Addis Ababa University

Collage of health science

School of public health

Comparative Cross Sectional Study on Chronic Respiratory Symptoms and Associated Factors among Addis Ababa city municipal Street Sweepers, Addis Ababa, Ethiopia

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A research thesis to be submitted to the School of Graduate Studies of Addis Ababa University College of Health Science School of public health in partial fulfillment of the requirements for the degree of masters of public health

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Approved by Examining board

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Acknowledgment

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Finally I would like to forward my special thanks to my families for their support throughout my time.

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Acronyms and abbreviations

PPE - Personal Protective Equipment

ATS - American Thoracic Society

BSI- British Standard Institute

ISO - International Standards Organization

EDHS- Ethiopian Demographic Health Survey

SD- Standard Deviation

CI- Confidence Interval

COR- Crude Odds Ratio

AOR- Adjusted Odds Ratio

RPE- Respiratory Protective Equipment

Abstract

Introduction

Street sweepers play an important role in helping the wellbeing of the people and cleanliness of the cities. This job exposes the street sweepers to a variety of risk factors such as dust, toxins and diesel exhaust pollution, which leads them to develop respiratory symptoms and diseases.

Objective: This study was designed to assess the prevalence of chronic respiratory symptoms and associated factors among street sweepers.

Methods: A comparative cross-sectional study was conducted among a sample of 208 street sweepers and 203 petty traders in Addis Ababa city in 36 districts of three selected sub cities; Yeka, Bole and Arada of Addis Ababa city administration from January to May 2016. The data was collected using close ended questionnaire adapted from American Thoracic Society respiratory symptoms questionnaire and observational check list was used to check the accessibility and utilization of personal protective devices. The collected data was entered in to computer using Epi-Info7 then exported to SPSS (version 20) for cleaning and analysis. Frequency distribution, Chi square test and logistic regression were used in data analysis.

Result: In this study, the prevalence of chronic respiratory symptoms was 113(54.3%) in street sweepers and 51(25.12%) petty traders with prevalence of Cough (43.6% versus 15.3%), Phlegm (24.8% versus 9.4%), Wheezing (19.3% versus 5.4%), breathlessness (17.8% versus 6.4%) and Chest pain (5.3% versus 1.5%). None of the street sweepers used respirator and 57.7% wearing mouth/nose mask. Chronic respiratory symptoms among street sweepers were associated with age (AOR = 1.382, 95 % CI, 1.176-10.861), work experience (AOR = 6.418,95 % CI, 1.604-25.686), working hours (AOR = 3.925, 95 % CI, 2.060-7.477) and past dust exposure (AOR = 2.696, 95 % CI, 1.278-5.685).

Conclusions and recommendations

Chronic respiratory symptoms were highly prevalent among street sweepers than the control group. Age, duration of job, working hours and past dust exposure were identified factors among street sweepers. Therefore, the study has recommended that Pre employment and on service training should be given and, appropriate protective device should be supplied in order to maintain the health and safety of workers. Further studies with cohort study design should be undertaken to identify the factors responsible for higher prevalence of chronic respiratory symptoms among the street sweepers.

1. Introduction

1.1. Background

Street sweepers play significant role in maintaining the health of people and sanitation of the cities. Most of the time, people involved in this occupation are people with low socio-economic status, without much education and live in poor housing condition(1). About 11,000 people in Ethiopia are engaged in street sweeping occupation. Out of these, 5,000 workers have been employed by the Addis Ababa City Sanitation Administration Agency (AACSAA) who cleans public roads throughout the cities(2).

Road dust has been recognized as the main source of urban suspended smallest particles in many parts of the world and its contribution can also be significant in the suspended large size range (3). High road dust concentration has usually remained a problem of urban areas as it exposes people to a major source of biological materials capable of causing allergic disease, such as a runny nose, watery eyes, and sneezing for larger sized particles, as well as swelling of lung tissue and asthma for fine particles (4). Long-term exposure can also directly contribute to the development of various diseases. Consequently, People living in cities with higher dust concentration for long-term averagely die earlier than people living in cities with lower dust concentration and farther short-term exposure has been linked to increased daily morbidity and number of hospitalization due to respiratory and cardiovascular diseases (5).

Street sweeping is to sweep waste materials thrown at public streets and it is considered as a risk job due to the close contact to agents present in the urban waste that exposes sweepers to different types of health problems (6). Often, the conditions they work in, in terms of occupational safety and health are far from adequate. For instance, they manage wastes without acceptable personal protective equipments (7). Hence, it is presumed that this job exposes them

to variety of risk factors such as soil and dust. In addition to these, street sweepers can be exposed to sunburn, heat stress and chemical hazards such as carbon dioxide, carbon monoxide and sulfur dioxide from vehicular emission and bio-aerosols like pollens, endotoxin, fungal secretions and micro organisms present in aerosols created during sweeping process (8).Commonly reported respiratory symptoms associated with road dust among occupational groups exposed to it includes; wheezing, breathlessness, dry cough, cough with phlegm and other nasal problems(9).

1.2. Statement of the problem

Respiratory disease causes for 4 million deaths worldwide annually (10). Around 13,000 of those deaths each year from work related lung disease and cancer are likely caused by past exposure primarily to chemical and dust at work place (11). Street sweeping occupation is linked with exposure to chemicals and dusts such as organic and inorganic dusts, bioaerosol, volatile organic matter and fumes which could arose during vehicular movement, sweeping with brooms, through wind and other human activities (12). A research conducted in Nigeria indicates the prevalence of cough 25.5%, chest pain 13.0%; and sneezing 6.0% among the street sweepers(13).

In Ethiopia even though the street sweepers sweep the road manually with brooms and debris that may aggravate respiratory problems, the study of respiratory symptoms and illness is limited. There is no research survey that has been published regarding the respiratory symptoms and associated factors among street sweepers. Therefore, there is a clear research gap on this area. Hence, this study will assess the prevalence of chronic respiratory symptoms and associated factors among street sweepers in Addis Ababa city administration, which is the capital city of Ethiopia.

1.3. Significance of the study

The findings from this research will help Addis Ababa City Sanitation Administration Agency to develop appropriate workplace intervention measures to protect the health of street sweepers. Also non government, authorities and policy makers may use the recommendation from this study in developing strategies and enforce legislation for further improvement. It will benefit street sweepers themselves to know the hazard in their working environment, about the importance of using and consequently demand of PPEs and how to protect from other factors which contribute in risk of getting disease. It can also serve as a base line for future studies.

2. LITERATURE REVIEW

Work related disorders are the main cause of health problems in worker population. One of the main problem comes across dusty occupation is respirable dust (<10µm)(14). Exposure to those dusts is associated with increase in morbidity and death from respiratory disease (15). Individuals working in such environment such as street sweepers are suffering from respiratory and non-respiratory symptoms that may lead to adverse health effects (12). Some of the respiratory symptoms are sneezing, cough, wheezing, chest pain, dyspnea, phlegm and nose irritation, where as non respiratory symptoms are skin lesion, eye irritation, conjunctivitis and e.t.c.(1).

2.1. Dust and Respiratory Symptoms.

Dust is considered as the solid matter that is produced by different activities such as during mining, rock disintegrations, sweeping and any other activities which is borne by air. According to ISO and BSI, 1994, it is defined as small solid particles ranging from 1- 75µm. Particles smaller than 1µm are referred to as fumes (16). Dust can be subdivided into respirable and non-respirable dust with the boundary of 10µm. Dust as an occupational hazard (ISO 4225 - ISO, 1994) is small solid particles, conventionally taken as those particles below 75µm in diameter, which stay suspended for some time and they settle slowly under the influence of gravity.

The health risk associated with a dusty job depends on the type of dust which will determine its toxicological properties, and hence the resulting health effect; and the exposure, which determines the dose (17).The amount of dust retained in the lung also depends on chemical and physical properties of the dust particles and where in the respiratory tract the particles are deposited (18). Respiratory morbidity, such as admissions for asthma and chronic obstructive pulmonary diseases, was more strongly related to coarse particles that are more often crustal origin (19). Street sweepers

sweep waste materials thrown at public streets and they perform it in an open environment, due to they are subjected to different types of health problems (20).

Apart from dust, road traffic also produce volatile organic compounds, suspended particulate matter, oxides of sulphur, oxides of nitrogen and carbon monoxide which makes adverse health effects on the exposed population(21). Some of the health effects include infection and inflammation of the airways and results in development of respiratory symptoms (22). A study in India indicates prevalence of upper respiratory tract infection and chronic bronchitis among street sweepers were 7.3% and 5.9% respectively(23).

