

**RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES
KARNATAKA, BANGALORE**

'SYNOPSIS OF DISSERTATION'

**"A STUDY OF PULMONARY FUNCTION TESTS IN STREET
SWEEPERS COMPARED TO GENERAL POPULATION"**

SUBMITTED BY

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ANNEXURE - II

SYNOPSIS FOR REGISTRATION OF SUBJECTS FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	Dr.MOHD ALEEMUDDIN POST GRADUATE STUDENT, DEPARTMENT OF PHYSIOLOGY, SHIVAMOGGA INSTITUTE OF MEDICAL SCIENCES, SHIMOGA- 577201.
2	NAME OF THE INSTITUTION	SHIVAMOGGA INSTITUTE OF MEDICAL SCIENCES, SHIMOGA- 577201.
3	COURSE OF STUDY AND SUBJECT	‘DOCTOR OF MEDICINE IN PHYSIOLOGY’
4	DATE OF ADMISSION TO COURSE	14TH JULY 2012
5	TITLE OF THE TOPIC	“A STUDY OF PULMONARY FUNCTION TESTS IN STREET SWEEPERS COMPARED TO GENERAL POPULATION”.

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BRIEF RESUME OF INTENDED WORK:

6.1. NEED FOR THE STUDY:

Chronic inhalation of dust impairs lung function and may cause respiratory symptoms. Street sweeping is associated with exposure to dust, in which dust is raised during sweeping with brooms and by vehicular movement as well as other human activities. Street sweepers are hence chronically exposed to dust and by not using any precautionary measures are likely to get affected by conditions that adversely affect their pulmonary function.¹

Also, the airborne dust plays a major part in the overall atmospheric pollution and the motor vehicle emissions constitute the most significant source of ultra fine particles in an urban environment. Exposure to dust has long been associated with varying degrees of obstructive and restrictive respiratory diseases.²

However very little attention has been paid to the health of the workers chronically exposed to these hazards in the process of street sweeping, who play an important role in maintaining the health and hygiene within the cities. Striving to provide a clean environment for us, they themselves succumb to these health hazards.

Therefore the following study is undertaken to assess the impact of these hazards associated with street sweeping which impairs the lung functions of this underprivileged section of the society.

6.2 REVIEW OF LITERATURE:

A study conducted by Jafary ZA, Faridi IA and Qureshi HJ on 105 subjects using Vitalograph showed that Forced Vital Capacity(FVC), Forced expiratory volume in first second(FEV₁) and Forced mid expiratory flow rate(FEF_{25-75%}) all showed significant and highly significant decrements depending upon the extent of exposure to roadside dust.²

Mariammal T, Jaisheeba AA and Sornaraj R in their study on 249 subjects found out that in both construction and sanitary workers the mean of the actual values of FVC, FEV₁, FEV₁/FVC% , PEFR and FEF_{25-75%} were significantly decreased to a greater extent when compared to control groups. All the parameters further significantly decreased to a greater extent when the years of experience of the workers increased above 15 years.³

A study by Okwari OO, Antai AB, Owu DU, Peters EJ and Osim EE showed that the mean values of FVC, FEV₁, FEV/FVC% and PEFR of the workers exposed to timber dust were significantly lower(P<0.01) than in control subjects.⁴

Zodpey SP and Yogesh DS conducted a study on 273 street sweepers working in Nagpur Muncipal Corporation, Maharashtra and found that the proportion of chronic respiratory morbidities like Chronic bronchitis, Bronchial Asthma & Bronchiectasis were significantly higher among street sweepers than the comparison group.⁵

Ingle ST and WAGH N found variations in lung parameters(FVC, FEV₁ and PEFR) among the vehicular pollution exposed and unexposed group. Significant decrease in FEV₁ and PEFR was noted in the age group of 40- 49 years of exposed population.⁶

Raaschou-Neilson O, Neilson ML and Gehl J found a significantly higher prevalence of chronic bronchitis and asthma in street cleaners than in cemetery workers.⁷

6.3 OBJECTIVES OF STUDY:

- 1) To observe the pattern of changes in the pulmonary functions in street sweepers.
- 2) To compare the same with that of the general population.

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MATERIALS AND METHODS:

7.1. SOURCE OF DATA:

Type of study: Cross Sectional Comparative Study.

