ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF PREVALENCE OF MUSCULOSKELETAL DISORDER, HEALTH SEEKING BEHAVIOR AND ASSOCIATED FACTORS AMONG TAXI DRIVERS IN ADDIS ABABA

BY:-MELESE TADDESE (BSC)

A THESIS SUBMITTED TO GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE SCHOOL OF PUBLIC HEALTH FOR PARTIAL FULFILLMENT OF MASTERS OF PUBLIC HEALTH IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH.

OCTOBER, 2019

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APPROVAL BY THE BOARD OF EXAMINATION

The thesis by Melese Taddese Aredo entitled" Assessment of Prevalence of musculoskeletal disorder, health seeking behavior and associated factors among taxi drivers in Addis Ababa, Ethiopia" is accepted in its present form by the board of examiners as fulfilling thesis requirement for degree of master's in Public Health in Environmental and Occupational health.

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Name Rank Signature Date

STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis entitled "**Assessment of prevalence of MSD, health seeking behavior and associated factors among taxi drivers in Addis Ababa**" is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University at College of Health Sciences, School of Public Health. The thesis is deposited in the Addis Ababa University Digital Library and is made available to local, national and international scientific community. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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BIOGRAPHICAL SKETCH

The author, Melese Taddese Aredo was born in February, 1988 G.C in Belle Gesgar District which is found in Arsi Zone of Oromia Region. He attended his elementary school at Jidda Hoja dure primary school up to grade eight from 1995-2002 G.C, respectively. He attended his secondary school at Amigna Gesgar secondary school from 2003 to 2004G .C. He also attended his preparatory level at Robe Didea comprehensive secondary school from 2005 to 2006 G.C

In 2007 he joined the Haromaya University and graduated in Bachelor of Science in Environmental health. After graduation he assigned to work at Honkolo Wabe woreda health office as health extension workers' supervisors. After that he transferred to other woreda called Bekoji woreda health office as health extension program coordinator, and had been serving five years. In 2015 he transferred to Asella referral and teaching Hospital and assigned as Infection prevention coordinator and in 2016 he promoted to Graduate assistant in Arsi University. In 2017 he joined Addis Ababa University College of health science school of public health to pursue his higher education for the degree of public health, specialty in Environmental and occupational health.

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Last but not least my appreciation goes to my family that support and encouraged me and I would like to thank my data collectors and supervisor who devoted and committed by sucrifying full of their time and capacity for the success of this thesis.

ACRONYMS AND ABBREVIATIONS

AOR	Adjusted Odds Ratio
CI	Confidence Interval
DC	Data collectors
ETB	Ethiopian Birr
HAV	Hand Arm Vibration
HF	Health Facility
ID	Identification
IQR	Inter Quartile Range
Kg	Kilogram
LBP	Low Back Pain
MoLSA	Ministry of Labor and Social Affairs
MSD	Musculoskeletal Disorder
MSP	Musculoskeletal Pain
OR	Odds Ratio
SNQ	Standardized Nordic Questionnaires
SPSS	Statistical package for social sciences
TD	Taxi Drivers
UN	United Nation
WBV	Whole Body Vibration
WRMSD	Work Related Musculoskeletal Disorder

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ABSTRACT

Background: Musculoskeletal disorders are widespread in many countries around the world. Transport workers have been found to be at high risk of developing work related musculoskeletal disorders (WRMSDs).

Objective: The aim of this study was to determine the prevalence of musculoskeletal disorders, health seeking behavior and associated factors among Taxi drivers in Addis Ababa.

Methods and Materials: Community based cross sectional design was under taken among taxi drivers in Addis Ababa using Nordic MSD questionnaire. Then the data was collected through face to face interview by 4 data collectors. The collected data was checked for its completeness and entered in to Epi info7 then exported to SPSS ver. 21, cleaned and both descriptive and logistic regression analysis were done.

Results: From the total of study subjects, 371participants were involved in this study with 95.9% of response rate. The prevalence of musculoskeletal disorder among taxi drivers in Addis Ababa during the last 12 months and the last seven days were 55% and 29% respectively. The low back pain and shoulder were the most pain sites in the past 12 months d by accounting 53.6% and 31% respectively. Majority of study participants were not interested to take early treatment of MSD until it gets worse. The identified risk factors include, Driving Experiences >10yrs [AOR:3.01,95%C.I. (2.08, 28.31)], bending/twisting frequently[AOR:1.673,95%C.I. (1.52, 8.53)], sitting for a longer time[AOR:2.79,95%C.I. (2.30, 9.03)], Not comfortable Seat design of taxi [AOR:2.45,95%C.I.(2.18,17.10)], Not performing regular physical exercises[AOR:2.17,95%C.I. (2.9, 11.68)].

Conclusion and recommendation: This study found a high prevalence of musculoskeletal pain among taxi drivers with low back the most common site of the pain. The longer the years of driving experience the greater the chances of developing musculoskeletal disorder. Majority of them were not interested to take early treatment of MSD. Therefore, these findings call for awareness creation training for drivers on how to avoid or reduce the risk factors such as frequent bending/twisting, prolonged sitting, seat design of taxi and physical exercises.

Key Words: Musculoskeletal disorder, taxi, drivers, Addis Ababa.

1. INTRODUCTION

1.1Background

Musculoskeletal disorder (MSD) is an injury of the muscles, tendons, ligaments, nerves, joints, cartilage, bones, or blood vessels in the arms, legs, head, neck, or back that is caused or aggravated by work tasks such as lifting, pushing, pulling, repetitive task, awkward posture. Symptoms include pain, stiffness, swelling, numbness, and tingling. WMSDs have been a worldwide issue in many countries. A recent statics report of health and safety executive of Great Britain, 2015 showed that WRMSDs accounted for 44% of the prevalence of all work related ill-health and the number of new cases (an incidence) rate of 530 cases per 100,000 people (1).

An estimated 9.5 million working days were lost due to WRMSDs. In many of the WRMSDs studies, risk factors that contribute to the development of WMSDs broadly categorized as workplace activities (ergonomics), workplace physical conditions, individual, psychosocial and organizational factors. The main workplace activities related with WMSDs are awkward and static postures, repetitive work, vibration and manual handling.

The workplace physical conditions include extreme temperature, poor lightning, work environment, etc. Individual factor includes medical history, obesity, physical activity, clothing, smoking and Leisure time activities . Psychosocial and organizational factor includes work demand, work control, relationship, support, job security, etc. It has been widely accepted that awkward and constrained postures result in musculoskeletal stress on different body regions of seated workers and are a major factor in the development of musculoskeletal disorders(2).

Musculoskeletal disorders are the most common cause of physical disability and severe long-term pain in working individuals. Population surveys estimated that for a one-month period of recall, up to 50% of people in the general population experience musculoskeletal pain at one or more anatomical sites .These public health problems were not well recognizing due to data limitation the area of work related disease and absence of an effective and continuous monitoring program regarding to occupational health and safety. Musculoskeletal disorders

(MSDs) are a main cause of productivity loss at work, functional impairments and permanent disability (2).

Musculoskeletal disorders have been reported that about 58 percent of the world's population over the age of 10 years spent one third of their life span at work. The population at a high risk includes nursing facilities, transportation, mining, food processing, leather tanning, heavy and light manufacturing. Transport workers have been found to be at high risk of developing work related musculoskeletal disorders (WRMSDs) (3).

Musculoskeletal disorders are among the most common causes of long-term disability in the work area. They represent a group of diverse conditions that affect the bones, joints and soft tissue structures around the joint. They also utilize a considerable proportion of health care resources (4).

Long-distance driving involves repetitive tasks, such as handling, bending and prolonged sitting, which may place excessive stress along the kinetic chain and affect the driver's personal and social life(5). A study in Ghana revealed 71 % of minibus drivers sustained WRMSDs. Out of this WRMSD, lower back and upper back pain constituted 34 % and 17 % of injuries respectively (6).

Health seeking behavior is also can be defined as the time span from symptom onset to contacting a healthcare provider, the type of healthcare provider chosen by the household, and the patient's compliance with treatment(26).

Musculoskeletal pain comprises a major health problem for the general population, affecting their quality of life, demanding increased health care and organization [6]. It has been suggested that people have varying perceptions about their musculoskeletal problem and perceptions about illness may influence health outcomes such as pain and disability directly or indirectly by their effect on coping (9).

There are so many evidences of study concerning the prevalence of MSD in drivers of various countries. But only one study has been done so far in Ethiopia that focused only on Low Back Pain (LBP) (7).Therefore the purpose of this study is to assess the prevalence and associated factors of RMSDs in the whole body regions and health seeking behavior of taxi drivers of Addis Ababa which were not incorporated by the majority of literatures reviewed in this proposal.

1.2Statement of the Problems

WMSDs are responsible for morbidity in many working populations and are known to cause significant occupational problems with increasing compensation and health costs, reduced productivity, and lower quality of life (8). WMSDs are a serious public health problem given the high cost to the injured worker, his or her family, employers, and society to a large extent. WMSDs are considered to be multi factorial that are caused due to the interactions between various risk factors, which result in conditions that vary across different occupations (9). Particularly, low back pain and neck pain being common forms of WMSDs cause substantial economic losses to individuals as well as to the community. Most people will experience musculoskeletal pain at some stage during their lifetime. The pain experienced may either be mild and transient or chronic and incapacitating. Musculoskeletal disorders are among the most common causes of long-term disability.

Convincing epidemiological evidence has indicated that professional drivers are at higher risk for low back pain (LBP) and various spinal disorders. Population surveys conducted in the USA and Canada have both found that back pain frequency among drivers is 1.6–2.0 times the reference prevalence. Professional drivers in developing countries, such as India and Taiwan have also similar MSD problems (4).

Professional drivers have been found to be at high risk for developing back pain due to prolonged sitting and vehicular vibration. As awareness of burden of MSD increases, it led to the proclamation of the Bone and Joint Decade 2000–2010, with endorsement by the UN, the World Health Organization (WHO), the World Bank and many governments and organizations worldwide (10-12) .

On the other hand regarding the factors that influence health seeking behavior of drivers, variety of factors has been identified as the leading causes of poor utilization of primary health care services: including poor socio-economic status, lack of physical accessibility, cultural beliefs and perceptions, low literacy level and large family size (31).

Importantly, WMSDs in professional drivers are associated with ergonomic as well as psychosocial risk factors. The most commonly identified physical factors are prolonged sitting, whole-body vibration, ergonomic mismatch, i.e., disparity between anthropometric sizes of the drivers and their physical environment including driving mechanisms

(automatic or manual, etc.). Individual factors such as age, gender, weight, height, body mass index, and general health status are also associated with work-related ailments of drivers (13). In the United States, between 1992 and 1997, approximately 5% of the Tri-Met bus driver-workforce compensation claims were directly attributed to the design of the bus operator's seat (14).

Many factors make taxi drivers distinct from other professions in terms of exposure to risk of work-related low back disorders. First is the time factor; because, taxi drivers spent longer time in driving than other professions (15). Second the design of automobile seat, can affect the posture of drivers and posture in turn also can influence both comfort and physical conditions of a driver (16-18). Work-related musculoskeletal disorders (WRMD) and other postural damage may result in physiological illness that may develop over a long period due to prolonged mechanical stresses imposed on the musculoskeletal system (19).

In general different literatures revealed different magnitude of MSD among different drivers. Example study conducted among truck drivers in United kingdom's revealed MSD prevalence of 81%(23),in Tricity among Bus drivers 53%(3),in Ghana among taxi drivers 70.5%(6),in Nigeria among taxi drivers89.3%(26).

Therefore, even though the prevalence and risk factors of MSD among taxi drivers in Ethiopia couldn't be differ from other developing countries in Africa, there is no sufficient evidence on general MSD prevalence and all associated factors. But, only one study was conducted among taxi drivers in Addis Ababa with prevalence of 64%(7) which was not incorporate the whole parts of the body which are susceptible for MSD and their health seeking behavior to alleviate the problem was not incorporated.

