Addis Ababa University

College of Health Sciences

School of Public Health

Characterizing Occupational risk factors of chronic kidney disease and its impact on work productivity and activity impairment among patients visiting at public hospitals in Addis Abeba, Ethiopia

Investigator

1. Yetemwerk Dagmawi

Advisor's Name

1. Primary advisor: Dr. Samson Wakuma

2. Secondary advisor: Prof Abera Kumie

A Research Thesis Submitted to the Graduate Program of Addis Ababa University, College of Health Sciences, School of Public Health in Partial Fulfillment for the Degree of Masters of Public Health in Environmental and Occupational Health Specialty

MASTER OF PUBLIC HEALTH RESEARCH PROJECT SUBMISSION FORM

Name of investigator	Yetemwerk Dagmawi
Name of Advisor(s)	1. Dr. Samson Wakuma (PHD) 2. Prof Abera Kumie (PHD)
Full title of the research project	Characterizing Occupational risk factors of chronic kidney diseases and its impact on work productivity and activity impairment among patients visiting at public hospitals in Addis Abeba,Ethiopia.
Duration of project	10 months
Study Area	Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College Addis Ababa, Ethiopia.
Total Cost of the project	102,608 ETB
Address of investigator	Tel: +251947709886 Mail: yetemwerkmuludagimawi@gmail.com

SUMMARY

Introduction: Chronic kidney disease (CKD) is a significant public health concern worldwide, it is primarily caused by well-established factors such as diabetes, hypertension, and genetic conditions, there are also unconventional factors that can contribute to its development including occupational and environmental factors. These factors may not be as widely recognized but can still play a significant role in the progression of CKD. However, Occupational factors for kidney failure are not well studied.

Objective: Therefore, this study aimed to characterize occupational risk factors of chronic kidney disease (CKD), as well as their impact on work productivity and activity impairment, among patients attending at public hospitals in Addis Abeba, Ethiopia.

Methods: An institutional cross-sectional study was conducted among chronic kidney disease patients at public hospitals in Addis Abeba, Ethiopia, from January 2025 to March 2025.Structured questionnaires were used in face-to-face interviews with patients who have confirmed cases of CKD when they were come for their follow up appointment during data collection period to assess occupational risk factors related to CKD in two hospitals. The data was collected using ODK software. The data was exported and cleaned using SPSS statistical software version 25 and characterization occupational risk factors of CKD was analyzed by Chi-Square test.

Results: Out of 401 participants, 392 took part in the study, resulting in a 97.8% response rate. The largest age group was 61 and above 97(24.5**).** The most common occupation among respondents was office work 83(21.2%), followed by agriculture/farming 58(14.8%). Regarding workplace hazards, physical hazards were the most frequently reported, 293(74.7%), followed by psychosocial hazards, 226 (57.7%) and chemical hazards 107 (27.3%).

Conclusion: Workers across different occupations faced multiple physical hazards in labor-intensive jobs, chemical in agriculture and manufacturing, and psychosocial and ergonomic in office, transportation, and construction settings.

Keywords: CKD, CKDu, Occupational factors, Work productivity, Activity impairment

TABLE OF CONTENTS

LISTS OF TABLES

LIST OF FIGURES

LISTS OF ABBREVATION AND ACRONYMS

CKD	Chronic kidney disease
CKDu	Chronic Kidney Disease Unknown Etiology
eGFR	Glomerular Filtration Rate
GBD	Global Burden of Disease
HIV	Human Immune Virus
UK	United Kingdom
UN	United Nation
ESRD	End-stage renal disease
AAU	Addis Ababa University
SPHMMC	St. Paul's Hospital Millennium Medical College
ALT	Alanine Transaminase
AST	Aspartate Aminotransferase
Pb	Lead
KDIGO	Kidney Disease Improving Global Outcome
LMICs	Lower and Middle Income Countries

1. INTRODUCTION

1.1 Background

When the glomerular filtration rate (GFR) is less than 60 ml/min/1.73 m2 for more than three months, it is referred to as chronic kidney disease (CKD), which can have serious health consequences [1]. Chronic kidney disease (CKD) is a global public health problem and a major contributor to the global disease burden and annual incidence of chronic kidney disease (CKD) has climbed to roughly 13–15% globally in recent years[2].

CKDu is a chronic kidney disease does not correlate with established risk factors such diabetes, hypertension, or chronic glomerulonephritis. The term "chronic kidney disease of unknown aetiology" has been used in the literature since the 2000s. The term "CKDu" was first used in El Salvador in the early 2000s to describe a disease that frequently affected agricultural societies. The aetiology of the disease was unclear [3].

Chronic disease of unknown aetiology (CKDu) is a chronic renal disease that is a dangerous new type of kidney failure that causes early death, especially in underprivileged communities. The condition known as CKD of unknown aetiology, or CKDu, primarily affects young individuals in the workforce and has grown to be a significant and grave public health concern [4].

Occupational and Environmental variables are closely linked to the development of chronic kidney disease (CKD) [5]. Previous investigations have verified that Kidney function is also thought to be correlated with hazardous work environments. Risky working conditions such as long hours, excessive workloads, and shift work have been linked to various chronic diseases such as Diabetes, Cardiovascular disease, and Death [6-8].