2.2. Socio-economic status and Respiratory Symptoms

Socio economic is a total measure of an individual's or family's economic and social position in relation to others. It is based on measures such as income, education, occupation, location of residence, housing condition and participation in social organization(24). Education is a key determinant of lifestyle and status an individual enjoy in a society and provide people with the skill and knowledge that can lead to a better quality of life (EDHS, 2010). Also level of education influences the type of occupation and income which can determine the home living condition (25). It has strong effect on attitude and awareness related to family health and hygiene. The low awareness of health and safety would make more vulnerable to illness (26). Socio-economic status is a determinant of health and is well known to play an important role in the development of several diseases such as respiratory diseases (24), with lower socio-economic status being associated with higher rates of morbidity and mortality from several chronic diseases, including cardiovascular disease, chronic bronchitis and chronic obstructive pulmonary disease (27).

2.3. Duration of Exposure/Employment and Respiratory Symptoms

Aerosol is a system of particles suspended in a gaseous medium, which may exist in the form of airborne dusts, sprays, mists, smokes and fumes(28). Occupational exposure to those matters is associated with increased prevalence of respiratory symptoms and impairment of lung function (1). Particles deposited in the respiratory symptoms also increases with duration of exposure (19).

A study done on Tanzania street sweepers shown that cough 63.0%, phlegm 44.4%, wheezing 40.7%, nose irritating 42.6%, sneezing 66.7% and breathlessness 37.0% on those who worked more than 5 years compared with those who have worked 1-5 years, even though it is not statistically significant (29). Indian female sweepers which show that the respiratory symptoms

were significantly higher in workers with duration of employment longer than 10 years when compared with the sweepers employed for less than 10 years(1).

2.4. Smoking and Respiratory Symptoms

Smoking is the action or habit of inhaling and exhaling the smoke of tobacco or a drug which increases the risk of developing respiratory disorders (30). Smoking is a known risk factor causing chronic bronchitis that is an important morbidity condition among street sweepers. (23)Shown that percentage of smokers was higher among street sweepers than that among subjects in the comparison group, (17.90%) and (10.46%) respectively. Tobacco uses also increases and leading to cardiovascular diseases and chronic obstructive pulmonary diseases. Nearly 1.25 billion people in the world uses tobacco regularly and every year 5.4% people die of it, and a population goes through transition; more poor and uneducated are affected by the use of tobacco (31). Smokers and, mainly, ex-smokers indicated more symptoms of chronic respiratory disease. The group with highest tobacco consumption, above 182 packs year showed increased respiratory symptoms (18).Current smokers are 25 times likely to die from lung cancer compared to those who had never smoked(32).

2.5. Use of Personal Protective Equipments and Respiratory symptoms

Personal protective equipment is anything worn or held by a person at work place which protects them against one or more risks to their health or safety and include a wide range of clothing and safety devices (21). Many workers are unaware of potential hazards present in their working environment, which let them to be more vulnerable to injury and other work-related diseases (33). Workers do not wearing proper protective equipment causing serious health problems (26). The fact that the street sweepers rarely used any protective devices such as face masks and were exposed to a high dust level generated at the test sites may have contributed to increase in the prevalence of respiratory symptoms and lung function problems (9). A study reported from Beni-suef city, Egypt 75% street sweepers have not received any protective devices from their institution. Whereas during working time, 75.7% from the total sample never use respirator, while only 24.3% sometimes use it (33).Another study from Cairo, Egypt also shows no one of the participating street sweepers wear nose/mouth mask and respirator. Only 42.7% of them frequently washed their hands and faces after work while 56.3% seldom did (34).Proper use of personal protective equipment through training and education, accessing and maintaining is an effective intervention to prevent respiratory problems (35).

2.6. Age and Respiratory Symptoms

Increased sensitivity with elderly people may be caused by diseases as a consequence of age and not the age itself. Characteristics that have been shown to influence susceptibility include pre-existing respiratory or cardiovascular disease, diabetes, medication use, age, gender, race, socioeconomic status and health care availability, educational attainment, housing characteristics and genetic differences, but still there are gaps in the knowledge about who is most at risk or susceptible to smallest dust particles(24).

The prevalence of respiratory symptoms in some cases is assumed to increase with age. Sputum production and wheeze are likely to reflect underlying chronic obstructive airways disease. (34).Elderly people are mostly affected as a result of normal and pathological ageing (14).

Based on the above reviews chronic respiratory symptoms and associated factors on street sweepers are summarized on conceptual frame work shown below (fig 1).This conceptual frame work was developed by assuming chronic respiratory symptoms of street sweepers will also associated with those factors as reviewed from the literature. As shown in the conceptual frame work chronic respiratory symptoms of street sweepers can be associated with socio demographic variables such as Age, Sex, education and Income. In addition chronic respiratory symptoms of the workers can also be associated with institutional and environmental factors like shortage of protective devices supply, duration of employment, past dust exposure and Length of Working hours, and behavioral factors like smoking and not using of PPEs.

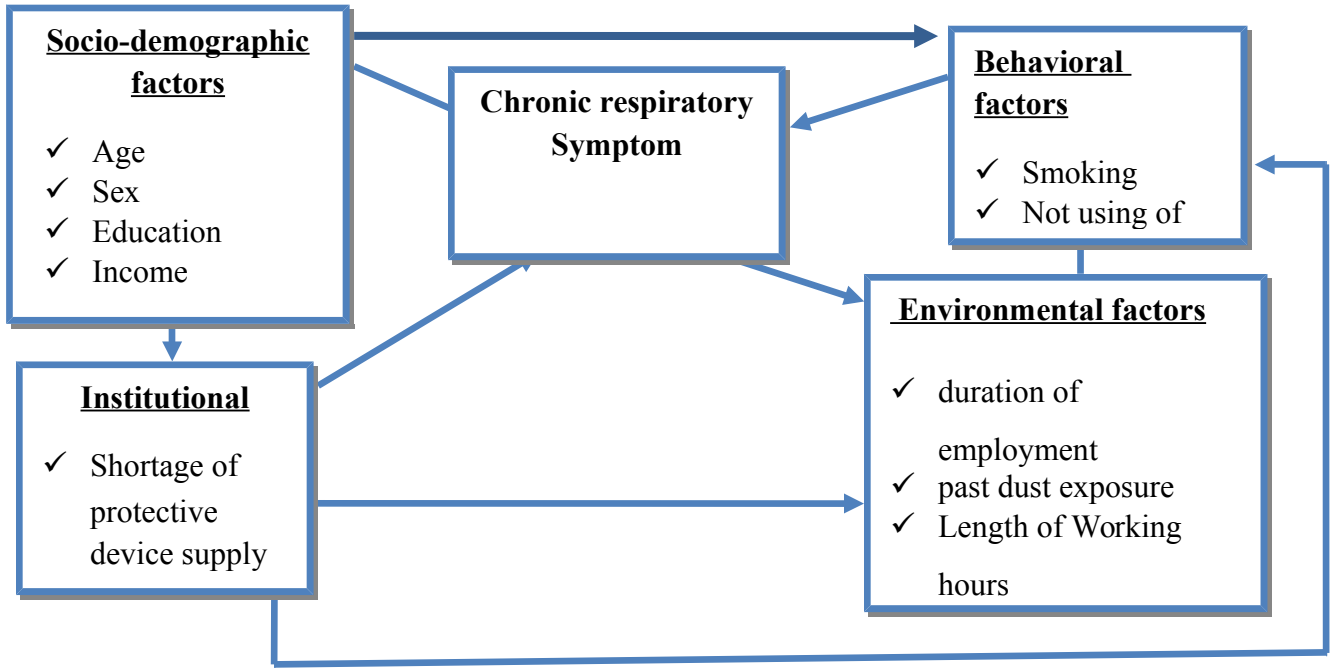


Figure 1: Conceptual frame work for this study Addis Ababa, Ethiopia January 2016.

3. OBJECTIVE

3.1. General objective

The general objective of this study was to assess the prevalence of chronic respiratory symptoms and associated factors among street sweepers in Addis Ababa, Ethiopia.

3.2: Specific objective

To compare the prevalence of chronic respiratory symptoms between street sweepers and petty traders

To identify the factors associated with chronic respiratory symptoms among street sweepers.

4. METHODS AND MATERIALS

4.1. Study design

A comparative cross-sectional study was conducted to assess the prevalence of chronic respiratory symptoms and associated factors among street sweepers in Addis Ababa, Ethiopia.

4.2. Study Area and period

The study was carried out on January to May 2016 in Addis Ababa, the capital city of Ethiopia. The city has a total of 2,738,248 populations with an area of 540 square kilometers (54000hectares). It is sub-divided in to ten sub-cities and 116 districts. During this study, there were about 5000 street sweepers that are employed by Addis Ababa city sanitation Administration Agency(2).

4.3. Source Population

All street sweepers and petty traders working in Addis Ababa city were the source population.

4.4. Study population

Street sweepers and petty traders working in the three selected sub-cities; Yeka, Bole and Arada sub city were study population.