1.3Rationale and Significance of the Study

Despite Musculoskeletal disorder is the serious health problem that can lead to different social and economical problems, yet no great attention and emphasis was given for this serious problems and in addition to this only one study was conducted among taxi drivers in Addis Ababa which did not incorporate the whole body region and the level of their perception for early medical care seeking but it focused only on the prevalence and associated factors of Low back pain. Therefore this is the reason why I conducted this study by incorporating the missed points I mentioned above.

The Result of this study will be beneficial for taxi drivers by creating awareness on the risk factors of Work related musculoskeletal disorder by all concerned body such as Federal Ministry of Health, roads and transportation Authority, MoLSA and other interested stakeholders. In addition to this, the finding of this study will be helpful and can be used as input or baseline for other researchers who will be interested to conduct similar studies regarding musculoskeletal disorders. Another importance of this study could be helpful to control different contributing factors such as maintenance of the road and road quality and design, controlling and limiting the speed of the taxi and the seat design of the taxi by the concerned body such as both non government and government like different Authorities and policy makers.

2. LITERATURE REVIEW

2.1 Prevalence of MSD

The fact that low back discomfort frequently accompanies driving is no surprise to many researchers. In a study of 1000 drivers at motorway service stations in England, it was found that 25% of all drivers and 66% of all business drivers were suffering from some low back discomfort at the time of the interview (20-22).

In the study of commercial travelers it was found that the odds ratios for having low back pain in the last 12 months increased with exposure to driving; 1.5 for driving a car 15-19 hours a week, 2.0 for 20-24 hours a week, and 2.1 for more than 25 hours a week. In addition, driver discomfort has been found to be more prevalent with increased time driving and less discomfort reported in drivers of cars with more adjustable features such as steering wheel adjustment (20, 23). Occupational driving has been associated with high prevalence of MSP and the prevalence for professional truck drivers in the United Kingdom has been reported to be 81% (23).

Out of the total sample of 300 male bus drivers in Tricity, India 159 reported that they had WRMSDs. The Prevalence of WRMSDs among bus drivers in Tricity was 53%. In Tricity study, the prevalence of low back pain was highest among the bus driver that is 30.3%, then neck pain 17.3%, knee pain 14.7%, shoulder 6.3%, ankle and feet 5.7%, upper back 4%, hip and thigh 4%, elbow 1.3% and wrist and hand 1.3%. Thus low back pain, neck pain and knee pain are the most prevalent WRMSDs amongst bus drivers (3).

In Malaysia, there is increasing numbers of reports and claims from musculoskeletal disorders caused by work activities(20).

Numerous studies have proven that driving is associated with MSDs among bus drivers, truck drivers, taxi drivers and lorry drivers (19, 23-25).

2.2Health seeking behavior

Musculoskeletal pain comprises a major health problem for the general population, affecting their quality of life, demanding increased health care and organization [6]. It has been suggested that people have varying perceptions about their musculoskeletal problem and perceptions about illness may influence health outcomes such as pain and disability directly or indirectly by their effect on coping. [5] If a person considers that musculoskeletal problem is a serious disease that

medical care or the health services can do little about, this belief may have an impact on the level of interference in daily life from that disease that the person reports and on their decision to consult or seek treatment for it [5]. This reveals that perceptions may be an important issue to address as part of reducing the impact of disease and encouraging appropriate management.

On the other hand regarding the factors that influence health seeking behavior of drivers, variety of factors have been identified as the leading causes of poor utilization of primary health care services: including poor socio-economic status, lack of physical accessibility, cultural beliefs and perceptions, low literacy level and large family size(31).

Most of the drivers used self prescribed drug, herbal preparation and hot fermentation and massage in that order to alleviate their musculoskeletal pain. Only 3.1% sought hospital treatment. Only 19 (11.9%) of drivers that reported low back pain saw health practitioner during the last 12 months period to the study(26).

2.3 Risk factors of MSD

2.3.1 Socio demographic factors

There were no significant differences between males and females for any of the prevalence or in low back pain (27).But results in the different literature are contradicting the above issues. For example, males have a higher prevalence of low back trouble at work than females;20 females have an overall prevalence of low back pain 4% higher than that of males;21 and females report a significantly higher frequency of musculoskeletal troubles related to their work in the neck, shoulders and knees(28) Reasons for gender differences have been put forward as being the fact that females have to cope with childbearing, they have multiple role obligations, different anatomy and responses to stress(29, 30).

Chronic musculoskeletal disorders such as osteoarthritis and osteoporosis are more prevalent in older people. Current projections are that, in Europe, there will be more people over 60 years of age than under 20 years of age by 2010, by which time the elderly will represent 25% of the population(4).

2.3.2 Work related and individual factors

The workplace condition and work practice such as comfort and adjustability of the seat in the driver's cabin also contribute for musculoskeletal discomfort among train drivers. The prevalence of unadjustable seat, not comfortable seat and high exposure to vibration are 70.5%, 86.4% and 97.7% respectively (31).

Study conducted in Accra Metropolis, Ghana also revealed high prevalence of MSD among taxi drivers (70.5%).The prevalence of the various MSD domains was lower back pain (34.3%), upper back pain (16.7%), neck pain (15.2%), shoulder pain (11.0%), knee pain (10.0%), hip/thigh pain (2.9%), elbow pain (4.8%), ankle/feet pain (2.4%), and wrist/hand pain (1.9%).Regarding determinants of MSD, Lack of sports activity (OR = 3.2; 95% CI = 1.4–3.8; P < 0.001), being an employee driver (OR = 2.7; 95% CI = 2.0–4.2; P < 0.01), driving time >12 hours/day (OR = 2.6; 95% CI = 1.8–3.5; P < 0.01), and driving 5–7 days per week (OR = 2.9; 95% CI = 2.1–7.6; P < 0.001) were the significant variables that increased the odds of MSDs in the univariate analysis. Also, those who perceived their job as stressful were 3 times more likely to have MSDs as compared to those who did not (OR = 2.7; 95% CI = 1.8–3.9; P < 0.01), and those who were dissatisfied with their job were twice more likely to have MSDs than those who were satisfied with their job (OR = 2.3; 95% CI = 1.6–4.0; P < 0.05). (6). In similar manner the 12-month prevalence of musculoskeletal pain among occupational drivers in Nigeria was 89.3%.In this study low back was the most commonly reported pain site and it was reported by 64.8% of participants. Other common sites include the shoulder (30.8%), the knee (27.0%) and the neck (17.0%). The least reported site of pain was the upper back (2.6%). The ODs who reported MSP had significantly more years of experience than those who reported no MSP. Duration of driving per week and distances covered per journey had no significant influence on reported experience of MSP (6).

Even though the prevalence of MSD in Ethiopia is not consistent with prevalence of MSD among drivers in other African countries, but the problem is common in Ethiopia. For example study conducted among taxi drivers in Addis Ababa revealed that the prevalence of LBP was 64.2 %.Many of the participants mentioned alcohol consumption [AOR = 1.6] lack of physical exercise [AOR =1.6,] and history of back trauma [AOR = 3.8] as factors leading to LBP. Long years of driving [AOR =4.6], involvement in a similar activity prior to becoming taxi driver [AOR = 2.8] and lack of rest when on duty [AOR =1.76] were further risk

factors mentioned. There were also respondents who mentioned sitting on non -comfortable seat while diving [AOR = 1.74] and frequent handling of passengers' luggage [AOR = 1.9] as risk factors of low back pain by taxi drivers in Addis Ababa(7).

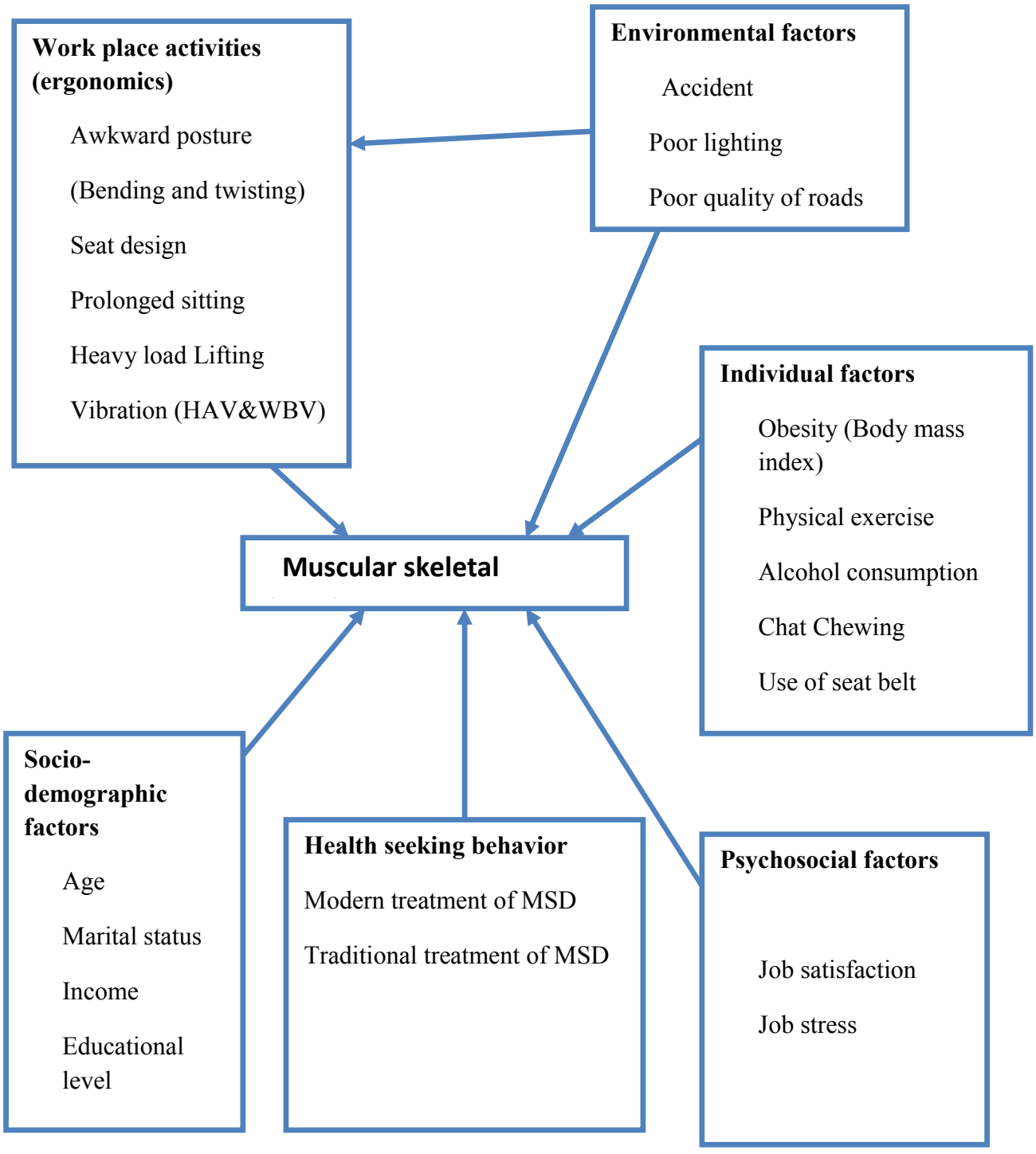

Figure 1:Conceptual Framework of Musculoskeletal disorder developed from literatures reviewed.

RESEARCH QUESTIONS

- What is the prevalence of MSD among taxi drivers in Addis Ababa?
- What is the proportion of health seeking behavior among taxi drivers in Addis Ababa?
- What are the associated factors with MSD among taxi drivers in Addis Ababa?

3. OBJECTIVES

3.1General Objective

The main aim of this study was to determine the prevalence of musculoskeletal disorders, health seeking behaviors and associated factors for musculoskeletal disorders among taxi drivers in Addis Ababa, Ethiopia.

3.2. Specific Objectives

o To assess the prevalence of musculoskeletal disorders among taxi drivers in Addis Ababa

o To explore the prevalence of health seeking behavior among taxi drivers for musculoskeletal pain.

o To identify the risk factors for musculoskeletal disorders among taxi drivers in Addis Ababa.