CKD patients may experience symptoms that interfere with their daily lives, impacting their quality of life and employment rates [121]. Symptoms commonly include fatigue, weakness, decreased mental sharpness, shortness of breath, and more, they have been shown to be associated with greater loss of work productivity and activity impairments, leading to increased economic consequences [122]

1.2 Statement of the problem

The 21st century saw the rise of chronic diseases as a significant global health policy concern [9]. The worldwide economy and life expectancy have been severely impacted by the alarming rise in the risk of death from chronic kidney disease (CKD) [10, 11].

The primary causes of CKD in both high-income and low-income countries are diabetes and hypertension However, many Lower and Middle Income Countries (LMICs) have identified an epidemic of chronic kidney disease (CKD) over the past 20 years that is unrelated to these conventional risk factors[12].

CKDu has a devastating effect on individuals, families and the community, and imposes an enormous burden on healthcare systems and it has grown to be a significant and life-threatening public health concern [13]. CKDu mainly affects young working-age adults in poor rural communities and is often fatal due to rapid disease progression and lack of dialysis or transplant options in the affected areas [14].

CKD is becoming a more significant public health issue in Africa, primarily due to the presence of risk factors that include both communicable such as HIV and noncommunicable diseases such as diabetes, and hypertension [15, 16]. In addition in Africa, there have been reports of an extra risk of CKD that cannot be accounted by conventional risk factors [17]. The incidence of chronic kidney disease (CKD) is increasing in Ethiopia due to increased risk factors, similar to the case with many other chronic diseases. In Ethiopia, renal illness accounts for 1.47% of all deaths [18].

Some previous studies on occupational risk for chronic kidney disease (CKD) have analyzed a limited range of occupations and focused on nephrotoxins [19]. These studies mainly focused on exposure to different types of nephrotoxins such as silicon, lead, mercury, glycol ethers, organic solvents, copper, chromium, tin, and welding fumes [20-22]. Nephrotoxin exposure is not the only occupational risk factor contributing to chronic kidney disease (CKD). Reports indicate that jobs in sales, management, carpentry, and cashiering are also associated with an increased risk of CKD-related death [23]. Occupations have been linked to an increased risk of CKD mortality, including cashier, sales representative, carpenter, and manager and the risk of acquiring chronic kidney disease has also been linked to work environments in hospitals, restaurants, and

construction sites [23]. Furthermore, it has been found that working environments in restaurants, bars, and hospitals are associated with a higher risk of developing chronic kidney disease [23]. Previous studies have identified specific nephrotoxins, such as lead and organic solvents, that are linked to renal effects. However, they have not fully explored the broader occupational risks associated with CKD. While existing research has highlighted some occupational hazards, many studies focus on particular chemicals or environments without considering the overall impact of various workplace factors on kidney health [115].

In recent years, the number of new CKD cases in Ethiopia has risen significantly, even among the younger population, but the underlying causes remain unclear [116]. It could be linked to factors of workplace exposure to chemical, physical, and biological hazards. Given this, there is an urgent need for further research to identify the contributing factors to the rising CKD rates in Ethiopia. This study aims to fill that gap by investigating a more comprehensive range of occupational risks and their association with CKD. By broadening the scope and considering various occupational exposures, this research intends to provide a clearer understanding of how different work environments contribute to CKD, which has not been fully explored in previous studies.

There has been no specific study in Ethiopia characterizing the occupational risks for CKD. Therefore, this research was focus on the characterize occupational risk factors of CKD, addressing a significant gap in the literature. Occupational and environmental factors, though not widely recognized, may play a substantial role in the progression of CKD, and further exploration is needed in this area

In addition, kidney failure itself causes disability and can lead to significant changes in employment, with even individuals in the later stages of CKD often discontinuing work [117]. While previous research on CKD patients has primarily concentrated on quality of life, there is a limited understanding of how the disease impacts patients' ability to work. This includes factors such as absenteeism, reduced productivity, and overall work impairment.

Therefore, this study is aimed at characterizing occupational risk factors of chronic kidney disease (CKD), as well as their impact on work productivity and activity impairment, among patients attending at public hospitals in Addis Abeba, Ethiopia.

1.3 Rationale of the study

Chronic kidney disease has grown to be a significant and life-threatening public health concern globally. Although the amount of evidence supporting CKD is increasing, estimates of the disease burden in Ethiopia are still sparse, and little is known about the potential occupational and environmental factors that may contribute to CKD. That's why this Study aimed at characterizing occupational risk factors of chronic kidney disease (CKD), as well as their impact on work productivity and activity impairment, at Black Lion Hospital and St. Paul's Hospital Millennium Medical College Addis Ababa, Ethiopia.

1.4 Significance of the study

Despite the increased risk of acquiring chronic kidney disease at work, workers often ignore the condition or are unaware of it. The findings from this study will

- ✓ Provide valuable insights into the occupational exposures that may contribute to the development and progression of CKD as well as the impact on work productivity and activity impairment
- ✓ Could guide the development of targeted interventions aimed at reducing the burden of CKD among patients with occupational exposure including workplace safety measures, education on the risks of certain exposures, and early detection and management of CKD in at-risk individuals.
- ✓ Have the potential to have broader public health implications, as they may inform policies and guidelines aimed at protecting individuals from harmful occupational exposures that contribute to CKD development could lead to improved workplace safety regulations and health education initiatives in the community.