4.5. Sample size determination

Sample size calculation for the first objective, to compare the chronic respiratory symptoms between street sweepers and petty traders was done using double population formulas.

p1=13 % prevalence of chest pain among exposed street sweepers (proportion of disease among the exposed group) and

p2=4% prevalence of chest pain among unexposed group from previous study (12).

$$n1 = \left[\frac{Z\alpha/2\sqrt{(1+1/r)p(1-p)} + Z1\text{-}\beta \sqrt{p1(1-p1)+p2(1-p2)/r}}{(P1\text{-}p2)^2} \right]^2 \quad (36)$$

Where $p = \frac{(p1+rp2)}{1+r}$

n= required minimum sample size for the two groups (n1+n2)

Where n1= sample of street sweepers

n2= sample of petty traders

r=1, proportion of exposed to none exposed is taken as equal 1:1.

Z α/2= critical value at 95% confidence interval=1.96.

Z1-β = standard normal distribution value corresponding 90% power to detect the assumed difference = 0.92

$$p = \frac{(0.13+1\times0.04)}{1+1} = \frac{0.17}{2} = 0.085$$

$$n1 = \left[\frac{1.96\sqrt{(1+1/1)0.085(1-0.085)} + 0.92\sqrt{0.13(1-0.13)+0.04(1-0.04)/1}}{(0.13-0.04)^2} \right]^2$$

n1=202

Since n1= n2 the total sample size (n) = 2n1=404.By adding 10% non respondent the total sample size is 444.

Sample size calculation for the second objective to assess factors associated with chronic respiratory symptoms among street sweepers.

By using double population formula,

p1=43.6 % prevalence of wheezing among street sweepers who did not use PPEs and

p2=25.4% prevalence of wheezing among street sweepers who use PPEs (29).

$$n1 = \left[\frac{Z\alpha/2\sqrt{(1+1/r)p(1-p)} + Z1\text{-}\beta\sqrt{p1(1-p1)+p2(1-p2)/r}}{(P1\text{-}p2)^2} \right]^2$$

Where $p = \frac{(p1+rp2)}{1+r}$

n= required minimum sample size for the two groups (n1+n2)

Where n1= sample of street sweepers who did not use PPEs

n2= sample of petty traders who use PPEs

r=1, proportion of exposed to none exposed is taken as equal 1:1.

Z α/2= critical value at 95% confidence interval=1.96.

Z1-β = standard normal distribution value corresponding 90% power to detect the assumed difference = 0.92

$$p = \frac{(0.436+1\times0.254)}{1+1} = \frac{0.69}{2} = 0.345$$

$$n1 = \left[\frac{1.96\sqrt{(1+1/1)0.345(1-0.345)} \pm 0.92\sqrt{0.436(1-0.436)+0.254(1-0.254)/1}}{(0.436-0.254)^2} \right]^2$$

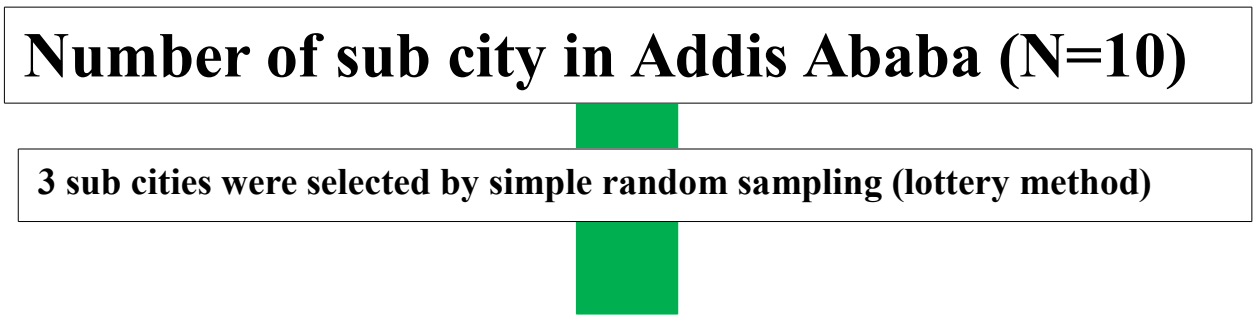
n1=144

Since n1= n2 the total sample size (n) = 2n1=288.By adding 10% non respondent the total sample size is 316.

The sample size for the first objective gave maximum sample size that is 444. Therefore, the sample size of this study is 444.

4.6. Sampling procedure

In Addis Ababa there are ten (10) sub-cities, from which three sub-cities; Yeka, Bole and Arada were randomly selected by lottery method considering the representativeness of the sample and logistical reasons. All 36 districts found in those selected sub cities which have street sweepers and 16 markets away from the road were included. Then the samples of street sweepers from each district were allocated proportionally and equal number of petty traders was allocated to each market. Finally the study participants who fulfill the inclusion criteria were selected by using systematic random sampling technique as follow. See figure below.



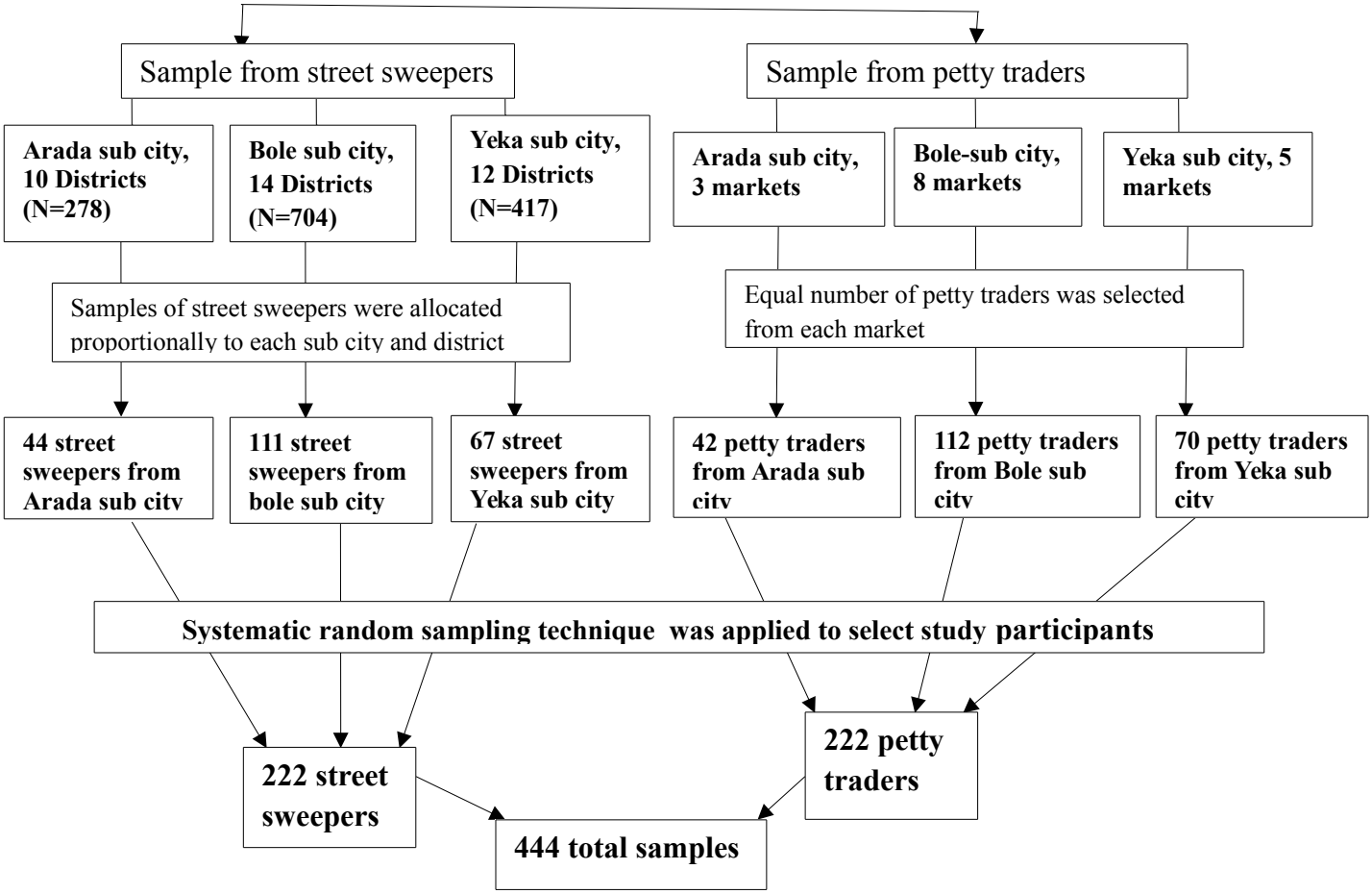


Figure 2-Schematic representation of sample procedure

4.7. Variables

4.7.1. Dependent variables

- Chronic respiratory symptoms.

4.7.2. Independent variables

- Socio demographic factors:- age**,** sex, education, income
- Behavioral factors:- smoking, not using of PPE
- Environmental factors:- duration of employment, length of working hours, past dust exposure history
- Past respiratory illness (co-morbidities) :- chronic bronchitis, tuberculosis (TB), heart disease, asthma and lung cancer.