4. METHODS AND MATERIALS

4.1. Study Design

Community based Cross sectional study design was undertaken using customized Nordic questionnaires for face to face interview of the study participants.

4.2. Study setting

The study was conducted among taxi drivers of Addis Ababa which is the capital city of the country Ethiopia and the head quarter of Africa union. The city has ten sub-cities and among this the study was held in five of them due to resource constraints. The city has different kinds of transportation facility such as code one taxi 5635, code three minibuses 10497, Higer minibus 432, Isuzu kitkit 394, Anbesa bus 460 and Sheger transport 220.

4.3. Source Population

Source populations were all taxi drivers of Addis Ababa.

4.4. Study population (sample)

Taxi drivers from selected five sub-cities and that fulfill the inclusion and exclusion criteria which were allocated proportionally based on the sample frame of each selected sub-cities.

4.5. Sample size

For first specific objective, using single population formula

$$n=\frac{(Z\alpha/2)2xp(1-P)}{d2}=\frac{(1.96)2x.64(1-.64)}{(0.05)2}=352$$

10% of non response rate=35, total sample size =35+352=387

Where= Zα/2 =95% of confidence interval

P=proportion or prevalence of Musculoskeletal disorder among taxi drivers in Addis Ababa (7).

D= margin of error (I take D 5% to solve shortage of time and budget constraints)

For Second specific objective, using single population formula

$$n=\frac{(Z\alpha/2)2.p\ (1-P)}{d2}=\frac{(1.96)2x.89\ (1-.89)}{(0.05)2}=150$$ and 10% of NR =150+15=165

Where= Zα/2 =95% of confidence interval=1.96

D= margin of error=0.05

P=89% (0.89) which is proportion of MSD and health seeking behavior among taxi drivers in Nigeria.

And finally the sample size for 3rd specific objective was calculated using double population proportion formula based on the following assumptions.

$$\mathbf{n = \frac{(Z\alpha + Z\beta)^2 \times [P1\,(1 - P1) + P2\,(1 - P2)]}{(P1 - P2)^2}} \quad n = \frac{(1.96 + 0.84)^2 \times [.58\,(1 - 0.58) + 0.685\,(1 - 0.685)]}{(0.58 - 0.685)^2}$$

The prevalence of low back pain among Taxi drivers in Addis Ababa who perform physical exercises was 101(58%) and those who did not perform physical exercises was 170(68.5%) (7). A type I error of 5%, power to detect the assumed difference 80% and a 10% non-response rate. (n1=170 and n2=101, n=271) and by adding 10% for non-response resulted **n= 319**. Therefore when the three sample sizes are compared, **387**was larger and it was taken as sample size for this study.

Where, p1 = proportion of low back pain among taxi drivers who performed physical exercises, p2 =proportion of low back pain among taxi drivers who did not perform physical exercises, Zα/2 =critical value at 95% level of significance, Z1 − β = standard normal distribution value corresponding to 80% power to detect the assumed difference =0.84.

4.6. Sampling Procedures

First using simple random sampling five sub cities were selected from ten (10) sub cities of Addis Ababa. The reason why I limit number of sub-cities to five was that due to resource constraints like time and financial constraints to address the whole sub-cites. Then the sample size of each selected sub-cities were proportionally allocated based on the sample frame of each sub-cities (Figure 2). Then the data was collected by face to face interview using standard Nordic questionnaires through consecutive sampling until the allocated sample size of each sub-cities were filled based on inclusion and exclusion criteria by data collectors after giving proper training on data collection tools, consent form, Ethical approach and confidentiality of the participants. The data quality was controlled through supervision during data collection period

and the 5%(19 participants) of pilot test was performed on similar study population but in none selected sub-cities for data quality management and from this pre-test some modifications were made on questionnaires part III which is work related factors of MSD like duration that they have been prevented from their normal working days due to MSD, duration of driving other vehicles prior to taxi and the time required the questionnaires were some of the modification. Drivers' ID numbers of driving license and ID number of the taxi were recorded to avoid duplication.

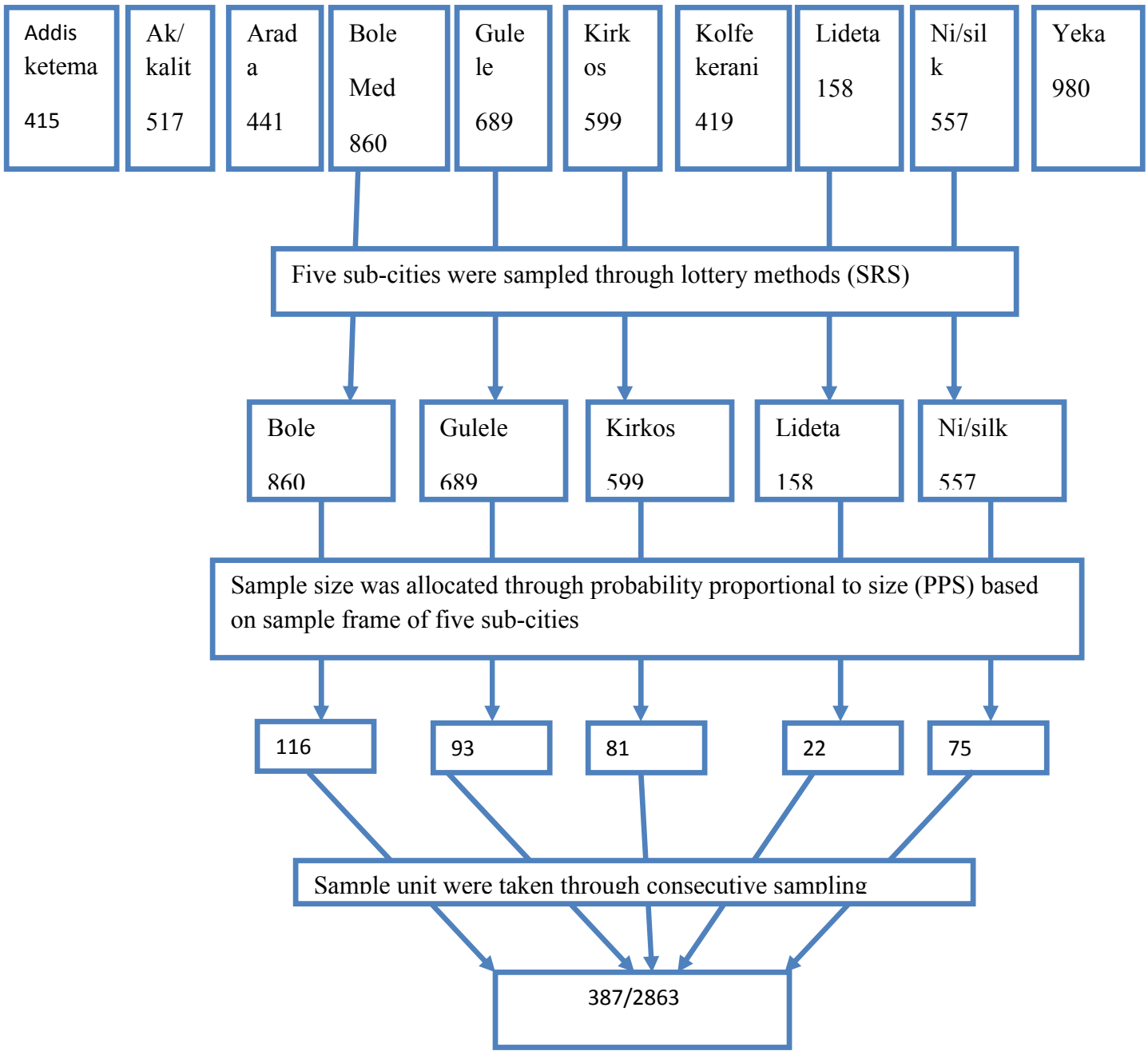

Figure 2:Schematic presentation of sampling procedure of sample size of taxi drivers from ten sub-cities in AA/2019.

4.7. Inclusion and exclusion Criteria

4.7.1. Inclusion Criteria

The study participants that were included in this study were those who engaged full of their time in taxi driving and who have more than one year of experience in taxi driving.

4.7.2. Exclusion Criteria

Taxi drivers that were excluded from this study groups were those could't communicate with data collectors during data collection, who were not interested to participate in the study and who had no driving license during data collection.

4.8. Variables of the study

4.8.1. Dependent Variable

Musculoskeletal disorder among taxi drivers of Addis Ababa.

4.8.2. Independent variables

Ergonomic factors: Awkward posture (Bending and twisting), Static posture, Repetitive work, Heavy load Lifting, Vibration (HAV&WBV), Manual handling

Individual factors: Medical history (previous injury), health seeking behavior, Obesity (Body mass index), Physical exercise, Alcohol consumption and chewing of chat

Socio-demographic factors: Age, marital status, Income, Educational level, Religion

Environmental factors: Poor Road quality, Poor Lighting

Health seeking behavior: (self prescribed drug, herbal, hot/holy water, massage and health facility).

4.9. Data quality assurance

To ensure data quality, the questionnaires were pre-tested on 5% of the total sample size at similar Setup(in non selected sub-cities of Addis Ababa, which was Akaki kality)among Taxi drivers and based on this result any ambiguity, confusion and things that needs correction and gaps in the questionnaire were corrected before the actual study.

4.10. Data collection tool and procedure

Socio demographic data and factors associated to musculoskeletal disorder data were collected through face to face using structured, pretested and customized standard Nordic Questionnaires

(SNQ) and the health seeking behavior also was collected through in-depth interview after the data collectors assigned to selected sub-cities following their training. First, the English version of the standard questionnaire was obtained. Then it was translated to Amharic version (local language) to make suitable conversation during an interview and retranslated to English to check if it was consistent with the original questionnaire. The filled questionnaires were checked by the supervisors and principal investigators on daily basis for completeness.

4.11. Data Entry and Analysis

The data were checked for completeness and entered in to Epi Info version 7 and were exported to SPSS version 21 and analyzed. Descriptive analysis like frequency, percentage, mean, SD , maximum and minimum were presented using different tables graphs and bi-variate analysis (one independent with dependent variable) was under taken in Binary Logistic regression to determine crude odds ratio of all risk factors independently and risk factors with p-value<0.2 were selected and re-entered to multiple variables logistic regression and analyzed again to determine the adjusted odds ratio .Then variables with p-value<0.05 were declared as risk factors of MSD among taxi drivers in Addis Ababa.

Operational Definition

- **MSD** is a pain of muscle, tendons, nerve, ligament and cartilage and that can be aggravated by different risk factors like ergonomics, individual and socio economic factors.

- **Health seeking behavior** is the action taken by the taxi drivers to alleviate (to be cured) from the MSP following the occurrence of MSDs and reason for choice of treatment providers.

- **Ergonomics** is the process of designing or arranging work place and systems so that they fit the people who use them and feel comfortable during working time.

- **Physical exercise** is the exercise that is performed by taxi drivers at least two times per week for 30 minutes.

Frequency of MSD occurrence is the number of MSD episode or number of MS pain experienced by taxi drivers in the last 12 months.

5. ETHICAL CONSIDERATION

The ethical clearance was obtained from IRB of Addis Ababa University School of Public health after approval of the proposal by research Ethical committee. Supportive letter was written by Addis Ababa University School of Public health to Addis Ababa Roads and Transport Authority. Then Addis Ababa Roads and Transport Authority wrote supportive letter to all study sub-cities. The purpose of this study was explained by data collectors for the study participants and the verbal Consent was obtained from study participants and confidentiality of the participants was kept.

6. DISSEMINATION OF THE RESULT

The result of this study was disseminated to all relevant stake holders such as for Addis Ababa University School of Public health, for Addis Ababa Roads and Transportation authority and for federal Ministry of health, for Ministry of labor and social affair and Policy makers and also will be disseminated for scientific community after publication.