2. LITERATURE REVIEW

2.1 General situation about CKD

Currently Chronic kidney disease is a global public health problem, involving about 10% of the global population. According to the 2024 Global Burden of Disease (GBD) report The global median prevalence of chronic kidney disease is 9·5% (IQR 5·9–11·7) [24].

Globally, Population based cross sectional studies conducted in developing countries such as Iran, China, North Korea, and Nepal showed that overall prevalence of CKD were range from (5%-18.9%) [25-28].

Another studies carried out worldwide in prevalence of CKD in some developed countries like the USA and Japan, north california (10% to 37%)[29]

Over the past five years, 90 percent of the 1 million persons with severe chronic kidney disease receiving treatment with renal replacement therapy worldwide reside in wealthy nations. But in the majority of developing nations, only 5–10% of individuals in need of renal replacement treatment are able to get it. Nevertheless, the sharp rise in diabetes and hypertension, which are both expected to fuel an epidemic in chronic kidney disease[30].

Studies revealed that the prevalence of CKD Stages 1 to 5 varies from 18.38% in Europe to 8.66% in South Africa, Senegal, and the Congo [31]. The incidence of chronic renal disease was also [9.07%, 24.9%] in Malaysia and Indonesia [32].

The frequency of CKD ranged from 2% to 41% throughout Africa. Studies carried out in East Africa and Egypt have shown that underdeveloped countries had at least three to four times higher rates of chronic kidney disease (CKD) [33].

Community-based cross sectional studies conduct in western Africa countries (Senegal, Nigeria, Ghana) stated Overall CKD prevalence was (4.9%-27,6) [34-35], In addition, Hospital based studies conduct in other African countries (Botswana, Sudan, South Africa) range from (13.5%-10.32%) [36-38].

A study identified a prevalence of CKD (38.6) by CKD EPI equations among Kidney disease patients that attend the public hospitals of Addis Ababa[41]

Institution-based cross-sectional studies were conducted in Zewditu Memorial referral hospital, SPHMMC in Addis Ababa stated that prevalence of CKD were 12.2%, 9.8%, [39-40] respectively

A study in Ethiopia conducted in Zewditu Memorial referral hospital, SPHMMC (Addis Ababa), Addis Abeba public hospitals of Addis Ababa [41]. Another study conducted in Dessie Referral hospital indicates that the magnitude of CKD was 21.3% [42].

2.2 Epidemiology of CKDu

The results of all of the aforementioned investigations demonstrated that CKD is primarily linked to diabetes, high blood pressure, ageing, and cardiovascular disease. Nevertheless, none of them measured the participants' occupational exposure or reported a link between work exposure and the prevalence of CKD. The risk of workplace exposure to rising CKD prevalence has not been evaluated or taken into consideration in prior research [69].

Due to the lack of attention and poor focus on the condition, many studies just reported CKD with no diabetes, hypertension or HIV [43-45].

CKDu affects more than 60,000 individuals, with almost 20,000 deaths every year in Sri Lanka. The affected area currently covers almost one-third of the country, and CKDu has recently been reported as the seventh leading cause of death nationally the true burden of this disease has not been well documented [46].

Reports showed that the prevalence of CKDu in some Sri Lanka district was 15.1–22.9% and in Nicaragua, Costa Rica, Guatemala, and other areas of El Salvador with a reported prevalence of CKD varying between 10% to as high as 42% [47-51].

The burden of CKDu among the CKD population in Africa has been shown by previous review reports to range from 13.5% to 20%.[52] CKDu accounted for 36.5% of the CKD burden [53]. CKD dominated by CKDu, 34.2%–51.6% in Senegal and Nigeria [54-56]. and 24.4%–53.6% of ESRD patients due to CKDu in Somalia, Egypt, Gambia, Ethiopia and Sudan [57-60].

2.3 Working condition risk factors of CKD

The onset of chronic kidney disease (CKD) is closely linked to environmental and occupational variables. There are currently documented environmental and occupational risk factors for

chronic kidney disease of non-traditional causes, or chronic kidney disease of unknown aetiology (CKDu) [5].

CKD of not conventional causes, or unknown etiology (CKDu) mainly affects young working-age adults in poor rural communities and is often fatal due to rapid disease progression and lack of dialysis or transplant options in the affected areas [4, 61]. CKDu is a growing public health concern, causing in excess of 30 000 deaths each year and is estimated to have the highest age-standardized rate of disability adjusted life years of all causes of CKD [62-64].

Work-related CKD mortality have been associated with exposure to silica, organic solvents, lead, and cadmium in the range of 8.2% to 14.5% [65]. Exposure to nephrotoxins, such as lead, mercury, glycol ethers, organic solvents, copper, chromium, tin, welding fumes, silicon-containing compounds, and grain dust, has been the main focus of reports on occupational risk factors.[19, 66, 67]. However, the impact of occupational exposure is not exclusive to nephrotoxins. In actuality, people who work in occupations with the highest burden of nephrotoxin exposure are not the only ones who are at risk [68].

Compared to people who had reasonably healthy working conditions [69]. Individuals who had poor working conditions were linked to a higher risk of chronic kidney disease (CKD). Multiple hazardous work environments can simultaneously impact kidney function through similar or supplementary routes [70].