4.8. Data collection procedure

A structured questioner modified from American Thoracic Society (ATS) was used to assess chronic respiratory symptoms (37). The questionnaire is available in English and translated to Amharic and then back to English to check its consistency. The questionnaire included questions about cough, phlegm, wheeze, breathlessness, chest illness and past illness. Predisposing factors such as occupational history, tobacco smoking, and family history will also be included in the questionnaire.

Observational check list was used to check the availability and utilization of personal protective devices. Seven Environmental health degree holders were involved for data collection and supervision. Data collectors and supervisors were trained for 2 days on the purpose of the study, the format of the questionnaire, interviewing techniques and data quality management.

4.9. Eligibility

4.9.1. Inclusion criteria

Street sweepers employed in street sweeping with one year and above in the job and petty trader(away from street) who engaged in that occupation one year and above.

4.9.2. Exclusion criteria

Street sweepers and petty traders who have less than one year work experience and those were not found at work place at the time of data collection were excluded from the study. Supervisors were excluded from the study, this is on assumption that these workers under go only controlling thus they will not be exposed to the dust on the working environment.

4.10. Operational definition

Chronic respiratory symptoms: The development of one or more of the symptoms of cough, phlegm, wheezing, shortness of breath and chest tightness which lasts at least three months in one year(37).

Cough: Experience of cough as much as 4–6 times per day occurring for most days of the week (≥4 days) for at least three months in one year (37).

Phlegm: It is sputum expectoration as much as twice a day for most days of the week (≥4 days) for at least three months in one year(37).

Wheezing: Chest sound whistling on expiration when have cold or occasionally apart from colds or most days or night for at least three months in a year(37)

Chest pain: In the past one year, chest pain that kept off work (37)

Shortness of breath: It is divided into 5 grades with the following definitions:

- Grade 0: No breathlessness except with strenuous exercise;
- Grade 1: Breathlessness when hurrying on the level or walking up a slight hill.
- Grade 2: Walking slower than people of the same age on the level because of breathlessness or need to stop for breath when walking at own pace or level.
- Grade 3: Stopping for breath after walking about 100 yards (96 meter) or a few minutes on the level.
- Grade 4: Grade 4: Too breathless to leave the house or breathless when dressing or undressing. So, that the study was reported dyspnea grade 2 or more as an outcome American Thoracic Society (37).

Smoking habit:

- **Never smokers**: workers who used no cigarette.

- **Smokers**: workers who smoked at the time of the study or had stopped smoking less than one year before (30).

Past dust exposure: any work experience on dusty environment before the current working position.

Past respiratory illness: respiratory disease likes TB, chronic bronchitis, lung cancer, and heart disease that could be developed before and identified by physicians.

Dust:-consisting of particles in the atmosphere that comes from various sources such as soil, dust lifted volcanic eruption and pollution.

Road dust: - dust generated from the road during sweeping**.**

Street sweeper: - persons who clean the street.

Utilization of PPE: - accessibility and wearing of personal protective equipment.

Respirator: - a device worn over the mouth or nose or over both to protect the respiratory tract from harmful dust or fumes.

Nose/mouth mask: -device design to cover mouth and nose for administration of inhalation anesthetics, oxygen or other gases and to prevent in halation of particulate matter.

4.11. Data analysis

The collected data was checked for errors and coded by the principal investigator before entered into computer. Data entry and cleaning was done using epidemiological information package (Epi Info7) and then exported to statistical package for social sciences (SPSS) version 20 for analysis. Data were described using frequency distribution, means, chi-square, standard deviations and prevalence. Bivariet and multiviaret logistic regression were done to see if there is association between dependant and independent variables. To avoid an excessive numbers of variables and unstable estimates only variables with p-value less than 0.3 were considered for multivariate analysis

4.12. Data quality assurance

To assure data quality, parts of a standardized questionnaire adapted from ATS was used .The principal investigator was closely observe and coordinate the overall activities of the study project.

Data collectors were trained before data collection in order to fill the questioner properly and to minimize bias. Each data collector checked the questionnaires for completeness before leaving each study participant. All filled questionnaires were reviewed at the end of the day by the supervisor. Pre-test was conducted 10 days before the actual data collection in kirkos sub city for validation of data collection tool. The questionnaire was available in English and was translated in to Amharic and then was retranslated to English to verify the comparability with the English version.

4.13. Data management

Data was coded and kept confidential and accessed only by research team. During data collection period, the principal investigator checked for completeness and consistencies through a close follow up. The data was entered into a data base using epidemiological information package (Epi Info7). Frequencies and cross- tabulation was done to check the completeness and accuracy of the entered data and then the data was exported to statistical package for social sciences (SPSS) version 20 for analysis. Missing values and outliers were checked using frequency tabulation and residual plotting, and then managed accordingly.

4.14. Ethical clearance

Before conducting the study ethical clearance was obtained from the institutional review board (IRB) of Addis Ababa University, School of Public Health. Official permission to conduct the study was obtained from Addis Ababa city sanitation Administration Agency. Verbal informed consent was obtained from each study participants after clear explanation about the purpose of the study, the importance of their participation, confidentiality of the information, participation is voluntary and refusal to participate will have no effect on the subject or any family member.

4.15. Dissemination of the result

The result of this study will be presented to Addis Ababa university school of public health. The result will also be shared to Addis Ababa City Sanitation Administration Agency and respective sub cities and districts where the study was done and pre-test have under taken. In addition the result will be presented through publication.

5. Result

A total of 444 street sweepers and petty traders from 3 sub cities (36 districts) were selected to participate in the study, of which 411 were involved with a response rate of 92.6%. Twelve individuals were not found at work place due to annual leave on three consecutive visits and registered as nonresponsive. Twenty one individuals were found unwilling to participate and excluded from the study.

5.1. Socio-demographic characteristics of respondents

Out of 411 respondents, 41**(**9.98%) were males and 370(90.02%) were females. Among the total study subjects 230(55.9%) were between the age group of 18-32 years and 162(39.4%) were between 33-47years. One hundred ninety two (46.7%) of the respondents were married, 138(35.5%) were never married (single) and the remaining 81 (19.6%) were separated or divorced or widowed. Distribution of education level in the study participant, 81 (38.9%) street sweepers attended primary education and the remaining 127(61.1%) attended secondary education and above. Whereas the petty traders 23 (11.3%) had no education (illiterate), 128 (63.1%) attended primary education and the remaining 52 (25.6%) attended secondary education and above. Among the study participants, 208 (100%) of the street sweepers and 193(95.1%) petty traders had monthly income with a range of 1000-2000 birr and the remaining 10(4.9%) petty traders get 2100 birr or more per month (table 1).

Table 1: Socio demographic characteristics of respondents in Addis Ababa city, Ethiopia, May2016

Variable	street sweepers Number (%)	comparison group (petty traders) Number (%)	total Number (%)
Sex			
Male	22(10.6)	19(9.4)	41(9.98)
Female	186(89.4)	184(90.6)	370(90.02)
Age			
18 –32	110(52.9)	120(59.1)	230(55.9)
33 – 47	86 (41.3)	76(37.4)	162(39.4)
> 47	12(5.8)	7(3.4)	19(4.7)
Marital Status			
Single	74(35.6)	64(31.5)	138(35.5)
Married	103 (49.5)	89 (43.8)	192(46.7)
Divorced/Separated	23(11.1)	40(19.7)	63(15.3)
Widowed	8(3.8)	10(4.9)	18(4.3)
Level of education			
Illiterate	0(0)	23(11.3)	23(5.6)
Primary education	81 (38.9)	128(63.1)	209 (50.8)
Secondary education and above	127(61.1)	52(25.6)	179(43.6)
Monthly income (Birr)			
1000-2000	208(100)	193(95.1)	401(97.6)
>2000	0 (0)	10(4.9)	10(2.4)

5.2. Comparison socio-demographic variables for street sweepers and petty traders

The mean age of the street sweepers was 32.71 years (S.D = 8.96) and that of the comparison group was 31.74 years (S.D. = 8.12).The mean smoking habit of the street sweepers was 0.03(0.168). Mean (SD) duration of job for study group 3.46(3.01) and control group 5.04(4.56) see table 2._

Table 2: Comparison socio-demographic variables for street sweepers and comparison groups, May 2016

Variable	**street sweepers**	**control group (petty trader)**	**p value**
	Mean (SD)	Mean (SD)	
Age (year)	(n=208)	(n=203)	
	32.74(8.96)	31.74(8.12)	0.238
Smoking habit	(n=208)	(n=203)	
	0.03(0.168)	0.00(0.00)	0.148
Previous respiratory	(n=208)	(n=203)	
Illness	0.1(0.296)	0.05(0.217)	0.008*
Duration of job (year)	(n=208)	(n=203)	
	3.46(3.01)	5.04(4.56)	0.000*
Working hours per day	(n=208)	(n=203)	
	5.33(1.27)	8.16(1.56)	0.000*
Working days/week	(n=208)	(n=203)	

	6.64(.781)	6.30 (.528)	0.000*

X^2- test, mean value (standard deviation), number of respondent (n), $p<0.05$.