7. RESULT

7.1 Socio-demographic characteristics of the study participants

A total of 371 taxi drivers were participated in this study with response rate of 95.9% and Out of the 387 taxi drivers contacted for the study, 16 had terminated the study when passengers arrived, which turned 4.1% of the questionnaire incomplete. All of the study participants were males. The median age of the participants was 33years and with IQR, Minimum and Maximum of 13,21 and 62 respectively. The median of their monthly income was 2400ETB with IQR, Minimum and Maximum of 800,800 and 5000ETB respectively. Out of the total participants, about 160(43.1%) were single or not married and about 199(53.6%) were married. Regarding their educational level, majority of the participants were attended primary school, 212(57.1%) and the least about 6(1.6%) were at degree level. When we see religion distribution, majority of the participants were belongs to orthodox Christianity which accounts171 (46.1%) (Table1).

When we see the monthly distribution of taxi drivers, those whose their monthly income is>=4000 were 4.85% and majority of their monthly income fall within the range of 2001-3999 by accounting 53.10 %.

Table 1: Socio-demographic distribution of taxi drivers in Addis Ababa/2019(n=371).

Marital status	**Frequency**	**Percent**
Single	160	43.1
Married	199	53.6
Divorced	12	3.2
Educational level		
primary school(0-8)	63	17
secondary school(9-12)	212	57.1
diploma/TVET	90	24.3
Degree and above	6	1.6
Religion		
Muslim	107	28.8
Orthodox	171	46.1
Protestant	68	18.3
Others	25	6.7
Age category		
20---30	140	37.74
31---41	141	38.01
42---52	78	21.02
>=53	12	3.235

The median and IQR of driving experience of the respondents were 7 and 6 with the minimum and maximum driving years of 1 year and 30 years respectively. The median and IQR of driving duration of the respondents were 8 and 2 hours per day. About 190(51.2%) of the respondents were used to drive other vehicle prior to taxi with median of 4 years. The median and IQR of driving days per week were six days and one day respectively.

7.2. Anthropometric measurements of the participants

The median and Inter Quartile Range (IQR) of height (m) and, body mass index of the participants were 1.7,0.1,22.8 and 2.2 respectively. Majority of taxi drivers' BMI fall within the range of 18.5-25 which accounts 94.3% and BMI >=25.5 accounts 5.1% of the taxi drivers. The mean and SD of the weight of the participants' were 66 $\pm$ 5.9 respectively.

7.3. Magnitude of MSD

About 204(55%) of the respondents reported that they have experienced musculoskeletal disorder in the last 12 months with an average frequency of twice (2.3 $\pm$ 0.9). Out of this percent 15(4%) of MSD magnitude was related to accident. On the other hand 107(28.8%) of the respondents reported that they have experienced MSD in the past 7 days (Table3).

Out of 204 respondents that experienced MSD in the last 12 months,102(50%) of them were prevented from normal working days and as a result about 419 working days on average (4 $\pm$ 2.6) working days were lost.

Out of 371 taxi drivers, 204(55%) of the cases that experienced MSD in the last 12 months, complained the following factors as the real cause of their musculoskeletal disorder with their respective frequency and percentage. Trauma/accident 15(4%), bending/twisting 169(45.6%), WBV during driving 135(36.4%) and prolonged sitting 123(33%) (Figure 5).

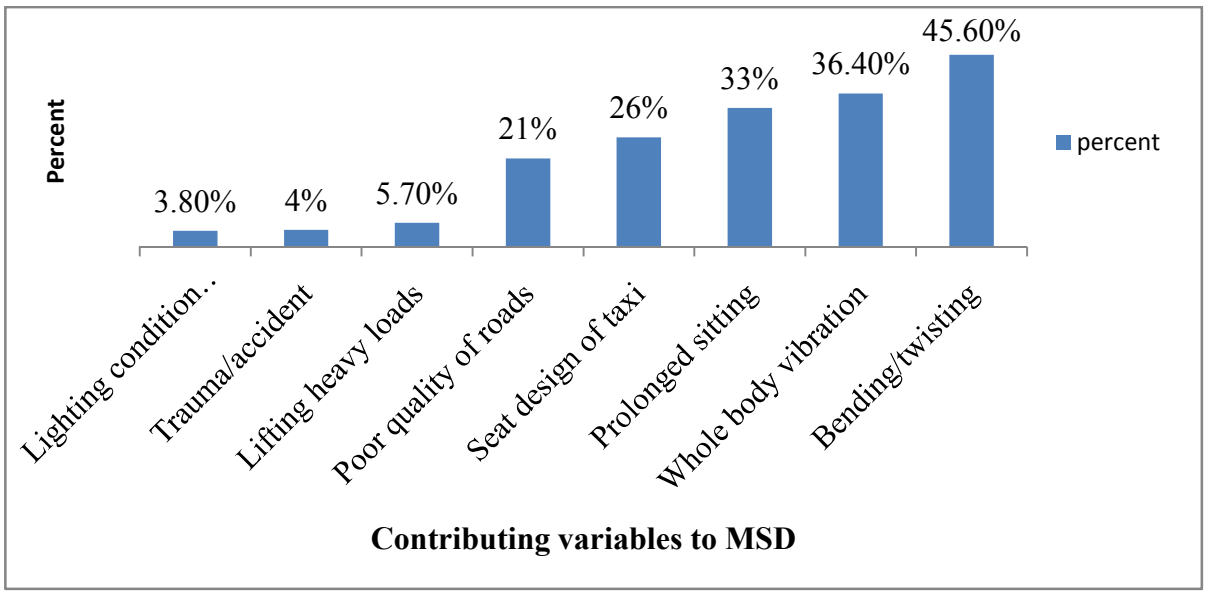

Figure 3:the perceived cause of MSD complained by 204 taxi drivers in Addis Ababa/2019.

Table 2: Cross tabs of Taxi drivers' belief about cause of MSD in AA 2019(n=371).

Variables		MSD in the past 12 months		P-value
		No	Yes	
Trauma	No	62(52.1%)	57(47.9%)	0.059
	Yes	105(41.7%)	147(58.3%)	
Bending/twisting	No	109(64.9%)	59(35.1)	<0.001
	Yes	58(28.6%)	145(71.1%)	
Lifting heavy loads	No	147(47.9%)	160(52.1%)	0.015
	Yes	20(31.3%)	44(68%)	
WBV during driving	No	100(49.8%)	101(50.2%)	0.046
	Yes	67(39.4%)	103(60.6%)	
Seat design of taxi	No	132(49.6%)	134(50.4%)	0.004
	Yes	35(33.3%)	70(66.7%)	
Prolonged sitting	No	71(46.1%)	83(53.9%)	0.722
	Yes	96(44.2%)	121(55.8%)	
Lighting condition of taxi	No	156(45.3%)	188(54.7%)	0.643
	Yes	11(40.7%)	16(59.3%)	
Lack of physical exercise	No	144(86.2%)	164(53.2%)	0.136
	Yes	23(36.5%)	40(63.5%)	
Poor quality of roads	No	130(46.4%)	150(53.6%)	0.337
	Yes	37(40.7%)	54(59.3%)	

Period (12months) and point(one week) prevalence of musculoskeletal disorder among taxi drivers were 55% and 29% respectively and among the period prevalence about 4% of the cases related to accident/trauma.

Regarding the frequency of musculoskeletal disorder occurrences, from the total of 204 cases experienced MSD, 87 (23.5%) of the cases experienced twice in the last 12 months while the least about 17(4.6%) of the cases experienced more than three times (Figure6).

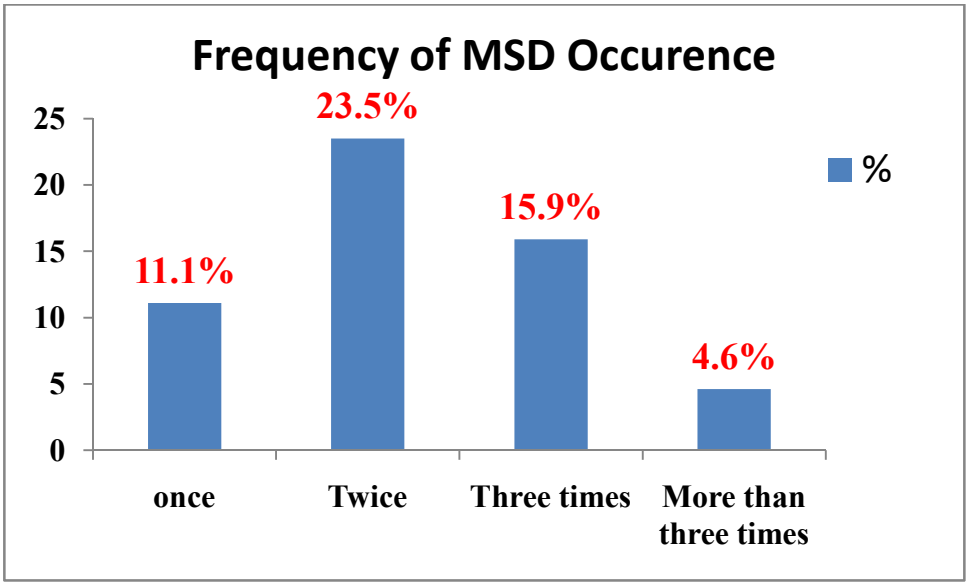

Figure 4:Frequency of MSD occurrence among taxi drivers in Addis Ababa in the last 12 months/2019 (204cases/371).

In this finding lower back the most musculoskeletal disorders complained by the taxi drivers in Addis Ababa in the past 12 months and 7 days by accounting 53.6% and 4.8% respectively (Table3).

Table 3:Prevalence of MSD among different body parts among taxi drivers in the past 12 months and 7days in AA, 2019(204cases/371).

Different body parts	12 months MSD prevalence		7 days MSD prevalence	
	N	%	n	%
Neck	43	11.6	7	1.9%
Shoulder	115	31	32	8.6%
Upper back	72	19.4	23	6.2%
Elbow	25	6.7	7	1.9%
Wrist/hand	31	8.4	5	1.3%
Lower back	199	53.6	92	24.8%
Hips/thigh	64	17.3	34	9%
Knees	68	18.3	13	3.5%
Ankle/feet	27	7.3	7	1.9%

Regarding the prevalence of accident related musculoskeletal disorders in different body parts, the most affected body parts that complained by the participants were lower back that accounts2.7% and followed by knees that accounts 2.2%.

From the total study participants, who have a driving experiences greater than 10 years 63.27% were the owner of the taxi while 9.82% were the employee. However from one year to 9years driving experiences, employees were greater than owner of the taxi drivers.

7.4. Psychosocial factors

Regarding perception of cause of stress, about 289 (77.9%) of the respondents perceive that taxi driving can cause or leads to stress and in similar manner regarding job satisfaction about 164(44.2%) of the respondents were dissatisfied by taxi driving.

7.5. Behavior and the working environment

About 332(89.5%) of respondents reported that the lighting condition of their Taxi was good while the rest 39(10.5%) of respondents reported that the lighting condition of their taxi were poor. A total of 97(26%) of the study participants reported that the seat design of their taxi were not comfortable. Pertaining behavioral characteristics, about 157(42.3%) of the respondents reported that they consume alcohol on average 2.14$\pm$ 0.98 days per week and in similar manner

about 15(4%) of the study participants reported that they smoke cigarette on an average and SD of 2.9+ 0.64 pieces of cigarettes per day. About 71(19%) of the participants reported that they chew kchat on an average of 2.3± 0.9 days per week.

Only about 89(24%) of the respondents reported that they perform physical exercises on an average for 17.6±4.8 minutes per-day for an average and SD of 4.3± 0.9 days per week. On the other hand about 103(27.8%) of the participants reported that they did not use seat belt frequently due to discomfort and negligence problems.

7.6. Health seeking behavior of the participants.

Out of 204(55%) of the cases that developed MSD in the past 12 months, only 70(34.3%) of them reported that they took treatment action immediately following the occurrence of MSD while the rest134 (65.7%) did not seek for help. From the total sample (n= 371) about 225(60.6%) said that they never take treatment action immediately following the occurrence of MSD for the reason that they under estimate the case of MSD and unless it gets worse. Out of 225 the study participants that were not interested to take early treatment of MSD, about 134(59.6%) already developed MSD.