Research carried out in the United States revealed that certain occupations have been linked to an increased risk of CKD mortality, including cashier, sales representative, carpenter, and manager, the risk of acquiring chronic kidney disease has also been linked to work environments in hospitals, restaurants, and construction sites[71]. Additional study carried out in North Carolina Memorial Hospital showed that occupational silica exposure (compared with none) was associated with a 40% increased risk of CKD [29].

A UK cohort study discovered that unfavorable work environments, including excessive workloads, shift work, lengthy workdays, and exposure to secondhand cigarette smoke, were linked to a higher risk (88.0%) of chronic kidney disease [69] Finding from Pakistan reported chemical exposure in the working environment of garages results in an increased level of

different biochemicals among exposed subjects compared with the unexposed that linked to a high risk of developing CKD [72].

Studies conducted in Korea have demonstrated that shift workers have a much higher frequency of chronic kidney disease (CKD) than day workers, even in the absence of nephrotoxic drug exposure (OR = 2.04) [73].

In sectors such as construction and agriculture, workers sometimes faced multiple adverse conditions simultaneously) [78]. Being a farmer remained statistically significant for CKD, according to Indian research indicating that agricultural activities have been linked in a several studies, particularly in areas where pesticide use is extensive [74, 75].

An Indonesian study found that the prevalence of CKD among male farmers in our study was 24.9%. CKDu prevalence in a general working population, i.e. among farmers that are still actively working and farmer with longer lifetime duration of insecticide use and the more frequent use of insecticides increase in the risk of CKDu[76].

A higher than two-fold risk of developing chronic kidney disease (CKD) has been linked to agricultural activity in Cameroon, Malawi, and Morocco, Kenya, where higher prevalence rates of 6.5%–16.2% have been reported [44, 77, 78]

Approximately 70% of the population in Africa works in agriculture. This group is susceptible to several exposures, including agrochemicals and heavy metals.[79] Additionally, increased use of pesticides and herbicides without the use of protective gear may be the cause of CKD in this population that is not yet well-known [78, 80].

According to the Moroccan study, there was a 1.4-fold increase in the risk of CKD when exposed to agrochemicals [78]. Case control study in Ghana showed that Agriculture workers who were directly exposed to agrochemicals had a three-fold greater frequency of chronic kidney disease (CKD) [81]. In Nigeria, a case–control study of several rural farming communities observed an almost 81.6% excess risk of CKD among agrochemical applicators [82].

A comparative study of workers in bus garages and petrol stations in Harar and Mekelle, Addis Abeba, Jimma respectively, found that most biochemical levels (ALT, AST, and Pb) were considerably higher in the workers' cases of chronic kidney disease (CKD) as compared to the

controls. Long-term worker exposure to this may result in aberrant kidney function, which may eventually lead to renal failure [83-86].

The most vulnerable are working-age male agricultural laborers who engage in physically demanding work. Sugarcane workers are especially vulnerable to heat exhaustion and dehydration because of the lack of shade, prolonged periods of intense activity, and limited access to clean drinking water during the workday [87]. The affected industries also include "hot" occupations like port workers, rice growers, miners, and construction and cotton Workers [88, 89].

2.4 Environmental risk factors for CKD

Environmental risk factors for CKDu include exposure to heavy metals (arsenic and cadmium) and agrochemicals (fertilizers and pesticides) [74, 75, 90]. Recently, five studies from Tanzania, South Africa, Ghana and DR Congo explored the association of urban environmental exposure with CKD and found that living in urban environment is associated with higher risk of CKD [45, 91-94].

Africa exposes people to other CKD risk factors, such as poor access to affordable healthy options, environmental pollution, high temperatures via global warming, infectious diseases and urban water-related illness and injury [95]. In addition drinking unsafe water was associated with 2.1-2.8 fold risks of CKDu [96].

Studies finding showed that other CKD risk factors, such as poor access to affordable healthy options, environmental pollution, high temperatures via global warming, infectious diseases and urban water-related illness and injury.[118]

2.5 Socio-economic and CKD

Notably, almost 60% of people in Africa live in a rural area, and multiple studies across the region have found higher CKD prevalence among the rural than the urban residents and identified rural environmental exposure as a risk factors for CKD [16, 97]. Epidemiological studies have linked low socioeconomic status (SES), Limited access to water, sanitation and hygiene services, and greater use of nephrotoxic herbal and street medications has also been reported in the rural areas, which may account for the increased CKD inadequate health access to health care and possible adverse environmental exposures, with increased CKD risk [53, 98].

2.6 Behavioral factors and CKD

Current CKD guidelines recommend lifestyle modifications such as regular physical activity, abstinence from smoking, achieving a healthy weight, and adopting a healthy diet comprising low-fat and higher consumption of whole grains, fruits and vegetables for prevention of onset or progression of CKD based on studies conducted in general populations [99]. Lifestyle behaviors, such as diet, physical activity, weight management, alcohol consumption, and tobacco use, have mainly been studied in relation to reducing chronic disease such as CKD [100-102].

Compared to current smokers, nonsmokers had reduced risk of CKD progression and heavy alcohol consumption may increase CKD patients' risk [100].