Period of study: One Year

Site of study: Shivamogga Institute Of Medical Sciences, Shimoga.

Selection of Study group and Control group:

Study group: Presently working street sweepers of either sex who have been involved in street sweeping for more than 2 years.

Control group: Group D workers other than sweepers of either sex working in Shivamogga Institute Of Medical Sciences, Shimoga.

Inclusion criteria:

- 1) Age group of 30 to 50 years.
- 2) Subjects who have given written consent.

Exclusion criteria:

1. Subjects suffering from significant cardiovascular disorders.
2. Subjects suffering from familial Bronchial asthma.
3. Chronic smokers, smoking at least 20 cigarettes per day for not less than 10 years.
4. Severely Obese individuals.
5. Individuals with significant spinal and skeletal deformities.

From a study², by taking standard deviation 0.5 in each group and power of 90% and a significance level of 1%, the minimum sample size calculated is 40 in each group. The subjects will be selected by simple random sampling method.

7.2. METHOD OF COLLECTION OF DATA:

- 1) **Selection of study group:** A list of street sweepers will be obtained from City Municipal Corporation, Shimoga. A separate list of eligible subjects will be prepared from it out of which 40 candidates will be selected by simple random sampling.
- 2) **Selection of Control group:** A list of Group D workers other than sweepers will be obtained from the concerned authority of SIMS, Shimoga out of which 40 subjects will be selected with corresponding age, sex and height of the study group.
- 3) All the subjects will be tested for Pulmonary Functions using a computerized Spirometer after taking an informed consent and tested for the following parameters.
 1. Forced Vital capacity(FVC)
 2. Forced Expiratory Volume in first second(FEV₁)
 3. Percentage of FVC forcefully expelled in first second (FEV₁/FVC %)
 4. Peak Expiratory Flow Rate (PEFR) and
 5. Forced mid Expiratory Flow Rate (FEF_{25-75%})
- 4) Data will be collected in a pretested and semi-structured proforma on socio-economic and demographic variables.

Note: The tests will be carried out on the subjects(study & control) in a relaxed state and privacy will be given utmost importance.

Statistical analysis:

Statistical analysis will be done using the unpaired 't' test

7.3. Does the study require any investigation or interventions to be conducted on patients or other human or animals? If so, please describe briefly.

No, The lung functions of the subjects will be measured by a non-invasive procedure using a computerised Spirometer.

7.4. Has the ethical clearance obtained from your institution?

YES.

LIST OF REFERENCES:

1. NKU CO, Peters EJ, Eshiet AI, OKU O and Osim EE. Lung function, oxygen saturation and symptoms among street sweepers in Calabar-Nigeria. Nigerian journal of physiological sciences 2005;20(1-2):79-84.
2. Jafary ZA, Faridi IA and Qureshi HJ. Effects of airborne dust on lung function of the exposed subjects. Pak journal of physiology 2007;3(1):30-34.
3. Mariammal T. Work related respiratory symptoms and pulmonary function tests observed among construction and sanitary workers of Thoothkudi. International Journal of pharmTech Research 2012;4(3):1266-1273.
4. Okwari OO, Antai AB, Owu DU, Peters EJ and Osim EE. Lung function status of workers exposed to wood dust in timber markets in Calabar,Nigeria. Indian journal of public health 2008;52(3):147-9.
5. Zodpey SP and YogeshD S. Respiratory morbidity among street sweepers working at Hanumannagar zone of Nagpur municipal corporation, Maharashtra. Southeast Asian journal Trop med Public Health 1997;28(1):36-45.
6. Ingle ST and WAGH N. Impact of highway traffic pollution on lung function of residential population in jalgaon urban center. Advanced OR AI Methods in Transporataion, Transportation Research Circular 2007; (E-C 113): 99-102.
7. Raaschou-Neilson O, Neilson ML and Gehl J. Traffic related air pollution: Exposure and health effects in Copenhagen street cleaners and cemetery workers. Arch Environ Health. 1995;50:207.

9	SIGNATURE OF THE CANDIDATE:	
10	REMARKS OF THE GUIDE:	‘THE TOPIC SELECTED BY THE CANDIDATE IS SATISFACTORY’
11	NAME AND DESIGNATION OF:	
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	12.2.SIGNATURE OF THE PRINCIPAL:	