Most of the time about 232(62.5%) of the participants prefer modern treatment for the reason that it is effective, safe and treats patients with respect and dignity where as 139(37.5%) of the participants prefer/seek traditional treatment to treat MSD for the reason that it is convenient, cost effective and saves time.

When we see the specific health seeking preferences of the taxi drivers, majority which is about 65.5% prefer to treat MSD followed by hot water like sodare, wondo genet and Filwuha, by accounting 43.7 %(Table 4).

Table 4: The most common practice (action taken) by Taxi drivers to alleviate MSD in Addis Ababa 2019.

Type of treatment action	N	Percent
Health facility	243	65.50%
Hot water	162	43.70%
Massage	111	29.90%
Holly water	80	21.60%

Wogesha	70	18.90%
Self prescribed drugs	43	11.60%
Herbal preparation	28	7.50%
Others	21	5.70%

From the total 199 participants who were married, 149(74.9%) of them experienced MSD in the past 12 months. On the other hand when we see MSD distribution with in religion from the total of 171 orthodox religion followers about103 (60.2%) experienced MSD in the past 12 months. When we see MSD distribution in terms of age category, majority of the cases fall within age category of 42-52 by accounting 98.7 %(Table 5).

Table 5: Cross tabs of socio-demographic with 12 months of MSD among Taxi drivers in Addis Ababa/2019.

Marital status	**MSD in the last 12 months**			**P-value**
	No	**Yes**	**Total**	
Single	116(72.5%)	44(27.5%)	160	<0.001
Married	50(25%)	149(74.9%)	199	
Divorced	1(8.3%)	11(91.7%)	12	
Religion Distribution				
Muslim	53(49.5%)	54(50.5%)	107	0.306
Orthodox	68(39.8%)	103(60.2%)	171	
Protestant	33(48.5%)	35(51.5%)	68	
Others	13(52%)	12(48%)	25	
Educational level*MSD				
primary school(0-8)	27(42.9%)	36(57%)	63	0.469
secondary school(9-12)	91(42.9%)	121(57%)	212	
diploma/TVET	45(50%)	45(50%)	90	
Degree and above	4(66.7%)	2(33.3%)	6	
Age category*MSD				
20-30	101(72.10%)	39(27.90%)	140	<0.001
31-41	65(46%)	76(53.9%)	141	
42-52	1(1.30%)	77(98.7%)	78	
>=53	0(0.00%)	12(100%)	12	

From the total of 157 participants who used to consume alcohol, about 100 (63.7%) of them experienced MSD in the last 12 months. On the other hand, from the total of 103 who didn't use seat belt frequently, 62(60.2%) experienced MSD. In similar manner from the total of 282 who didn't perform physical exercises regularly about 176(6.4%) developed MSD (Table 6).

Table 6: crosstab of individual behavior with the last 12 month MSD among taxi drivers in Addis Ababa/2019.

Individual behavior	Response	MSD in the last 12 months		Total	P-value
		No	Yes		
Alcohol consumption	No	110(51.4%)	104(48.6%)	214	0.004
	Yes	57(36.3%)	100(63.7%)	157	
Smoking	No	163(45.8%)	193(54.2%)	356	0.145
	Yes	4(26.7%)	11(73.3%)	15	
Chewing kchat	No	141(47%)	159(53%)	300	0.114
	Yes	26(36.6%)	45(63.4%)	71	
Use of seat belt	No	41(39.8%)	62(60.2%)	103	0.211
	Yes	126(47%)	142(53%)	268	
Physical Exercise	No	106(37.6%)	176(62.4%)	282	0.000
	Yes	61(68.5%)	28(31.5%)	89	

From 115 taxi drivers who had driving experiences of more than 10 years, 107(93%) of them developed MSD.From the total participants 39 whose the lighting condition of their taxi were poor, about 23(59%) of them developed MSD.When we see the seat design of their taxi from the total of 97 taxi drivers that their taxis' seat design were about 79(81.4%) not comfortable, of them developed MSD (Table 7).

Table 7: cross tab of driving experience and related factors with MSD in the last 12 months among taxi drivers in Addis Ababa /2019.

Variables		MSD in the last 12 Months		Total	P-value
		No	Yes		
Driving Hrs per-day	<8hrs	72(37.7%)	119(62.3%)	191	0.004
	>=8hrs	95(52.8%)	85(47.%)	180	
Driving days per-week	<=5days	3(6.7%)	42(93.3%)	45	0.000
	>=6days	164(50.3%)	162(49.7%)	326	
Driving Experiences in yrs	1-4 years	79(76.7%)	24(23.3%)	103	0.000
	5-9 years	80(52.3%)	73(47.7%)	153	
	>=10 years	8(7%)	107(93%)	115	
Lighting condition of Taxi	Good	151(45.5%)	181(54.5%)	332	0.597
	Poor	16(41%)	23(59%)	39	
The seat design of taxi	Comfortable	149(54.4%)	125(45.6%)	274	0.000
	not comfortable	18(18.6%)	79(81.4%)	97	

7.7 Binary Logistic regression analysis of Associated Factors of Musculoskeletal disorders among taxi drivers in Addis Ababa/2019.

7.7.1. Bi-variate analysis to determine the crude odds ratio of risk factors of MSD.

Bi-variate analysis was under taken using binary logistic regression for each risk factor independently with respect to dependent variable. Then variables with p-value<0.2 were selected and multivariate (multiple) variables analysis were run all at a time in covariate using binary logistic regression so that only variables with p-value<0.05 were taken and declared as the risk factors of musculoskeletal disorders (Table8).

Table 8: Bi-variate analysis to determine the crude odds ratio of risk factors of MSD among taxi drivers in AA/2019.

Variables	COR	95% C.I.for EXP(B)	
		Lower	Upper
Monthly income/salary	1.001	1	1.001
Weight	1.09	1.05	1.133
Body Mass Index	1.292	1.138	1`.467
Driving Experience	1.164	1.106	1.224
Driving other vehicle prior to taxi	0.403	0.264	0.617
Bending/twisting	0.002	0.001	0.007
WBV during driving taxi	0.013	0.004	0.044
seat design of taxi	0.011	0.001	0.077
prolonged sitting	0.005	0.002	0.014
quality of roads	0.035	0.011	0.115
Accident/trauma history	0.31	0.094	1.024
Alcohol consumption	0.53	0.348	0.087
Cigarette smoking	0.348	0.116	1.038
Chewing Kchat	0.563	0.334	0.948
Use of seat/safety belt	1.608	1.017	2.541
Physical exercises	0.561	1.509	4.348

Where COR= Crude Odds Ratio

7.7.2 Multiple variables/multi variate analysis of variables with p-value of <0.2 in bi-variate analysis.

Variables with p-value <0.2 were selected after bi-variate analysis and re entered into covariates all together and run with respect of the dependent variable so that variables with p-value < 0.05 were declared as the associated factors of MSD among taxi drivers of Addis Ababa/2019.Accordingly,bending/twisting, prolonged sittings the seat design, physical exercises and driving experiences were the associated factors because they are statistically significant(their p-value <0.05).These all factors are more likely to cause MSD because their p-value <0.05 and adjusted odds ratios are greater than 1.

The odds of MSD among taxi drivers who bending/twisting frequently are 1.673 times more likely than those did not bend/twist frequently(p-value=0.02,AOR=1.673 and 95%CI(1.5, 8.53)), In similar manner, the odds of MSD among taxi drivers who sit for prolonged time, is 2 .79 times more likely than those who did not sit for prolonged period(p-value=0.003,AOR=2.79 and 95%CI(2.301, 9.028))(Table 12).

Table 9: Multivariate analysis of MSD among taxi drivers in Addis Ababa, May/2019.

Variables	P-value	AOR	95% C.I.for AOR	
			Lower	Upper
prolonged sitting(yes)	0.003*	2.79	2.301	9.028
The seat design of taxi(not comfortable)	0.002*	2.45	2.18	17.103
Not performing physical exercises	0.006*	2.17	2.897	11.677
Driving Experiences(>=10 yrs)	0.011*	3.01	2.082	28.314

Where:

" * "variable with p-value <0.05 which means they are statistically significant.

P-value=probability value AOR = Adjusted odds ratio CI=confidence Interval

8. DISCUSSION

The study was aimed at determining the prevalence of musculoskeletal disorder, health seeking behavior and risk factors among Taxi drivers in Addis Ababa. Different literatures revealed that the prevalence of musculoskeletal disorder among urban taxi drivers ranges from53% to 89 %(3, 6, 7, 26). The prevalence of this study (55%) is greater than the study finding reported in Great Britain with prevalence of 44% MSD among general population (1). The variation could be due to differences in the overall setting of the study areas, as well as the differences in occupation and target group on which the study was conducted completely different. On the other hand 12-month prevalence rate of MSD among taxi drivers(55%) is similar to study conducted in Tricity, India that was reported 53% prevalence of MSD among Bus drivers(3). The finding of this study's 12 months prevalence of MSD is smaller than the result reported in Ghana which was musculoskeletal prevalence rate of 71% among taxi drivers(3). In similar manner the finding of this study is smaller than the result reported in Nigeria with high MSD prevalence rate of 89% among taxi drivers (26).The difference could be due to sample size difference and study setting. On the other hand the prevalence of this study(55%) relatively smaller than the study conducted in Addis Ababa with 64% of prevalence rate of low back pain(7).But in the present study the overall prevalence rate of MSD is 55% where as the low back pain is 53%.The discrepancy could be due to probably the time gap and the conditions of the vehicles and the roads on which the taxi drivers in the present study normally drive are probably better than those in previous studies.

When we compare prevalence of musculoskeletal disorder among taxi drivers in different body parts with the studies conducted in different parts of the region, the prevalence of musculoskeletal disorder of shoulder is 31% which is similar to the study conducted in Nigeria with shoulder musculoskeletal disorder prevalence rate of 30%(26).In a similar manner the prevalence of neck MSD of this study is 12% which is relatively similar to, but also slightly lower than studies conducted in Tricity,India(3) and Ghana(6) with a prevalence of 17.3% and 15.% respectively.

This result also showed that the prevalence of ankle/feet musculoskeletal disorder is 17% which is exactly similar with study conducted in Nigeria among taxi drivers with prevalence rate of 17%(26).The prevalence of low back pain(53%) of this study is greater than the prevalence of low back pain conducted in Tricity(3) and Ghana(6) with 30.3% and 34.3% respectively but

relatively smaller than study conducted in Nigeria(31) with prevalence of low back pain 64.8%.When we compare driving experiences and psychosocial factors, this study revealed that the mean driving years was 7.96 ± 4.95 years where as in Ghana and Nigeria 4.2± 3.3 years and 16±9.3 years respectively(6,31).But the mean driving days per week in this study is relatively similar to the study conducted in Ghana which is 6± 0.6 in this study and 5.1±1.2 days per week in Ghana(6).Regarding job perception and jobdissatisfaction,77.9% and 44.2% in this study while 84.7% and 28.7% respectively in Ghana(6).

Regarding the health seeking behavior of the study participants, most of the time about 232(62.5%) of the participants prefer modern treatment for the reason that it is effective, safe and treats patients with respect and dignity where as the rest 139(37.5%) of the participants prefer traditional treatment to treat MSD for the reason that it is convenient, cost effective and saves time.

From the total of 204(55%) of the cases that reported MSD, only 70(47.9%) of them took treatment action immediately following the occurrence of musculoskeletal disorder while the rest 134(59.6%) did not for the reason that they under estimate the severity of MSD unless it gets worse.

Regarding preference of treatment of MSD, out of the total cases 7.5% used herbal preparation,11.6% self prescribed drugs,43% hot water, 65.5% health facility and others 5.7% where as in study conducted in Nigeria among taxi drivers the preference of musculoskeletal disorder treatment was , 32% herbal, 35.8% self prescribed drugs, 2.5% hot water,3.1% health facility and 4.4% others(26).The cause for this difference could be probably socio-cultural, beliefs and perception, cost effectiveness, status of awareness and the time frame in which study was conducted may affect their preferences to treat MSD.