2.7 Psychosocial factors and CKD

Many studies show that smoking uptake, persistent smoking, quit attempts, and cessation/relapse are highly correlated with symptoms of depression and anxiety lead to CKD progression and also Adults with CKD have high rates of psychological distress, especially depression and anxiety [103].

Depression is a common condition among individuals with end-stage renal disease (ESRD) and increases the risk of serious adverse health outcomes, including mortality, more frequent hospitalization, and poorer quality of life [104-106]. Between 15 and 30% of ESRD patients either report symptoms of depression or are clinically diagnosed with this condition [107, 108].

Psychosocial stress may be a facilitating factor for the effects of shift work on kidney diseases. Shift workers experience greater stress than do daytime workers [109].

2.8 Policy, regulation and standards regarding CKD

The Ministry of Health-Ethiopia developed this second national strategic plan for the prevention and control of NCDs. The scope of the national NCD Strategic Plan is focus on Major NCDs (CVDs, DM, CRDs, CKD) and Risk Factors (tobacco use, harmful use of alcohol, khat use, unhealthy diet, physical inactivity, air pollution, infectious causes) [110].

Ethiopia faces many difficult obstacles in providing RRT, from a shortage of funding to policy concerns. Although the public has called for the provision of services, there is currently no national renal care policy or strategy. Thus, there is a lack of policy regarding renal treatment in Ethiopia. Because of this, stakeholders are unable to collaborate. In a given hospital or clinic, services are first provided by one person or a small group of people and are challenging to maintain. dialysis is mostly provided by the private sector, and practically all patients Dialysis facilities are run with very little, if any, monitoring, and it is impossible to even consider imposing minimal standards of quality. In addition, currently Ethiopia has 30 nephrologists (113 trainees), or 0.26 nephrologists per million people. Since 80% of the country's nephrologists are based in the capital, many areas lack even one nephrologist. The nation offers two fellowship

training programs in nephrology. Most nephrologists received their training locally, however the first few had their training elsewhere [111].

2.9 CKD impact on work productivity and activity impairment

The literature shows that presenteeism is associated with long-term sick leave [126], prolonged absence from work, and greater economic costs than those stemming from sick leave and sick days [127].

A study conducted in developed countries (France, Germany, Italy, Spain, the UK, the USA and China) in 2012–2018 in the Adelphi Real World Disease Specific Programme finding showed that CKD associated with greater work productivity losses and total activity impairments, suggesting potential economic consequences.[128]

A study conducted in Malaysia indicated that the employment rate in advanced CKD patients, revealing that only half of the population (50%) were employed and CKD patients lost their jobs due to the disease burden and had poor mental and physical composites of quality of life [123].

Another studies conducted in Netherland and India which reported employment rates of CKD 68% in 2019 and 61.1% in 2017 respectively [124, 125]. In addition a study showed that Prevalence of work productivity loss in patients with chronic kidney disease (CKD) was 26.0%, of which absenteeism and presenteeism accounted for 7.1% and 22.3%, respectively [128]

Another studies in Bishoftu town, Southeast and Lume district in Ethiopia indicated that the prevalence of sickness absenteeism were 54.5%, 58.8% respectively [129.130].

Studies have linked low socioeconomic status (SES), Limited access to water, sanitation and hygiene services, and which may account for the increased CKD inadequate health access to health care and possible increased CKD risk and CKD requiring expensive renal replacement therapy (RRT) for survival and has a major impact on healthcare costs, productivity and growth, cessation of work it lead to lower socioeconomic status of patients [53].

Diabetes, hypertension and HIV are the main contributing factors to CKD and also CKD is a risk factor for cardiovascular and other chronic disease morbidity and mortality [15].

Unhealthy Lifestyle behaviors, such as unhealthy diet, physical inactivity, obesity, alcohol consumption, and tobacco use, have mainly been studied in relation to increasing chronic disease such as CKD and also patient with CKD change their own life style [101].

Work-related CKD mortality have been associated with exposure to silica, organic solvents, lead, and cadmium in the range of 8.2% to 14.5% [65], Unfavorable work environments, including excessive workloads, shift work, lengthy workdays, and exposure to secondhand cigarette smoke, were linked to a higher risk (88.0%) of chronic kidney disease [69]

CKD patients have high rates of psychological distress, especially depression and anxiety and increases the risk of serious adverse health outcomes, including mortality, more frequent hospitalization, and poorer quality of life [107].

