[22].

There are a few numbers of studies on the effects of facemasks to lessen or prevent negative impacts caused when exposed to polluted air,the results of thoseshould be interpreted carefully. Two experimental studies showed that use of an N95 facemask during walking in the Beijing, blood pressure was lower than those without using a facemask in both healthy study groups. Blood circulationand oxygen utilization was seen to be better with use of N95 facemasks among cardiac patients participating in the study. In the third study,Low blood pressure was also observed in healthy participants with theuse of N95 facemask in Shanghai. These studies show that by using particle –filtering masks for a short-time, there will be reduction of effects on the heart and blood vessels whenexposed to urban air pollution[23].

It was observed during study that majority of males and females from first three age groups (10-17, 18-30 and 31-45 years) used facemasks during smog at Lahore because this age groups are more involved in outdoor activities for purposes of education, jobs and different earnings etc. During study it was noted that less than half participants used facemasks during smog.

CONCLUSIONS

It was concluded that tendency of using facemasks was more in males as compared to females. The young males and females were more prone to use facemasks during smog as compared to middle and old age people. The overall tendency of use of facemasks is less than 50% in the population of Lahore during smog.

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