Pertaining the associated factors of musculoskeletal disorder among taxi drivers, bending/twisting, prolonged sitting, Seat design of taxi, regular physical exercises and Driving experiences are significantly associated with musculoskeletal disorder. In this study, not comfortable seat design contributes 81.4% of MSD among taxi drivers and this prevalence is slightly similar to the study conducted in Malaysia which revealed 86.4% of MSD prevalence related to not comfortable seat (31). The taxi drivers that drive taxi more than 10 years are 3times more likely to develop musculoskeletal disorder than those drive less than 10 years. Taxi drivers

that frequently bend/twist are 1.673 more likely to develop musculoskeletal disorder than those did not bend/twist frequently. Taxi drivers who sit for a longer period during driving are 2.79 more likely to develop MSD than those who did not sit for a longer period. Participants whose their seat design were not comfortable are 2.45 times more likely to develop MSD than those with comfortable seat design. And those who didn't perform physical exercises regularly are 2.17 times more likely to develop MSD than those perform physical exercises regularly but study conducted in Ghana revealed that the odds of MSD among taxi drivers that did not perform of physical exercise was 3times more likely than that performed physical exercises(3).

In this study some variables like age (20-30), job stress and job satisfaction, being an employee drivers and alcohol consumption were not significantly associated with musculoskeletal disorder. But, other researchers revealed that older age workers have higher risk than younger age workers (3, 7). This could be when age increase, joint mobility and muscular strength decreases. In similar manner those who consumed alcohol may loss attention of safety practice like controlling speed and considering quality of roads that may aggravate whole body vibration. This leads to increase the pain in different body parts, but in this study the majority of taxi drivers in Addis Ababa were younger and the tolerance to report pain could be high among them.

9. STRENGTHS AND LIMITATIONS

9.1Strengths

Large sample size was taken to get more representative data to the source population by comparing each sample size calculated for each specific objective. Day to day supervision was undertaken to maintain the quality of data during data collection. Standardized data collection tool was used and pre-testing was done.

The study tried to address the health seeking behavior and different body parts that could be susceptible for MSD and not addressed in the previous study done in Addis Ababa. This cross-sectional study provides the baseline for elaborative studies in the future.

9.2Limitations

As it was self-reported pain or discomfort, there might be over and under estimation of the Magnitude of MSD and there might be recall bias. Since the methodology through which data collected was through interview, the accurate anthropometric measurements might be missed (direct measuring was better than interviewing).

Since the design was cross sectional it was difficult to establish temporal relationship and also there was lack of exposure measurement.

10. CONCLUSIONS

In conclusion, the estimated one-year prevalence of general musculoskeletal disorder within the taxi drivers was high. This study found a high prevalence of musculoskeletal pain among taxi drivers with low back the most common site of the pain where as elbow is the least reported pain site. The longer the years of driving experience the greater the chances of developing musculoskeletal disorder. A large number of taxi drivers with musculoskeletal disorder are not interested for early treatment of MSD until the case get worse. Therefore, these findings call for preventive to organize enlightenment training for drivers on how to avoid or probably reduce the risk factors of musculoskeletal pain like frequent bending/twisting, prolonged sitting, improving seat design and regular physical exercises among taxi drivers in Addis Ababa.

11. RECOMMENDATION

To Addis Ababa roads and transportation authority

The authority should organize refreshment training with other concerned body like health sector and higher institution so that the preventive strategies can be implemented through awareness creation. The drivers should be trained that the seat design of taxi, prolonged sitting, frequent bending/twisting, lack of physical exercises can contribute to the occurrence of MSD. Strengthening effective and continuous monitoring system especially on drivers risk behaviors that can contribute for the occurrence of MSD such as speed and quality of roads.

To Federal ministry of health and MoLSA

The federal ministry of health and MoLSA should jointly prepare different training manuals on which refreshment training can be provided and risk factors could be reduced.

To Higher education institutions (Universities and Research centers).

Since adequate research and evidences not yet done in our country in this area (work related MSD), Universities and research centers should expand and undertake studies in this area through different approach and study design such as comparative cross sectional and prospective cohort so that the socio-economic impact of the MSD can be under stood deeply in addition to health impact.

To Taxi drivers

Taxi drivers should prepare panel discussion through their association so that they can share their experiences regarding all risk factors of musculoskeletal disorders including individual behavior.

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13. Annexes

13.1. Annex I: English version participant's information sheet

Hello, my name is _____and I am here on behalf of Melese Taddese a post graduate student from Addis Ababa University, College of Health Sciences, and School of public health. I am here to collect some information about prevalence and associated factors of MSD from the study participants.

Title of the study: Assessment of prevalence and Associated factors of MSD among Taxi drivers Addis Ababa, Ethiopia

Benefit of the study: There is no direct benefit for participating in this study. However, the findings of this study will be used to know the magnitude of the problem and important to improve the safety of Working condition and the awareness status of the target groups.

Risk: There is no risk posed to the participants for participating in this study.

Right of participants: Your participation is voluntary and you are not obligate to answer any question you don't wish to answer. If you felt discomfort with the interview, you can with draw any time after you get involved in the study. You can take time to understand and decide on your participation in the study.

Confidentiality: Your name will not be written in this form and will never be used in connection with any Information you tell us. All information given by you will be kept strictly confidential.

Duration of the interview: This interview will take about 15---20 minutes.

Contact address: If you have any question which is not clear to you can contact the investigator or Research and Ethical Committee of Addis Ababa University.

Investigator: Melese Taddese

Mob +251-913976496

Email **meletade13@gmail.com**

Addis Ababa University, college of health science, school of public health

13.2. Annex II: Informed consent form

I have read this form or it has been read to me in the language I understand, all conditions sated above.

Therefore;

1. I agree to participate 2. I do not agree

Date of interview ----------Time started ---------- Time completed----------

Result of interview

1. Completed 2. Respondent not available 3.Refused 4. Partially completed

If no, skip to the next participant by writing reasons for his/her refusal.

Data collector name ----------Signature ----------Date----------

Checked by

Supervisor name ---------- Signature ----------Date----------

13.3. Annex III: Amharic Version Participant's Information Sheet

የተሳታፊዎች መረጃ ቅፅ፡

ጤና ይስጥልኝ!

ስሜ----------እባላለሁ፡፡

እዚህየመጣሁትበአዲስአበባዩኒቨርስቲጤናሳይንስኮሌጅየህብረተሰብጤናትምህርትቤትየድህረምረቃተማሪየሆኑትንመለሰታደሰ ንወከዬነው፡፡የመጣሁበትአላማምየድህረመረቃተማሪውየመመረቂያጥናታቸውንበጡንቻ፡በነርቭ፡አጥንትእናየደምቧንቧጉዳት፡ ህመም፡ምክንቶችናስርጭታቸውበአዲስአበባከተማታክሲሸፌሮችላይሲለሚያጠኑመረጃለመሰብሰብነው፡፡ስለጥናቱየሚከተሉት ንነጥቦችከተገነዘቡበኋላፈቃደኛከሆኑበቃ-ለመጠየቁእንዲሳተፉበትህትናእጠይቀዎታለሁ፡፡

የጥናቱዕርስ:በጡንቻ፡በነርቭ፡አጥንትእናየደነምበቧንቧጉዳት፡ህመም፡ምክንቶችናስርጭታቸውበአዲስአበባከተማታክሲሸፌሮች መካካልየዳሰሳጥናትነው፡፡

የጥናቱጥቅም:ይህጥናትበቀጥታለተሳታፊወችየሚሰጠውጥቅምየለም፡፡ይሁንእንጂየዚህጥናትግኝትየችግሩንስፋትለማወቅናየሥ ራላይደህንነትሁኔታንለማሻሻልእንዲሁምየግንዛቤማስጨበጫጥቅምላይይውላል፡፡

ጉዳት፡ እዚህ ጥናት ላይ በመሳተፍ ተሳታፊዎች ላይ ምንም አይነት ጉዳት አይደርስባቸውም፡፡

የተሳታፊዎቹመብት:በዚህመጠይቅተሳትፎበእርሶበፈቃደኝነትላይየተመሰረተነው፡፡የማይፈልጉትንማንኛውምጥያቄለመመለስ ግዴታየለብዎትም፡፡በቃለመጠይቁላይጥሩስሜትካልተሰማዎትበየትኛውምጊዜማቋረጥይችላሉ፡፡በጥናቱውስጥተሳትፎዎንለመ ረዳትናውሳኔለማድረግጊዜመውሰድይችላሉ፡፡

ሚስጥራዊነት፡ተሳታፊወችስማቸውንእንዲጠቅሱአይጠበቅም፡፡ማንኛውንምተሰታፊየሚሰጠውንመረጃበሙሉሚስጥራዊነቱእ ንዲጠበቅየጥናቱስነምግባርያስገድዳል፡፡በመሆኑምተሳታፊዎችየሚሰጡትመረጃሚስጥራዊነቱይጠበቃል፡፡

የቃለ-መጠይቁ ርዝመት፡ ይህ ቃለ-መጠይቅ ከ15---- 20 ደቂቃ ያህል ይወስዳል.

አድራሻ:ያልገባዎትማንኛውምጥያቄቢኖርየጥናቱንባለቤትወይምአዲስአበባዩኒቨርሲቲየምርምርናየሥነምግባርኮሚቴውንማነጋ ገርይችላሉ፡፡

የጥናቱ ባለቤት: መለሰ ታደሰ

ስልክ/ቁ. +251-913976496

Email-meletade13@gmail.com

13.4. Annex IV Amharic version Informed consent form

የፈቃደኝነት መግለጫ ቅፅ፡

ከዚህ በላይ ስለጥናቱ የተጻፈውን መግለጫ በሚገባኝ ቋንቋ አንብቤ ወይም ተነቦልኝ ተረድቻለሁ፡፡

በመሆኑም በዚህ፣

1. እስማማለሁ 2. አልስማማም

መልሱአልስማማምከሆነአመስግነውመጠይቁንያቋርጡ፡፡ለጥናቱፈቃደኛያልሆኑበትንምክንያትበመጠየቅናበማስታወሻላይበመ ያዝለጥናቱተቆጣጣሪሪፖርትያድርጉ፡፡

የቃለመጠይቁ ቀን ----------የተጀመረበት ጊዜ ---------- የተጠናቀቀበት ጊዜ----------የቃለመጠይቁ ውጤት

1. ተጠናቋል 2. መልስ ሰጪው አልተገኘም 3.ፍቃደኛአልነበሩም 4.በከፊልተጠናቅቋል

የመረጃ ሰብሳቢው ስም ----------ፊርማ ----------ቀን----------ያረጋገጠው፡

13.5 Annex V Questionnaire English Version.

A questionnaire designed to assess the prevalence, health seeking behavior and associated factors of MSD among taxi drivers in Addis Ababa.

100. Identification number of taxi_____

101. Identification number of the study participants._____

Part I socio-demographic information of the participants			
S/No	Question	Possible response	Skip
102	How old are you?	_____	
103	Gender	1.male 2.female	
104	What is your marital status?	1.single 2.married 3.divorced 4.widowed	
105	What is your educational level?	1.primary school(grade 1-8) 2.secondary school(grade 9-12) 3.Diploma/TVET 4.Degree and above	
106	What is your religion?	1.Muslim 2.Orthodox 3.protestant 4.others	
107	What is your monthly income (salary) in ETB?	_____	
Part II Anthropometric measurements of the participants			
201	What is your height in meter?	_____	
202	What is your weight in Kg?	_____	
203	BMI?(calculated by data collector)	_____	
Part III prevalence and work related factors of MSD			
301	Type of driver?	1. Owner 2. Employee	
302	For how long do you drive taxi?(in years)	_____	
303	How many hours do you drive taxi	_____	

	per day? (in hrs)		
304	How many days do you drive taxi per week? (in days)	_____	
305	Did you drive other vehicle (car) other than taxi prior to taxi?	1. Yes 2. No	No →
306	If yes to question number 305, for how long did you drive?(in years)	_____	
307	Do you perceive that driving taxi is the cause of stress?	1. Yes 2. No	
308	Do you get satisfaction in driving taxi?	1.Yes 2. No	
309	Have you at any time during the last 12 months had MSD (injury of the muscles, tendons, ligaments, nerves, joints, cartilage, bones, or blood vessels)?	Yes 2.no	No →
310	If yes to question number 309, in which parts of your body did you feel disorder (trouble or pain)?	Neck Lower back Shoulder hips/thigh Upper back knees Elbow ankle/feet Wrist/hand	
311	If yes to question 309, how many times did you get MSD during the last 12 months?	1.once 2.twice 3.three times 4. More than three times.	