2.9 Conceptual framework the study

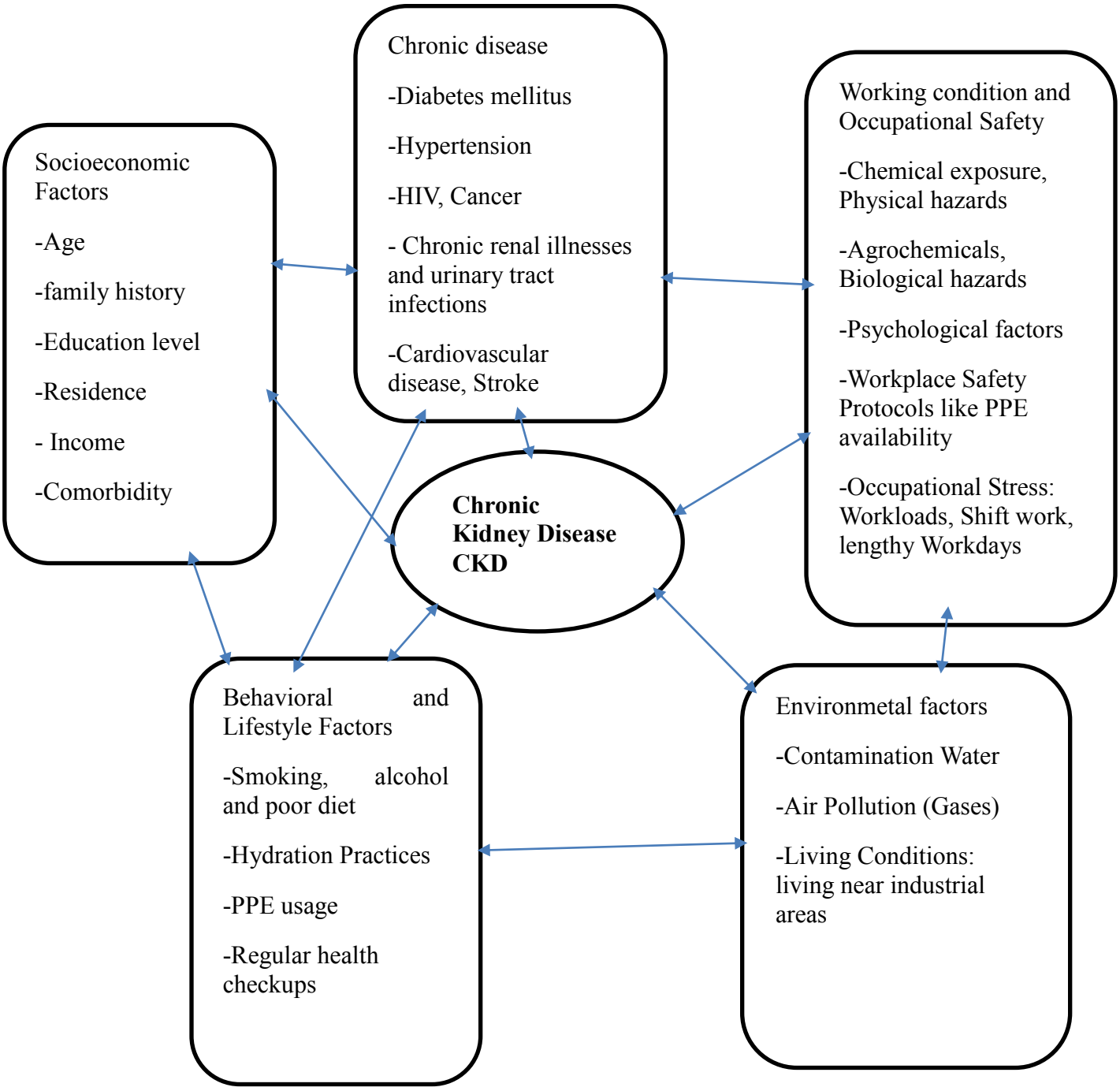

Figure 1.1 Conceptual frame work of the study [29, 71, 72, 74-76, 82, 90]

3. OBJECTIVES

3.1 General Objective

Therefore, this study aims to characterize occupational risk factors of chronic kidney disease (CKD), as well as their impact on work productivity and activity impairment, among patients attending at public hospitals in Addis Ababa, Ethiopia.

3.2 Specific Objectives

To characterize occupational risk factors of chronic kidney disease (CKD) among patients visiting at public hospitals in Addis Abeba, Ethiopia.

To assess the impact of CKD on work productivity and activity impairment, among patients attending at public hospitals in Addis Abeba, Ethiopia.

4. METHODOLOGY

4.1 Study area

This study was conducted at Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia. Black Lion Referral Hospital and St. Paul's Hospital Millennium Medical College are the first and second-largest hospital respectively and most advanced public healthcare institutions in Ethiopia. Located in the heart of Addis Ababa. They serve as a key teaching hospital affiliated with Addis Ababa University, providing specialized medical care to a wide range of patients from across the country. The Renal Unit at Black Lion Hospital and St. Paul's Hospital Millennium Medical College are specialized department dedicated to the diagnosis, treatment, and management of kidney-related diseases, including chronic kidney disease (CKD). As one of the leading centers for nephrology in Ethiopia, this unit offers critical services such as life-saving dialysis treatments for patients with end-stage renal disease (ESRD). St. Paul's Hospital Millennium Medical College has the first kidney transplant center Since 2015, SPHMMC's renal unit has been the only recognized renal center in a public setting for kidney transplants.

4.2 Study design and Study period

A hospital-based cross-sectional study was conducted at Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College Addis Ababa, Ethiopia from January 2025 to March 2025

4.3. Population

4.3.1. Source population

All patients who attend the nephrology outpatient clinics at Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College were considered for inclusion in the study.

4.3.2. Study population

All patients with confirmed chronic kidney disease in the nephrology departments of Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College during the data collection period were included.

4.4. Eligibility criteria

4.4.1. Inclusion criteria

Patients over 18 years of age who were diagnosed with CKD and were attending the nephrology outpatient clinics at Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College during the data collection period, and who were willing to participate in the study, were included.