5.3. Chronic respiratory symptoms among street sweepers and comparison group

The prevalence of chronic respiratory symptoms was 113(54.3%) and 51(25.12%) in street sweepers and petty traders respectively with prevalence of cough 90 (43.3%) versus 31(15.3%); phlegm 50(24.8%) versus 19(9.4%); wheezing 39(19.3%) versus 11(5.4%); breathlessness grade II and above 36(17.8%) versus 13(6.4%) and Chest coldness 30(14.9%) versus 8(3.9%) (Table3).

Table 3: Prevalence of chronic respiratory symptoms in street sweepers and control groups (petty traders) in Addis Ababa, Ethiopia May 2016

Respiratory symptoms	**street sweepers =208**		**comparison group =203 (petty traders)**		**p value**
	Number	%	Number	%	
Cough	90	43.3	31	15.3	0.000*
Phlegm	50	24.8	19	9.4	0.000*
Wheezing	39	19.3	11	5.4	0.000*
Breathlessness Grade II or more	36	17.8	13	6.4	0.000*
Chest pain	11	5.3	3	1.5	0.000*
Chronic respiratory symptom	113	54.3	51	25.12	0.000*

* X^2- test, $p<0.05$.

5.4. Working environment and behavioral factors of study participants

Out of 411 participants who involved in the study, 115 (55.3 %) street sweepers and 15(7.4%) petty traders worked less than or equal 5 hours per a day and 174(86.1 %) street sweepers and 142(70%) petty traders had working experience of one to five years. Only 120(57.7%) street sweepers used nose/mouth mask and 6(2.9 %) street sweepers were cigarette smokers (Table 5).

Table 4: Reported work environment and behavioral factors of participants in Addis Ababa street sweepers, May 2016

Variables	Street sweepers Number (%)	Petty traders Number (%)
Working hours per a day		
≤5	115(55.3)	15(7.4)
>5	93(44.7)	188(92.6)
Service year		
1 – 5	174(86.1)	142(70.0)
>5	28 (13.9)	61(30.0)
Use of PPE (nose/mouth musk)		
Yes	120(57.7)	0(0)
No	88(42.3)	203(100)
Smoking cigarette (current and ever smokers)		
Yes	202(97.1)	0(0)
No	6 (2.9)	203(100)

5.5. Occupational history and previous chronic respiratory illness of study participants

In this study 59(28.4 %) and 4(1.9 %) street sweepers were exposed to dusty and chemicals/gas working environments respectively, before they were employed to this street sweeping. On the other hand 4(2 %) and 11(5.4 %) petty traders were exposed to dusty and chemicals/gas working environments respectively, before they were started this job. Some street sweepers, 32(15.4 %) and petty traders, 10(4.9%) reported the presence of chronic respiratory disease identified by physicians before they have started this job (table 6).

Table5 :Previous chronic respiratory illness and occupational exposures of participants in Addis Ababa street sweepers, May 2016

Variables	Street sweepers Number (%)	Petty traders Number (%)
Past dust exposure		
Yes	59(28.4)	4(2.0)
No	149(71.6)	199(98.0)
Past chemicals/gas working environments		
Yes	4(1.9)	11(5.4)
No	204(98.1)	192(94.6)
Past respiratory illness		
Yes	32(15.4)	10(4.9)
No		193(95.1)

176(84.6)

5.6. Work place observation

5.6.1. Use of Respiratory Protective Equipment (RPE)

In this survey 203 petty traders and 208 street sweepers were asked about their use of personal protective equipment. All of the petty traders reported that they did not use any protective equipment. Out of 208 street sweepers, who were asked about their use of respiratory protective equipment, none of them reported using respirator where as 120 (57.7%) uses nose/mouth mask.Other protective devices used by street sweepers were reflector coat, hand gloves and clothing/overall 100% and foot wear boots 91.8%. See table below.

Type of PPEs	*Proportion of availability of PPEs among street sweepers*	*Proportion of street sweepers wear PPEs during working*
Respirator	0%	0%

Hand gloves	208(100%)	208(100%)
Eye protection/ goggles	0%	0%
Footwear boots	208(100%)	191(91.8%)
Clothing/over all	208 (100%)	208(100%)
Reflector	208(100%)	208(100%)
Helmet	0%	0%
Nose/mouth mask	164(78.8%)	120(57.7%)

Table6**:**Proportion of accessibility and wearing of PPEs among street sweepers

5.7. Factors associated with chronic respiratory symptoms among street sweepers

5.7.1. Bivariate analysis

Age of participants, working hours, service years in the street sweeping and previous dust exposure were significant in bivariate ($p < 0.05$) analysis. On the other hand sex, Educational status**,** wearing

of nose/mouth mask , past respiratory illness and smoking behavior were not associated with chronic respiratory symptoms in bivariate analysis (p >0.05) (Table 7)

Table7: Bivariate analysis of associated factors and chronic respiratory symptoms among street sweepers in Addis Ababa city, Ethiopia, 2016

Variable	chronic respiratory symptoms		COR (95%CI)	p-value
	Yes	No		

Sex				
Male	12	10	1.00	
Female	102	84	1.214(0.502-2.940)	0.667
Age				
18-32	54	56	1.00	
33-47	49	37	1.373(0.779-2.422)	**0.273**
> 47	10	2	5.185(1.086-24.763)	**0.039**
Educational status				
Primary	48	33	1.00	
Secondary and above	66	61	0.721(1.010-2.266)	**0.255**
Work experience				
1-5	83	91	1.00	
>5	26	3	9.502(2.773-32.559)	**0.000**
Working hours				
≤5	69	46	1.00	
>5	67	26	3.865(2.150-6.950)	**0.000**
Smoking behavior				
Never Smoked	108	94	1.00	
Ever Smokers	4	2	1.741(0.312-9.719)	0.383
Past dust exposure				
No	69	80	1.00	
Yes	44	15	3.401(1.743-6.637)	**0.000**
Past respiratory illness				
No	93	83	1.00	
Yes	20	12	1.487(0.686-3.227)	0.315
Wearing of nose/mouth mask				
Yes	59	61	1.00	
No	54	34	0.609 (0.348-1.065)	**0.082**

Note: 1.00 = reference

5.7.2. Multivariate analysis

Variables with bivariate analysis p< 0.3 were taken to multivariate analysis. Age of participants, service years, length of working hours and past dust exposure were also significant in multivariate analysis ($p < 0.05$).

Service years of participants were significantly associated with chronic respiratory symptoms among street sweepers. Sweepers with service years of greater than 5years were more likely to develop chronic respiratory symptoms [AOR=6.418, 95% CI, (1.604-25.686)] than individuals who had 1-5 years.

Sweepers aged greater than 47 years were more likely to develop chronic respiratory symptoms [AOR = 1.382, 95 % CI, (1.176-10.861)] than sweepers in the age category 18–32 years old.

Length of working hours was significantly associated with chronic respiratory symptoms in the street sweeping workers. Sweepers who work greater than 5 hours per a day [AOR=3.925, 95% CI, (2.060-7.477)] were more likely to develop chronic respiratory symptoms than those who had 5hours or less working per a day.

Past dust exposure was also significantly associated with chronic respiratory symptoms. Workers who had past dust exposure had the odds of developing chronic respiratory symptoms 2.679 times more likely [AOR = 2.696, 95 % CI, (1.278-5.685)] than workers with no past dust exposure (table 8).

Table 8: Multivariate analysis of associated factors and chronic respiratory symptoms among street sweepers in Addis Ababa city, Ethiopia, 2016

Variable	chronic respiratory symptoms		COR (95%CI)	AOR (95%CI)	p-value
	Yes	No			
Age					
18-32	54	56	1.00	1.00	
33-47	49	37	1.373(0.779-2.422)	1.041(0.527-2.055)	0.408
> 47	10	2	5.185(1.086-24.763)	1.382(1.176-10.861)	**0.035**
Educational status					
Primary	48	33	1.00	1.00	
Secondary and above	66	61	0.721(1.010-2.266)	0.772(0.391-1.525)	0.456
Work experience					
1-5	83	91	1.00	1.00	
>5	26	3	9.502(2.773-32.559)	6.418(1.604-25.686)	**0.009**
Working hours					
≤5	69	46	1.00	1.00	
>5	67	26	3.865(2.150-6.950)	3.925 (2.060-7.477)	**0.000**
Past dust exposure					
No	69	80	1.00	1.00	
Yes	44	15	3.401(1.743-6.637)	2.696(1.278-5.685)	**0.009**
Wearing of nose/mouth musk					
Yes	59	61	1.00	1.00	
No	54	34	0.609 (0.348-1.065)	0.869(0.446-1.692)	0.680

Note: 1.00 = reference

6. DISCUSSION

The response rate of this study was 92.6% that seems higher than previous similar studies conducted in Tanzania, 57.7 %(29) and Nigeria 90% (7). This could be resulted from the effort made to minimize the non response rate by repeatedly visiting the workers.

