

EFFECT OF TRAFFIC RELATED AIR POLLUTION ON RESPIRATORY HEALTH OF STUDENTS IN KANDY SCHOOLS

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A cross-sectional respiratory related health survey was carried out among 12-16 year old students at schools situated in and around the Kandy city, and its relation to traffic related air pollution was investigated into in this study. Two study populations of about 380 students each were selected. One is from the city schools situated by the roads with high traffic intensity, and the other from village schools situated by the roads with insignificant traffic intensity. Average traffic intensity by the city schools was 21 vehicles/min and it was less than 1 vehicle/min by the village schools. Average PM_{10} count taken as the measure of the air quality was $121 \mu\text{g}/\text{m}^3$ in the city and $84 \mu\text{g}/\text{m}^3$ in the village. It should also be noted that the PM_{10} particles collected in the city are almost black and those collected in the village environment are nearly light brown, indicating the domineering presence of black carbon emitted from automobiles in the city atmosphere and that of dust and sand in the village environment, respectively.

Data on the respiratory health of the students were collected with the help of a questionnaire. The responses of the students were weighed and a Health Indicator (HI) in a 0 – 1 scale was constructed to identify each students' respiratory related health level. When the frequency of the occurrence of a particular HI was plotted against the HI itself for both the study populations, a unique difference in the respiratory related health pattern was seen as in Figure 1. Of the students attending the village schools 32 % is ranked with the HI of 1, which is a measure of perfect respiratory related health, but only 8 % of students from the city schools is ranked with the HI of 1. The results of Figure 1 in the range of HI of 0.4 to 0.9 clearly show that that the students of the city schools are more prone to developing respiratory ill health than those of the village schools. Worst cases like the percentages of students ranked in the HI range of 0 – 0.4 are the same for both the populations, and the percentages are also very low (0 – 2 %).

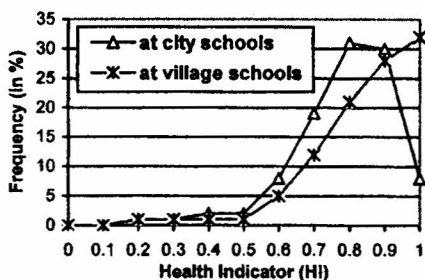


Figure 1 Frequency – HI pattern of the student population considered in this study

Some confounding factors such as exposure to black smoke at home environment, cigarette smoke, mosquito-coil smoke and firewood smoke and the family's socio-economic status were also covered in the questionnaire. None of these factors, however, is found to have any significant influence on the frequency – Health Indicator pattern of Figure 1. It is therefore highly probable that the traffic related air pollution has caused the observed difference in the respiratory related health of the students attending schools in the Kandy city and outside the Kandy city where the traffic intensity insignificant.

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