4.4.2. Exclusion criteria

Patients with cognitive impairments that prevented them from providing informed consent or participating in the study were excluded.

4.5 Sample size determination and sampling procedure

4.5.1. Sample size determination

For first objective

1. The sample size was calculated by using double population proportion formula for to characterize occupational risk factors of chronic kidney disease (CKD), assuming 90% confidence level 80% power, 10% non-response rate and prevalence of CKD from study conducted in Ghana were more prevalent on farmer who exposed to agrochemicals than non-exposed 18.1 and 6.6 respectively [81]

$$n_1 = n_2 = \frac{\left(z_{\alpha/2}\sqrt{2\overline{pq}} + z_{\beta}\sqrt{p_1q_1 + p_2q_2}\right)^2}{\Delta^2}$$

P1 is the proportion in exposed

P2 is the proportion in unexposed

Zα/2 is the quintile of the standard normal distribution for type I error (1.96 for 95%)

Zβ is the quintile of the standard normal distribution for type II error/power (0.84 for 80% power)

n1 is the sample size for group 1

n2 is the sample size for group 2

n1+n2=288

Non respondent rate 10% = 28.8, 288+28.8= 316.8= 317

For 2nd objectives

The sample size was calculated by using single population proportion formula. Assuming the prevalence of sickness absenteeism during the previous 12 months was 54 from study conducted in flower farm industry workers in Bishoftu town, Southeast Ethiopia was 54.5%. [41] (p- value 0.545) Assuming 5% margin of error, 95% confidence Interval and 15% non -respondent rate, sample size is calculated for the outcome variable.[129]

$$n = \frac{(Z(1-\alpha/2)^2 p(1-p)}{d^2} \qquad n = \frac{z^2 p(1-p)}{d^2} \; n = \frac{z^2 (pq)}{d^2}$$

n=number of minimum samples required from study population.

z= the standard score (critical value) corresponding to 95% confidence level = 1.96.

d= the proportion of sampling error between the sample and the population (degree of precision) = 5% (0.05).

P = prevalence of sickness absenteeism=54%

q= 1-p, 1-0.545= 0.455

$$n=\frac{z^2 (pq)}{d^2} = \frac{(1.96)^2((0.54)\ (0.46)}{0.05^2} =364.18$$

Non respondent rate 10% = 36.418= 364.18+36.418 =400.59=401

Objective	Sample size
1st objective	317
2nd objective	401

1st objective's sample size (317) was a bit small. Small sample sizes can compromise the reliability, accuracy, and generalizability of the findings, potentially leading to misleading conclusions. Therefore, I was used larger sample size (401).

4.5.2. Sampling technique and procedure

Consecutive sampling involves recruiting all eligible participants who attended the renal clinic OPD and were willing to participate in the study were included until the calculated sample size was reached.

4.6 Study Variables

Dependent variable:

- ✓ Chronic kidney disease

Independent variables:

- ✓ Occupational exposure (physical, chemicals, Agro-chemicals)
- ✓ Type of occupation (e.g. industrial worker, healthcare worker, office worker)
- ✓ Duration of occupational exposure (years)
- ✓ Frequency of exposure to chemicals at work (daily, weekly, monthly)
- ✓ Behavioral factors (Use of personal protective equipment at work, Hydration practice, Smoking status)
- ✓ Environmental factors (Contaminated water supplies, raise environmental temperature, air pollution)
- ✓ Socioeconomic status (Low, Middle, High)
- ✓ Psychological factors (Stress, Anxiety, Depression)
- ✓ Chronic diseases (Diabetes, Hypertension, Cancer, Cardiovascular disease)
- ✓ Communicable disease (HIV, Urinary tract infection, Chronic pyelonephritis)

4.7 Operational Definitions

1. Chronic Kidney Disease (CKD): is defined as structural/ functional abnormalities of the kidney or decreased GFR <60 ml/min/1.73m2 for more than 3 months.[112]
2. CKDu is a diagnosis of exclusion defined by fulfilling the Kidney Disease Improving Global Outcomes (KDIGO) CKD criteria: persistent kidney damage (albuminuria or proteinuria) and/or estimated glomerular filtration rate (eGFR) <60 ml/min/1.73m2 for at least 3 months in the absence of any traditional risk factor, such as diabetes, hypertension, or other known causes of CKD. [61, 113, 114]
3. Adult patients: Patients who attend Medical OPD at Black Lion referral specialized hospital and St Pauli Hospital Millennium Medical College whose Age ≥ 18. [39]
4. Absenteeism (%): Proportion of work time missed due to health, calculated as Q2 / (Q2 + Q4), for participants who were currently employed and had actually worked in the past seven days [143,144].
5. Presenteeism (%): Level of impairment while working due to health, calculated as Q5 / 10, for participants who were currently employed and had actually worked in the past seven days [143,144].
6. Overall Work Impairment (%): Combined effect of absenteeism and presenteeism, calculated as: Q2 / (Q2 + Q4) + [(1 − Q2 / (Q2 + Q4)) × (Q5 / 10)] for participants who were currently employed and had actually worked in the past seven days [143,144].
7. Activity Impairment (%): Degree to which health affected the ability to perform regular daily activities (other than paid work), calculated as Q6 / 10, for all respondents [143,144].