In both groups female were more than 90%. This was higher as compared with some studies conducted in Tanzania, but lower than other studies done in India (1).This might be due to the study done in India was in female sweepers.

This study revealed that the mean age of street sweepers were almost comparable to the control. This result was similar with studies done in Nigeria and India (1) (30).

In this study, the prevalence of chronic respiratory symptoms was higher among street sweepers than petty traders (54.3% vs. 25.12%). This is consistent with many studies in the past(1) (6) (7) (23) (29). The symptoms might vary from one country to others and in the present study most of the workers complained of cough (43.3%). A study done in Cairo, Egypt showed that cough was significantly more common among street sweepers (17.5%) than among control group (5.8%)(34). The same study in Beni-suef in Egypt revealed that cough was significantly more frequent among those working street sweeping and waste collection than comparison group (18.1% vs 7.1% respectively)(33).Another study in Nigeria showed a high prevalence of respiratory disorders among street sweepers than comparison group, mainly cough and sneezing(12).Two studies in India found a significance higher prevalence of chronic respiratory diseases among sweepers than among the comparison group(23) (35).It is likely that exposure to soil dust, traffic exhaust particles and fumes together with other biological materials may all contribute to irritation of the respiratory tract causing cough and other respiratory symptoms. This result also agrees with those of study conducted among waste collectors in Malaysia (22)where the prevalence of cough, phlegm and shortness of breath was significantly higher than the control group. But, the prevalence of phlegm, Wheezing, and breathlessness in the exposed groups in the current study, were lower than the exposed workers in Tanzania (29). The difference with Tanzanian study might be due to the difference in the definition of those symptoms. The Tanzanian study used only the presence on most days of the week (≥4 days) to say presence or absence while this study used minimum of three

month to say presence or absence. In the same way, for chest pain this study considered the presence of chest pain that kept off the workers from work, but in the case of the Tanzanian study, only the presence of pain on chest.

The result from work place observational showed that none of the street sweepers use respirator. This finding was the same to studies conducted in Egypt (34).This might be due to Shortage of respiratory protective device supply by the institution as a result of low emphasize given to the workplace safety and or not clearly understand the importance of respirator for the street sweepers.

On the other hand this study showed that 57.7% of the street sweepers wear nose/mouth mask. In contrast to study from Cairo, Egypt which shows no one of the participating street sweepers wear nose/mouth mask (34).

This study showed that age, work experience, working hours and past dust exposure were determinant factors for the development of chronic respiratory symptoms among street sweepers.

This study disclosed that workers aged above 47years were more likely to develop chronic respiratory symptoms than workers aged 18–33 years [AOR = 1.382,95 % CI, (1.176-10.861)]. The confidence interval is big; this is because of small number participants in this group. The result of this study was more or less similar to the study conducted in Thoothukudi that reported respiratory symptoms were more among person above 40 years of age (14).This might be due to the amount of dust exposure and may also depend on the number of service years, and aged people the body immunity start to go down and less fighting for diseases.

In this study sweepers with work experience >5 years were more likely to develop chronic respiratory symptoms than 1-5 years [AOR=6.418, 95% CI, (1.604-25.686)]. The confidence interval is too big; this is because of small number participants in this group. This finding was in line with the studies conducted in Indian female sweepers (1) and study done in Egypt (34). This might be due to prolonged exposure increased dust deposition in the respiratory system.

We found that street sweepers those who exposed >5 hours to street dust per a day were more likely to develop chronic respiratory symptoms than workers ≤5 hours [AOR = 3.925,95 % CI, (2.060-7.477)]. This finding was similar with a study conducted in Tanzania (29). This might be due to exposure for extended time (hours) increased dust accumulation in the respiratory system.

The study also revealed that past dust exposure was significantly associated with the development of chronic respiratory symptoms [AOR = 2.696, 95 % CI, (1.278- 5.685)].This result agrees with finding in Egypt(34).This might be due to it can aggravated to quick onset of the symptoms.

The present study also found that nose/mouth mask use was not statistically significant in relation to the development of chronic respiratory symptoms [AOR = 0.906, 95 % CI (0.464-1.77)]. This finding was in agreement with studies done in Tanzania and Nigeria (29), (23) and this might be due to the quality of nose/mouth mask provided, that was piece of cloths instead of nose/mouth mask or respirator, inconsistent use and cleaning of PPE in case of Tanzania and Nigeria, and in the present study as observed during work place observation. It might be due to the quality of nose/mouth mask provided, that was piece of cloths instead of nose/mouth mask and not properly fitted to completely eliminate the material generated during sweeping. They might not use it all the time while they are on duty because of no access, discomfort and to save time.

7. STRENGTH AND LIMITATIONS OF THE STUDY

7.1. Strength

This study was comparative; it can show the magnitude of chronic respiratory symptoms between the two groups. Representative sample was used.

7.2. Limitation

The study design was cross-sectional study; it may not be strong enough to demonstrate direct cause and effect relationship between risk factors and outcome. Only healthy workers who were present during the data collection were enrolled in the study, which may contribute to underestimate the effect of interest. Participants recall bias and interviewer bias might have influenced the results for reported duration of employment, age, past dust exposure and past respiratory disease. This might lacking association between street sweeping and those factors for respiratory outcomes.

8. CONCLUSIONS

Findings from this study indicate that chronic respiratory symptoms were higher among street sweepers compared to controls. None of the street sweepers used respirator, only 57.7% sweepers use nose or mouth mask during work time. Also the study conclude for those who did not develop respiratory symptoms while working/exposed on street sweeping dust, they are at risk of developing respiratory symptoms.

9. RECOMMENDATIONS

Another cohort study design should be conducted by Addis Ababa City Sanitation Administration Agency in collaboration with Addis Ababa health bureau to explore cause-effect relationship of chronic respiratory symptoms among street sweeper due to street sweeping occupation. Effective use of protective devices like masks and respirator should be promoted. Training should be prepared by Addis Ababa City Sanitation Administration Agency to street sweepers and supervisors on occupational safety. Workplace risk assessment should be done periodically to identifying level of dust which produced during street sweeping.

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11. ANNEXES

11.1. ANNEX I: Questionnaires in English version:

Addis Ababa University, School of Public Health

1. Information sheet

Greeting

How are you, I am ————. I came from Addis Ababa University, Collage of Health Science, and School of Public Health to conduct a research. The aim of the study is Assessing Chronic Respiratory Health Symptoms and Associated Factors among Addis Ababa city municipal Street Sweepers. Therefore, this study will have a great contribution in the control and prevention of chronic respiratory symptoms among street sweepers. Besides, I believe that this study will help in attracting governmental and stakeholders to contribute their part on these problems. During the study period structured questioner will be used. Your name will not be written in this form and will never be used in connection with any information you tell me. All information given by you will be kept strictly confidential. Your participation is voluntary and you are not obligated to answer any question which you do not like to answer. If you feel discomfort with the interview, please feel free to drop it any time you want. This interview will take about 15 minutes.

2. Informed consent

Having the above information, I honorably invite you to participate in the study.

I the under signed, will like to confirm that, as I give consent to participate in the study, it is with clear understanding and recognition of:

1. The objective of the study
2. My right to resign from the study during any stage of the study

I confirmed my agreement with my signature after the detailed objective of the study has been explained to me in the language I understand well.

Signature (participant's) _____ Signature (collector) _____

Date _____ Date _____

Remark: for any inconvenience and problem related to questionnaire please contact principal investigator.

Name of principal investigator: Tsegay Gebrezgher Tell: +251-920 344622

ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE SCHOOL OF PUBLIC HEALTH

Date of interview…… Questionnaire number ……

Name of interviewer…… Please, put check (√) in front of the correct question number which to indicate number and write a correct number example age put in a years.

1: Socio-demographic characteristic

S.N	Question(variable)	Coding	respond
1	Sex(by observation)	0=male	
		1=female	
2	Age ……years		
3	Marital status	1=single	
		2=Married	
		3=Divorced/separated	
		4=widowed	
4	Educational level	1=illiterate	
		2=Primary education	
		3=Secondary education and above	
5	When did you start the job? ---------- E.c.		
6	How long do you working in this job? ----------years.		
7	How many working hours per a day? ----------hours.		
8	What is your working time? ---------- to ----------hours.		
9	How many working days per a week? ----------days.		
10	What is your income per a month? ----------birr.		