312	If yes to question 309, what is the real cause of your MSD?	Trauma Bending/twisting Lifting heavy loads WBV during driving Seat design of taxi Prolonged sitting Lighting condition of the taxi Quality of the roads If other please specify_____	
313	Have you faced accident/trauma in the past 12 months?	Yes 2.no	No → 314
314	If yes to question 313, which part of your body was/were injured?	Neck Lower back Shoulder hips/thigh Upper back knees Elbow ankle/feet Wrist/hand	
315	During the past 12 months have you been prevented from carrying out taxi driving b/c of MSD?	Yes 2. No	No → 317
316	If yes to question 315, for how long have you been prevented/absent from work?	1.in days____	
317	Had you feel MSD during the last	1.yes 2.no	No →

	7days?		319
318	If yes to question 317, which part of your body had MSD?	Neck Lower back Shoulder hips/thigh Upper back knees Elbow ankle/feet Wrist/hand	
319	What is the lighting condition of your taxi?	1.good 2. Poor	
320	What is the seat design of your taxi?	1.comfortable 2.not comfortable	

Part IV behavioral factors of participants			
401	Do you drink alcohol?	1 yes 2. No	No → 403
402	If yes to question 401, how many days per week do you drink alcohol?	_____	
403	Do you smoke cigarette?	Yes 2.no	No → 405
404	If yes to question 403, how many pieces of cigarette do you smoke perdaday?	_____	
405	Do you chew chat?	Yes 2.no	No → 407
406	If yes to question 405, how many days per week do you chew kchat?	_____	

407	Do you use safety belt always while driving?	1. Yes 2. No	
408	If no to question 407, why?	No belt Not comfortable I forget If other please specify_____	
409	Do you perform physical exercises?	Yes 2. No	No → 50 1
410	If yes to question 408, for how long do you perform physical exercise?	1.in minutes per day_____ 2.in days per week_____	

Part v Health seeking behavior of the participants			
501	What are your beliefs about cause of MSD?	Trauma Bending/twisting Lifting heavy loads WBVduring driving Seat design of taxi Prolonged sitting Lighting condition of the taxi Lack of physical exercises Quality of the roads If other please specify_____	
502	What are the common practices (action) you take to alleviate MSD?	Self prescribed drugs Herbal preparation Hot water Holy water	

		Massage Wogesha Health facility If other please specify_____	
503	Most of the time which treatment do you prefer to treat MSD?	Modern treatment Traditional	
504	If modern what is your reason to prefer it?	It is effective to treat MSD Treatment at HF are safe Professionals treat patients with respect and dignity If other please specify_____	

505	If traditional what is your reason to prefer it?	It is effective to treat MSD It is convenient Traditional healer treat patient with respect and dignity It is safe It saves time If other please specify_____	
506	Did you take treatment action as soon as (immediately) following the MSD?	1. Yes 2. No	No → 409
507	If yes with in how long (duration) did you take treatment action?	1.in hrs_____ 2.indays_____ 3. in weeks_____ 4. In month_____	

508	If yes what makes you to take treatment action immediately?	_____	
509	If no why you didn't take treatment action immediately?	_____	

Thank You very much for your cooperation!!

13.6 Annex V Questionnaire Amharic Version.

በአዲስአበባአባታክሲሹፌሮችየጡንቻመሸማመቀቅ፤የመገጣጠሚያህመሞችስርጪትእናምክንያታቸውእንዲሁምጠህከምናፍላጎ ታቸዉንለማጥናትየተዘጋጀመጠይቅ

100 የታክሲ መለያ ቁጥር----------

101 የጥናቱ ተሳታፊ (ተክሲ ሹፌር) መለያ ቁጥር----------

ክፍል አንድ የማህበራዊ እና ስነህዝባዊ መረጃ			
ተ/ቁ	ጥያቄ	ሊሆን የሚችል መልስ	እለፍ/ዝለል
102	እድሜክ ስንት ነው		
103	ጾታ	1.ወንድ 2. ሴት	
104	የጋብቻ ሁኔታ	1.ያላገባ 2. ያገባ 3.የፈታ 4.የሞተችበት	
105	የትምህርት ደረጃ	1.የመጀመሪያ ደረጃ 2.ሁለተኛ ደረጃ 3.ዲፕሎማ 4.ዲግሪና ከዚያ በላይ	
106	ሐይማኖትክ ምድነው	1.መስሊም 2.አርቶዶክስ 3.ፕሮቴስታንት 4.ሌላ	
107	ወርሃዊ ገቢህ (ደመወዝ) ስንት ነው		
ክፍል ሁለት የተሳታፊውአንትሮፒሜትሪክ ልኬት			
201	ቁመትክ በሜትር ስንት ነው		
202	ክበደትክ በኪሎግራም ስንት ነው		
203	ቦዲማስ ኢንዴክስ (በመረጃ ሰብሳቢየሚሰላ)		

ክፍል ሶስት የጠንቻመሸማቀቅ፡ መግጣተሚያ ህመም ስርጭትና ከስራ ጋር ጠያያዥነት ያላቸውምክንያቶች			
301	የሹፌሩ ዓይነት	1.ባለ ንብረት 2. ተቀጣሪ	
302	ለምን ያህል ጊዜ ታክሲ ሾፍረኃል(ነድተሃል) በአመት		
303	በቀን ለስንት ሰዓት ታክሲ ትነዳለህ		
304	በሳምንት ለስንት ቀናት ታክሲ ትነዳለህ		
305	የታክሲ ሹፌር ከመሆንህ በፊት ሌላ መኪና ነድተሃል ወይ	1.አዎን 2. አይደለም	
306	ለጥያቄ ቁጥር 305 መልስህ አዎን ከሆነ ለምን ያህል ጊዜ ነድተሃል(በአመት)		
307	ታክሲ መንዳት ለድካምና ጭንቀት ምክንያት ይሆናል ብለህ ታስባለህ ወይ	1.አዎን 2. አይደለም	
308	የታክሲ ሹፌር በመሆንህ ደስታኛ ነህ ወይ	1.አዎን 2. አይደለም	
309	ባለፉት 12 ወራት የጠንቻመሸማቀቅ እና የመገጣጠሚያ ህመም ስሜት ተሰምቶክ ያውቃል ወይ	1.አዎን 2. አይደለም	
310	ለጥያቄ ቁጥር 309 መልስህ አዎን ከሆነ የትኛዉን የሰዉነትህን ክፍል ነው ያመመህ	አንገት የቸኛጋብ ትከሻ የታችኛው ጀርባ የላይናው ጀርባ ወገብ/ታፋ ክርን ጉልበት የእጅ አንጓ	

		እግር /ቁር ጭጭሚት	
309	ለጥያቄ ቁጥር 310 መልስህ አዎን ከሆነ ባለፉት 12 ወራት ስንት ጊዜ የቱንቻ መሸማቀቅ እና መገ ጣጠሚያ ህመም ተሰምቶሃል	1.አንድ ጊዜ 2.ሁለት ጊዜ 3.ሶስት ጊዜ 4.አራት ጊዜ ና ከዚያ በላይ	
312	ለጥያቄ ቁጥር 309 መልስህ አዎን ከሆነ ለጡንቻ መሸማቀቅ እና ለመገ ጣተሚያ ህመሙ ተጨበ ጭ ምክንያቱ ምን ነበር	ድንገተኛ አደጋ መጠምዘዝ ከብደት ያላቸውን ዕቃ ማንሳት በምነዳበት ወቅት ካለው ንዝረት የታክሲው መቀመጫ(ወንበር)ሁኔታ ለረጅም ጊዜ መቀመጥ የታክሲው ባዉዛ (መብራት)ሁኔታ የመንገዱ ጥራት ሌላ ምከሆና ይገለፅ	
313	ባለፉት 12 ወራት ድንገተኛ አደጋ አጋጥሞሃል ወይ	1.አዎን 2. አይደለም	

314	ለጥያቄ ቁጥር 313 መልስህ አዎን ከሆነ የትኛውየሰዉነትህ ከፍልነው የተጎዳው	አንገት የቸኛጋብ ትከሻ የታቸኛው ጀርባ የላይናውጀርባ ወገብ/ታፋ ከርን ጉልበት የእጅ አንጓ እግር /ቁር ጭጭሚት	
315	ባለፉት 12 ወራት በጡንቻ መሸማቀቅ እና በመገ ጣጠሚያ ህመም ምክንያት	1.አዎን 2.አይደለም	

	ታክሲ መሸፈር አቋርተህ ነበር ወይ		
316	ለጥያቄ ቁጥር 315 መልስህ አዎን ከሆነ ለምን ያህል ጊዜ ታክሲ መንዳቱን አቋረትክ (ከስራ ቀረክ)	1.----------ቀን	
317	ባለፉት ሰባት ቀናት የጡንቻ መሸማቀቅ እናየመገጣጠሚያ ህመም ስሜት ተሰምቶህ ያውቃል ወይ	1.አዎን 2.አይደለም	
318	ለጥያቄ ቁጥር 317 መልስህ አዎን ከሆነ በየትኛው የሰውነትህ ክፍል ነውህ መሙየ ተሰማህ	አንገት የትከሻ የታችኛውጀርባ የላይናውጀርባ ወገብ/ታፋ ክርን ጉልበት የእጅ አንጓ እግር/ቁርጭምጭሚት	
319	የታክሲህ መብራት(ባዉዛ)ሁኔታ ምን ይመስላል	1.ጥሩ ነው 2.ጥራት የለዉም	
320	የታክሲህ መቀመጫ(ወንበር)ሁኔታ ምን ይመስላል	1.ምቹ ነው 2. ምቹ አይዴለም	
ክፍል አራት የተሳታፊውለህ መሙየ ባህሪውምክያቶች			
401	አልኮል ትጠጣለህ ወይ	አዎን 2.አይዴለም	
402	ለጥያቄ ቁጥር 401 መልስህ አዎን ከሆነ በሳምንት ስንት ቀን ትጠጣለህ		
403	ሲጋራ ታጨሰለህ	1.አዎን 2. አይደለም	
404	ለጥያቄ ቁጥር 403 መልስህ አዎን ከሆነ በቀን ስንት ፍሬ ስጋራ ታጨሰለህ		
405	ጫት ትቅማለህ	አዎን 2. አይዴለም	
406	ለጥያቄ ቁጥር 405 መልስህ አዎን ከሆነ በሳምንት ስንት ቀን ትቅማለህ		
407	ሁሌም ታክሲ በምታሽከረክርበት የደህንነት ቀበቶ ትጠቀማለህ ወይ	አዎን 2. አይዴለም	