2. Respiratory symptoms

2.1. Cough

S.N	Questions	Coding	Respond
1	Do you usually have a cough? if no skip to 3.	0=No	
		1=Yes	
2	Do you usually cough as much as 4 to 6 times per a day or 4 days more per a week?	0=No	
		1=Yes	
3	Do you usually cough at all on getting up in the morning?	0=No	
		1=Yes	
4	Do you usually cough at all during the rest of the day or night?	0=No	
		1=Yes	
	If yes to any above (1, 2, 3, 4) answer the following if not to all jump to next section.....		
5	Do you usually cough like this for 3 consecutive months or more during the year?	0=No	
		1=Yes	
6	For how long have you had this cough? -----years.	0=No	
		1=Yes	

2.2. Phlegm

S.N	Questions	Coding	respond
1	Do you usually bring up phlegm from your chest?	0=No	
		1=Yes	
	If not jump to question No 3 -------		
2	Do you usually bring up phlegm like this as much as twice a day, 4 or more days out of the week?	0=No	
		1=Yes	
3	Do you usually bring up phlegm at all on getting up in the morning?	0=No	
		1=Yes	
4	Do you usually bring up phlegm at all during the rest of the day or at night?	0=No	
		1=Yes	
	If yes to any above (1,2,3) answer question 5 and 6 -------		
5	Do you bring up phlegm like this on most days for 3 consecutive months or more during the year?	0=No	
		1=Yes	
6	For how many years have you had trouble with phlegm?....years		

2.3. Wheezing

S.N	Question	coding	Respond
1	Does your chest ever sound wheezy or whistling? 1. When you have a cold	0=No 1=Yes	
	2.Occasionally apart from colds	0=No 1=Yes	
	3. Most days or night	0=No 1=Yes	
	If Yes to1, 2 or 3 in question 1 go to question 2		
2	For how many years has this been sound wheezy present? .....years.		

2.4. Breathlessness

S.N	**Question**	**coding**	**Respond**
1	Have you trouble by shortness of breath when hurrying on the level or walking up a slight hill? If yes answer question 2,3,4 and 5	0=No 1=Yes	
2	Do you have to walk slower than people of your age on the level because of breathlessness?	0=No 1=Yes	
3	Do you ever have to stop for breath when walking at your own pace on the level?	0=No 1=Yes	

4	Do you ever have to stop for breath after walking about 100yards (96m) on the level?	0=No	
		1=Yes	
5	Are you too breathless to leave the house or breathless on dressing or undressing	0=No	
		1=Yes	

2.5. Chest cold and chest illness

S.N	Question	coding	Respond
1	IF you get a cold, does it usually go to your chest?	0=No	
		1=Yes	
2	During the past 3 years have you had any chest illness that has kept you off work, indoors at home or in bed?	0=No	
		1=Yes	
3	Did you produce phlegm with any of those chest illnesses?	0=No	
		1=Yes	

2.7. Chronic bronchitis

S.N	Question	coding	Respond
1	During the past 3 years have you had a period of increased cough with increased sputum production for as long as three weeks or more?	0=No	
		1=Yes	

3. Occupational history

S.N	Question	Coding	Respond
1	Have you ever worked for any other dust?	0=No	
		1=Yes	
2	Specify the job ----------		
3	For how long? ---------- Years.		
4	What perceived level of dust has been exposed in that job?	0= mild	
		1=moderate	
		2= sever	
5	Have you ever been exposed to gas or chemical fumes in your work?	0=No	
		1=Yes	
6	Specify the job? ----------		
7	What perceived level of fume has been exposed in that job?	0= mild	
		1=moderate	
		2= sever	
8	For how long exposed? _____ Years.		

4. Smoking behavior

S.N	Question	Coding	Respond
1	Have you ever smoked cigarettes? If yes answer no 2	0=No	
		1=Yes	
2	Do now smoke cigarettes?	0=No	
		1=Yes	

5. past respiratory disease history

Question	Respond		
	0=No	1=Yes	2= I don't know
Was either of your past life ever told by doctor that you had a chronic lung condition as mentioned below?			
1.Chronic bronchitis			
2. Asthma			
3.Heart attack			
4. Lung cancer			
5.tuberculosis(TB)			

6. Utilization of PPEs

S.N	Type of PPE	Availability of PPE	
		0=No	1=yes
1	Respirator		
2	Hand gloves		
3	Eye protection/goggles		
4	Footwear/boots		
5	Clothing/ over all		
6	Reflectors		
7	Helmet		

8	Nose/Mouth masks		

S.N	Type of PPE	Wearing of PPE during work	
		0=No	1=yes
1	Respirator		
2	Hand gloves		
3	Eye protection/goggles		
4	Footwear/boots		
5	Clothing/ over all		
6	Reflectors		
7	Helmet		
8	Nose/Mouth masks		

11.2. ANNEX II: Questionnaires in Amharic version

አዲስ አባባ ዩኒቨርስቲ ጤና ሳይንስ ኮሌጅ የህበረተሰብ ጤና ሳይንስ ትምህርት ቤት

1.<u>የመረጃ ቅፅ</u>

ጤና ይስጥልኝ!

ስሚ----------ይባላል።ከአዲስ አባባ ዩኒቨርስቲ ጤና ሳይንስ ኮሌጅ የህበረተሰብ ጤና ሳይንስ ትምህርት ቤት ጥናት ለማካሄድ ነው የመጣሁት። የጥናቱ ዋናው አላማ በአዲስ አባባ ከተማ አስተዳደር ከሚገኙት የአስፓልት ፅዳት ሰራተኞች የቆየ የመተንፈሻአካላት ችግርና መንስኤዎቹው ዳሰሳ ማድረግ ነው።በዚህ መሰረት ይህጥናት የአስፓልት ፅዳት ሰራተኞች የሚታዩ የቆዩ የመተንፈሻ አካላት ችግሮች በመከላከልና መቆጣጠር ትልቅ አስተዋፅኦ ይኖረዋል።ስለሆነም ይህንን ጥናት መንግስትና የተለያዩ ባለ ድርሻ አካላት ትኩረት በመስጠት ችግሩ ላይ የራሳቸው አስተዋፅኦ እንዲያደርጉ ይረዳል ብየ አስባለው።ጥናቱ በሚካሄድበት ወቅት ለጥናቱ የተዘጋጀ መጠይቅ እጠቀማለው።በዚህ ቅፅ ላይ ስምሽ/ህ አይሰፍርም። በተጨማሪም የምትሰጪኝ/ጠኝ መረጃ ከስምሽ/ህ ምንም ግንኙነት አይኖረውም። የምትሰጪኝ መረጃ ሁሉም ምስጢራውነቱ የተጠበቀ ነው።ተሳትፎሽ ፍላጎት ላይ የተመሰረተ ሲሆን መመለስ

የማትፈልጊያቸው ጥያቄዎች ሲያጋጥሙሽ ለመመለስ አትግደጂም።በመጠይቁ ወቅት ምኞት ካልተሰማሽ በፈለግሺው ሰኣት መተው ትቺያለሽ።መጠይቁ 15 ደቂቃ ሚያክል ይፈጃል።

2.<u>የስምምነት ማረጋገጫ ቅጽ</u>

ይህንን ግንዛቤ ውስጥ በማስገባት በጥናቱ ላይ እንድትሳተፍ/ፊ በአክብሮት እጠይቃለሁ።

እኔ ከዚህ በታች ፊርማዬ የተቀመጠው በጥናቱ በፍቃደኝነት እሳተፋለሁ ስል የሚከተሉትን ግንዛቤ ውስጥ በማስገባት ነው::

1. የጥናቱ ዓላማ
2. በጥናቱ የሚካተቱ ጥያቄዎችንና የጥናቱ አስፈላጊነት

በሚገባኝ ቋንቋ ስለተገለጸልኝና ስለተብራራልኝ በጥናቱ ለመሳተፍ በፊርማዬ አረጋግጣለሁ::
ፊርማ(የተሳታፊ)_____ ፊርማ(የመረጃሰብሳቢ)_____

ቀን_____ ቀን_____

ማሳሰቢያ፡ ያልገባዎት ወይም ጥያቄ የሆነበዎት ሁኔታ ካለ የጥናቱ ዋና ተሳታፊን መጠየቅ ይችላሉ።

የጥናቱ ዋና ተሳታፊ ስም፡ ፀጋይ ገ/እግዚአብሄር ስልክ ቁጥር፡ +251-920-34 46 22

አዲስ አባባ ዩኒቨርስቲ ጤና ሳይንስ ኮሌጅ የህበረተሰብ ጤና ሳይንስ ትምህርት ቤት

ቃለ-መጠይቅ የተደረገበት ቀን----------/--------/2008 የመጠይቁ ተራ ቁጥር----------

ቃለ-መጠይቅ አድራጊው ስም---------- እባክዎ ከትክክለኛው መልስ ቁጥር ፊት ለፊት የራይት ምልክት(√) ና ትክክለኛ ቁጥር ለምሳሌ እድሜ ይፃፉ

1.ማህበራዊና ዲሞግራፊ መስፈርት

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	ፆታ(በማየት)	0=ወንድ	
		1=ሴት	
2	ዕድሜ ---------- ዓመት		
		1=ያላገባ/ች	

3	የጋብቻ ሁኔታ	2=ያገባ/ች	
		3=የፈታ/ች	
		4=የሞተባት	
4	የትምህርት ደረጃ	1=ያልተማረ/ች	
		2=የመጀምርያ ደረጃ	
		3=ሁለተኛ ደረጃና ከዛ በላይ	
5	ሰራው መቼ ዓ.ም ነው የጀመርሺው ? ---------- ዓ.ም		
6	እዚህ ስራ ላይ ስንት አመት ሆኖሻል ? ---------- አመት		
7	በቀን ስንት ሰኣት ትሰሪያለሽ ? ---------- ሰአት		
8	መቼ መቼ ነው ምትሰሪው ? ከ.....እስከ..... ሰአት		
9	በሳምንት ስንት ቀናት ትሰሪያለሽ ? ---------- ቀናት		
10	በወር ምንያክል ገቢ ታገኚያለሽ? ..... ብር		

2. የመተንፈሻ አካላት ችግር

2.1. ሳል

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	አብዛኛው ጊዜ ሳል አለሽ ? ምላሽ አይደለም ከሆነ ወደ 3 ይዝለሉ።	0=አይደለም	
		1=አዎ	
2	አብዛኛው ጊዜ 4-6 ጊዜ በቀን 4 ቀን ወይም ከዛ በላይ በሳምንት ያስልሻል?	0=አይደለም	
		1=አዎ	
3	አብዛኛው ጊዜ ጧት ከእንቅልፍሽ ስትነሺ ያስልሻል ?	0=አይደለም	
		1=አዎ	
4	በተቀሩት የቀን ሰአት ቀን ወይም ሌሊት ያስልሻል ?	0=አይደለም	
		1=አዎ	
	አዎ ከሆነ ላንዳቸው ጥያቄ(1,2,3,4) ጥያቄ 5 ና 6 መልስ ።		
5	እንደዚህ አይነት ሳል ለተከታታይ 3 ወርና ከዛ በላይ በ 1 አመት አስሎሽ ያቃል?	0=አይደለም	
		1=አዎ	

6	ሳሉ ለምን ያክል ጊዜ ቆይቷል? ---------- አመት	

2.2.አክታ

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	አብዛኛው ጊዜ ከደረትህ/ሽ አክታ ይወጣል? መልስዎ አይደለም ከሆነ ወደ ቁ.3 ይዝለሉ።	0=አይደለም	
		1=አዎ	
2	በአብዛኛው ጊዜ እንደዚህ አክታ በቀን 2 ጊዜ ወይም 4 ጊዜ ወይም ከዛ በላይ በሳምንት አለሽ?	0=አይደለም	
		1=አዎ	
3	በአብዛኛው ጊዜ አክታ በቀን ወይም በማታ ጊዜ አለሽ? አዎ ከሆነ ላንዳቸው(1,2,3) ጥያቄ 4 ና 5 መልስ	0=አይደለም	
		1=አዎ	
4	በዚህ አመት እንደዚህ አይነት አክታ በአብዛኛው ቀናት ለተከታታይ ሶስት ወር ነበረሽ?	0=አይደለም	
		1=አዎ	
5	ስንት አመት ሆነሽ እንደዚህ አይነት የአክታ ችግር ከያዘሽ? ---------- አመት		

2.3.የማንኮራፋት ድምፅ

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	ደረትሽ የማንኮራፋትወይም ማፋጨት ድምፅ ያሰማል 1.1. ሲቀዘቅዝህ	0=አይደለም	
		1=አዎ	
	1.2.ድንገት ከቅዝቃዜ ስትወጣ	0 =አይደለም	
		1=አዎ	
	1.3.አብዛኛው በቀን ሰአት ወይም ሌሊት	0=አይደለም	
		1=አዎ	
	ለጥያቄ 1.1፣1.2፣1.3 መልስ አዎ ከሆነ ጥያቄ 2 መልስ		
2	ስንት ጊዜ ሆነህ እንደዚህ የማንኮራፋት ድምፅ ማሰማት ከያዘሽ? ---------- አመት		

2.4.የትንፋሽ ማጠር ወይም መቆራረጥ

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	የመተንፈስ ችግር ያጋጥምሻል በፍጥነት ስትራመጂ ወይም ዳገት ስትወጪ? አዎ ከሆነ ጥያቄ 2፣3፣4 ና 5 መልስ	0=አይደለም	
		1=አዎ	
2	ከ የመተንፈስ ችግር ጋር በተያያዘ ከ እኮዮችሽ በነሰ ፍጥነት የመራመድ ችግር አጋጥሞሽ ያቃል?	0=አይደለም	
		1=አዎ	
3	በራስሽ ፍጥነት ሜዳ ላይ ስትራመጂ የትንፋሽ መቋረጥ አጋጥሞሽ ያቃል?	0=አይደለም	
		1=አዎ	

4	በሚዳ ላይወደ 100 ያርድ(96 ሚ)ከተራመድሽ በኋላ የትንፋሽ መቋረጥ አጋጥመሽ ያቃል?	0=አይደለም	
		1=አዎ	
5	ከቤት ስትወጪ፤ ልብስ ስትለብሺ ወይም ስታወልቂ ከፍተኛ የትንፋሽ መቋረጥ አጋጥሞሽ ያቃል?	0=አይደለም	
		1=አዎ	

2.5.አክታ ያለው የደረት ህመም

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	ቅዝቃዜ ሲኖር አብዛኛው ደረትሽ ይቀዘቅዝሻል?	0=አይደለም	
		1=አዎ	
2	በዚህ 3 አመት ውስጥ ከስራ የሚያስቀር ወይም የሚያስተኛ የደረት ህመም ይዞሽያቃል?	0=አይደለም	
		1=አዎ	
3	ደረትሽሲያዝሽ አክታ አለው?	0=አይደለም	
		1=አዎ	

2.7.የቆየ የጎሮሮ ቁስል(የቆየ ብሮንካይትስ)

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	በዚህ ሶስት አመት ውስጥ እየጨመረ ሚሄድ አክታ ያለው ሳል ለሶስት ሳምንትና ከዛ በላይ የሚቆይ ይዞሽ ያቃል?	0=አይደለም	
		1=አዎ	

3.ከስራውጋር የተያያዘ ታሪክ በተመለከተ

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	አቧራ ያለበት ስራ ሰርተሽ ታቂያለሽ	0=አይደለም	
		1=አዎ	
2	ስራው ቢገለፅ		
3	ለምን ያክል ጊዜ ---------- አመት		
4	ስትሰሪበት በነበረ ቦታ ምን ያክል አቦራ ይቦንሽ ነበር	0=ቀላል	
		1=መካከለኛ	
		2=ከፍተኛ	
5	የጋዝ ወይም ከሚካል ጭስ በሚጨስበት ስራ ሰርተሽ ታቂያለሽ	0=አይደለም	
		1=አዎ	
6	ስራው ቢገለፅ----------		
7	ስትሰሪበት በነበረ ቦታ ምን ያክል ጭስ ይጨስብሽ ነበር	0=ቀላል	
		1=መካከለኛ	
		2=ከፍተኛ	
8	ለምን ያክል ጊዜ ሰራሽ ---------- አመት		

4. ሲጋራ ማጨስ ባህሪይ

ተ.ቁ	መጠይቅ	ኮድ	ምላሽ
1	ሲጋራ አጭሰሽ ታቂያለሽ?	0=አይደለም	
		1=አዎ	
2	ሲጋራ ታጨሺያለሽ?	0=አይደለም	
		1=አዎ	

5.ከዚህ በፊት የመተንፈሻ አካላት ህመም በተመለከተ

መጠይቅ	ምላሽ		
ባለፈው ህይወትሽ በዶክተር የተነገረሽ የቆየ የሳምባ ችግር ታመሽ ታቂያለሽ	0=አይደለም	1=አዎ	3=አላስታውስም
1.የቆየ ጉሮሮ ቁስለት(የቆየ ብሮንካይትስ)			
2.ለመተንፈስ የሚያውክ የሳንባ በሽታ			
3.አስም			
4.የልብ ድካም			
5.የሳንባ ካንሰር			
6.ሳንባ ነቀርሳ(TB)			

6.የግልየስራ ትጥቅ አጠቃቀም

ተ.ቁ	የግልየስራ ትጥቅ አይነት	.የግልየስራ ትጥቅ ስለ መኖሩ	
		0=የለም	1=አለ
1	የመተንፈሻ		
2	የእጅ ጓንት		
3	የአይን መከላከያ/መነፅር		
4	ጫማ		
5	የስራ ሙሉ ልብስ		
6	ብርሃን የሚያንፀባርቅ		
7	የብረት ባርኔጣ		

8	የአፍ/አፍንጫ መሸፈኛ		

ተ.ቁ	የግልየስራ ትጥቅ አይነት	የግልየስራ ትጥቅ አጠቃቀም	
		0=የለም	1=አለ
1	የመተንፈሻ		
2	የእጅ ጓንት		
3	የአይን መከላከያ/መነፅር		
4	ጫማ		
5	የስራ ሙሉ ልብስ		
6	ብርሃን የሚያንፀባርቅ		
7	የብረት ባርኔጣ		
8	የአፍ/አፍንጫ መሸፈኛ		