408	ለ ጥ ያ ቄ ቁ ጥ ር 407 መ ል ስ ህ አ ይ ዴ ለ ም ከ ሆ ነ ለ ም ን ድ ነ ው የ ማ ት ጠ ቀ መ ው	ቀ በ ቶ ው የ ለ ም ቀ በ ቶ ው ስ ለ ማ ይ መ ቸ ኝ ስ ለ ም ረ ሳ ው ሌ ላ ም ከ ሆ ነ ይ ገ ለ ፅ	
409	የ ሰ ዉ ነ ት እ ን ቅ ስ ቃ ሴ (እ ስ ፖ ር ት) ት ሰ ራ ለ ህ ወ ይ	1.አ ዎ ን 2. አ ይ ዴ ለ ም	
410	ለ ጥ ያ ቄ ቁ ጥ ር 409 መ ል ስ ህ አ ዎ ን ከ ሆ ነ የ ሰ ዉ ነ ት እ ን ቅ ስ ቃ ሴ ዉ ን (እ ስ ፖ ር ቱ ን) ለ ም ን ያ ህ ል ት ሰ ራ ለ ህ	1.---------ደ ቂ ቃ በ ቀ ን 2----------ቀ ና ት በ ሳ ም ን ት	
ክ ፍ ል አ ም ስ ት የ ተ ሳ ታ ፊ ው ለ ጡ ን ቻ መ ሻ ማ ቀ ቅ እ ና መ ገ ጣ ተ ሚ ያ ህ መ ም የ ህ ክ ም ና ፍ ላ ጎ ት ባ ህ ሪ ው			
501	ባ ነ ተ እ ም ነ ት ለ ጡ ን ቻ መ ሻ ማ ቀ ቅ እ ና መ ገ ጣ ተ ሚ ያ ህ መ ም ም ክ ን ያ ት ሊ ሆ ኑ የ ሚ ች ሉ ት ነ ገ ሮ ች ም ን ድ ና ቸ ው	ድ ን ገ ተ ኛ አ ደ ጋ መ ጠ ም ዘ ዝ ክ ብ ደ ት ያ ላ ቸ ው ን ፅ ቃ ማ ን ሳ ት በ ም ነ ዳ በ ት ወ ቅ ት ካ ለ ው ን ዝ ረ ት የ ታ ክ ሲ ው መ ቀ መ ጫ (ወ ን በ ር)ሁ ኔ ታ ለ ረ ጅ ም ጊ ዜ መ ቀ መ ጥ የ ታ ክ ሲ ው ባ ዉ ዛ (መ ብ ራ ት)ሁ ኔ ታ የ መ ን ገ ዱ ጥ ራ ት ሌ ላ ም ከ ሆ ና ይ ገ ለ ፅ	
502	ብ ዙ ን ጊ ዜ ለ ጡ ን ቻ መ ሻ ማ ቀ ቅ እ ና መ ገ ጣ ተ ሚ ያ ህ መ ም ለ ማ ስ ታ ገ ስ እ ን ደ መ ፍ ት ሄ የ ም ት ወ ስ ደ ው እ ር ም ጃ ም ን ድ ነ ው	በ ራ ሴ የ ም ገ ዛ ቸ ው መ ድ ሃ ን ቶ ች የ ተ ለ ያ ዩ ዕ ፅ ዋ ት መ ቅ ውሃ ጸ በ ል መ ታ ሸ ት ወ ጌ ሻ ጤ ና ተ ቋ ም ሌ ላ ም ካ ለ ይ ገ ለ ፅ	

503	ባ ብዛ ኛ ው ጊ ዜ የ ጡን ቻ መሻ ማቀ ቅ እ ና መገ ጣተ ሚያ ህ መምን ለ ማከ ም የ ት ኛ ዉን አ ይነ ት ህ ክ ምና ነ ው የ ምት መር ጠው	1.ዘ መና ዊ 2.ባ ህ ላ ዊ	
504	ምር ጫህ ዘ መና ዊ ከ ሆነ ምክ ን ያ ት ህ ምን ድነ ው	ዉጤታ ማ ስ ለ ሆነ የ ጤና ተ ቋ ም ህ ክ ምና አ ስ ተ ማማኝ ስ ለ ሆነ ጤና ባ ለ መያ ዎ ቹ ታ ካ ሚ ዎ ቹ ን በ ክ ብ ር ስ ለ ሚያ ክ መሌ ላ ም ከ ሆነ ይ ገ ለ ፅ	
505	ምር ጫህ ባ ህ ላ ዊ ከ ሆነ ምክ ን ያ ት ህ ምን ድነ ው	አ ስ ተ ማማኝ ስ ለ ሆነ ምቾ ት ስ ላ ለ ው ባ ህ ላ ዊ ህ ኪ ሞ ቹ ታ ካ ሚዉን ስ ለ ሚያ ከ ብ ሩ ደ ህ ን ነ ቱ የ ተ ጠበ ቀ ስ ለ ሆነ ጊ ዜ ስ ለ ሚቆ ጥ ብ ሌ ላ ም ካ ለ ይ ገ ለ ፅ	
506	የ ህ መሙ ስ ሜት እ ን ደ ተ ሰ ማህ የ ህ ክ ምና እ ር ምጃ ዉን ወ ዲ ያ ዉኑ ት ወ ስ ዳ ለ ህ	1.አ ዎ ን 2. አ ይ ዴ ለ ም	
507	ለ ጥ ያ ቄ ቁ ጥ ር 506 መ ል ስ ህ አ ዎ ን ከ ሆነ በ ምን ያ ህ ል ጊ ዜ ዉ ስ ጥ ወ ደ ህ ክ ምና ት ሄ ዳ ለ ህ	1.----------ሠ ዓ ት 2.----------ቀ ና ት 3.----------ሳ ምን ት 4.----------ወ ር	
508	ለ ጥ ያ ቄ ቁ ጥ ር 506 መ ል ስ ህ አ ዎ ን ከ ሆነ ቶ ሎ ወ ደ ህ ክ ምና እ ን ድ ት ሄ ድ ያ ነ ሳ ሰ ህ ምክ ን ት ምን ድነ ው		
509	ለ ጥ ያ ቄ ቁ ጥ ር 506 መ ል ስ ህ አ ይ ዴ ለ ም ከ ሆነ ቶ ሎ ወ ደ ህ ክ ምና እ ን ዳ ት ሄ ት ያ ረ ገ ህ ምክ ን ያ ት ምን ድነ ው		

ለትብብርህ አመሰግናለሁ

NORDIC QUESTIONAIRE

Please answer by ticking the appropriate box (one tick for each question). You may be in doubt as to how to answer but do try and give out your best anyway. Answer any questions on each parts of the body.

In this picture, you can see the appropriate position of the parts of the body being referred to in the questionnaire. Limits are not sharply defined and certain parts are overlap. You should decide for yourself in which part you have or have had trouble (if any).

Have you at any time during the last 12 months had trouble(such as ache,pain,discomfort,numbness)in During the last 12 months have you been prevented from carrying out normal activities b/c of this troubles During the last 12 months have you seen physicians for this conditions During the last 7days have you had troubles

	Have you at any time during the last 12 months had trouble(such as ache,pain,discomfort,numbness)in	During the last 12 months have you been prevented from carrying out normal activities b/c of this troubles	During the last 12 months have you seen physicians for this conditions	During the last 7days have you had troubles
Neck	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Shoulder	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Upperba	☐ Yes ☐	☐ Yes ☐	☐ Yes ☐	☐ Yes ☐

ck	No	No	No	No
Elbow	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Wrist/Hand	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Lower back	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Hips/thighs	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Knees	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Ankles/feet	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

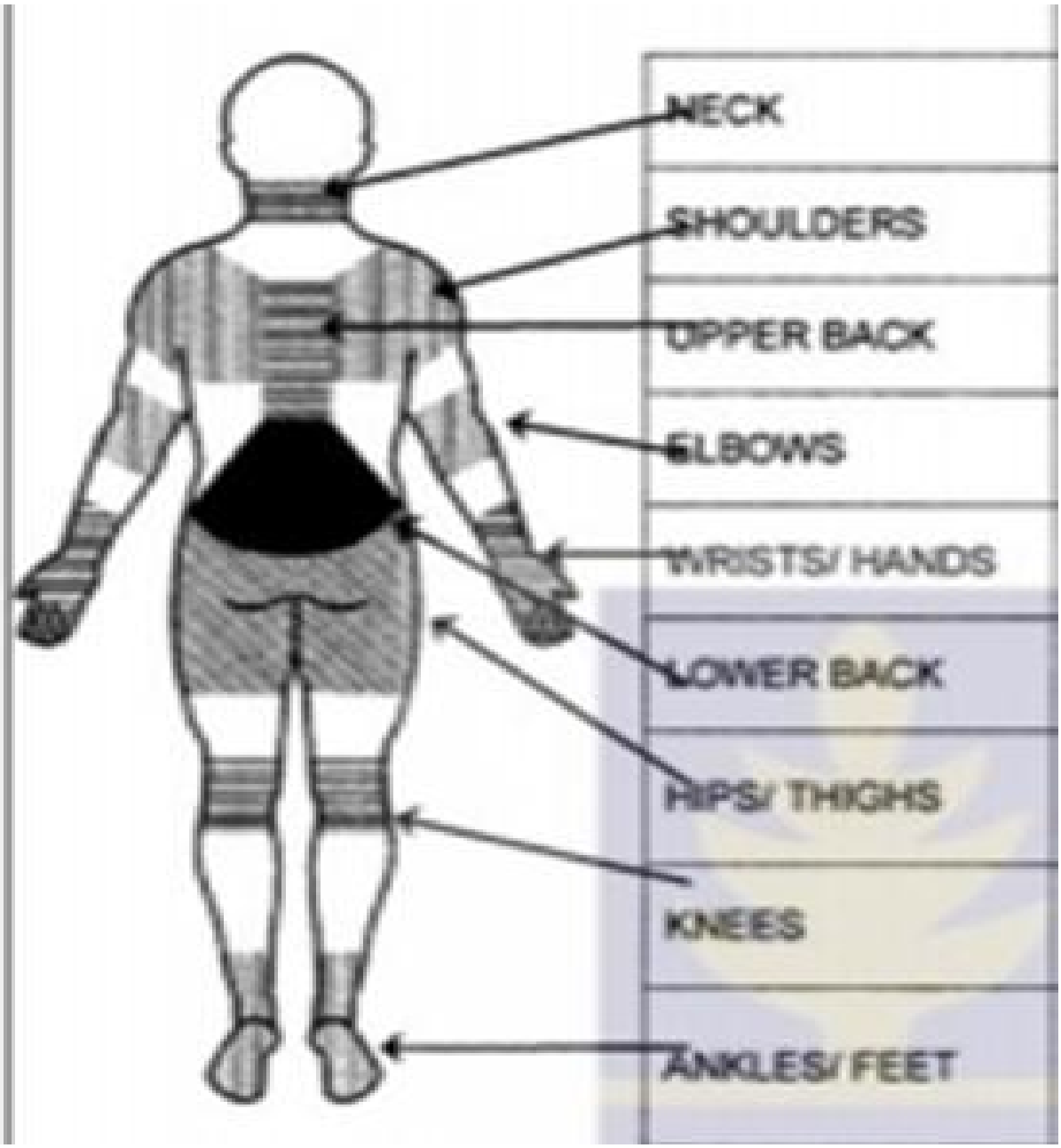

Figure 5: the nine body parts that can develop MSD.

Assurance of Principal Investigator

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress report as per terms and conditions of the research publications Office in effect at the time of grant is forwarded as the result of this application.

Name of the Student: Melese Taddese

Date: September, 2019 Signature: _____

Approval of Advisors

Name of the Advisors:

1. Worku Tefera Date: _____ Signature: _____

2 Ansha Negga Date: _____ Signature: _____

Curriculum Vitae (CV)

I.Personal Information

Name Melese Taddese Aredo

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Phone Number 0913976496

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Education and Training

BSc in Environmental Health from Haromaya University July 2009 with CGPA 3.06.

BSc in Clinical Nursing from Arsi University in 2016 with CGPA 3.81.

Employment

From September 2009--------August/2010 Arsi zone Honkolo wabe woreda health office as health extension supervisor

From September 2010----------November/2014 Arsi zone Bekoji woreda health office as health extension program coordinator.

From December 2015----- January 2016 At Asella Referral Hospital Infection Prevention coordinator.

From February 2016-------September 2017 Assistant lecturer at Arsi University.

Language and Communication

Excellent in:

- Afan Oromo
- Amharic and
- English

Hobby: Watching TV news and occasionally Amharic film and reading holly bible.