4.8 Data Collection Tools and Procedures

Structured questionnaires were used in face-to-face interviews with patients who had confirmed cases of chronic kidney disease (CKD) to assess occupational risk factors associated with CKD at two hospitals. Data were collected during the patients' routine follow-up appointments.The questionnaire was adapted from various literature sources and guidelines developed for similar purposes by different authors [39–42, 71, 72]. The Work Productivity and Activity Impairment (WPAI) questionnaire, a tool used to assess the impact of disease on work productivity and daily activities over the past seven days, was also included. This instrument has been widely used by patients across a range of diseases in numerous studies [119]. The data collection tool was prepared in Microsoft Excel 2016 in XLS format and then exported to ODK Collect software. The form was uploaded and sent to the data collectors' smartphones. During data collection, data collectors accessed the questionnaire directly on their smartphones using the ODK app.

4.9 Data Quality Control

During design

The questionnaire was originally prepared in English, then translated into the local language (Amharic) for data collection, and subsequently back-translated into English to ensure accuracy and consistency. Two weeks prior to the start of the study, the structured interviewer-administered questionnaire was pre-tested on 5% (21 participants) of the total sample size (401) at Yekatit 12 Referral Hospital and Zewditu Memorial Referral Hospital. This was done to assess the clarity of the questions. Based on the pre-test findings, necessary modifications were made to unclear questions. The internal consistency of the data was also evaluated. Four data collectors and one supervisor were recruited and trained by the principal investigator for one day on data collection procedures and how to ensure data quality.

During data collection

The uploaded questionnaire form was sent from the server to the data collectors’ smartphones. During data collection, they used their smartphones to access the questionnaire by retrieving the form from the ODK app. Data were entered directly into ODK during the interviews, and the collected data were submitted daily to the principal investigator’s server. Continuous supervision was provided by the principal investigator and a trained supervisor.

During data analysis

The collected data were checked for completeness, consistency, and accuracy by the principal investigators. After verification, the data were cleaned before further processing.

4.10 Data Management and Statistical Analysis

Data analysis was conducted to address the specific objectives of the study. The collected data were checked for completeness, consistency, and accuracy by the principal investigators. Once verified, the data were cleaned, tallied, and analyzed using frequency counts in SPSS version 25. The results were then expressed in numerical values and percentages. Descriptive statistics were presented using tables, percentages, charts, and graphs. A Chi-square test was performed to identify associations between occupational risk factors and CKD. Additionally, the WPAI (Work Productivity and Activity Impairment) scoring system was used to assess the impact of CKD on work productivity and daily activity impairment.

4.11 Ethical considerations

Ethical clearance and a support letter were obtained from the Ethical Review Committee of the School of Public Health, Addis Ababa University, prior to data collection. An official ethical approval letter was provided to Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College by the review board. Subsequently, permission to conduct the study was obtained from the clinical directors, renal department heads, and renal unit heads of both hospitals. The study was also approved by the Institutional Review Board (IRB) of Addis Ababa University.

Participants who met the inclusion criteria and expressed willingness to participate were provided with a consent letter, and their oral consent was obtained prior to the start of data collection. In addition, they were asked to sign the consent form after being informed about the study's objectives and procedures. Participants were informed of their right to withdraw from the study at any time.

The study had no conflicts of interest and aimed to provide potential benefits to the broader community. Privacy and confidentiality were maintained by ensuring participant anonymity, with access to the data limited solely to the principal investigator.

4.12. Dissemination of the result

The results of this research will be submitted to Addis Ababa University, College of Health Sciences, School of Public Health, Department of Preventive Medicine, Environmental and Occupational Health Unit. In addition, the information will be provided to Addis Ababa University (AAU).

5. RESULT

Section 1 Sociodemographic factors

Out of 401 participants, 392 took part in the study, resulting in a 97.8% response rate. The largest age group was 61 and above 97(24.5%), followed by ages 51–60 87(22.2%). Males made up 211(53.8%), and females 181(46.2%). Most were married 293 (74.7%). Regarding education, 150 (38.3%) had completed college or higher. In terms of residence, 289 (73.7%) lived in urban areas, 72(18.4%) in rural, and 31(7.9%) in semi-urban areas. About 131(33.4%) had previously lived elsewhere, while 261 (66.6%) had not.

Table 1 Socio-demographic characteristics of CKD patients at Black lion and SPMMCH 2024/25

Variables	Categories	Frequency (Percent)
Age	18-30	67(17.1)
	31-40	60(15.3)
	41-50	81(20.7)
	51-60	87(22.2)
	61 and above	97(24.7)
Gender	Male	211(53.8)
	Female	181(46.2)
Marital status	Single	68(17.3)
	Married	293(74.7)
	Divorced	13(3.3)
	Widowed	18(4.6)
Educational status	Unable to read and write	46(11.7)
	Primary school (1-8 grade)	100(25.5)
	High school (9-12 grade)	96(24.5)
	Grade college/University graduate and above	150(38.3)

Section 2 Environmental factors

Most respondents, 295(75.3%) reported using tap water as their main drinking source, followed by protected spring 27(6.9%) and well water 20(5.1%). A large majority 321(81.9%) do not treat their drinking water. Regarding air quality, 178(45.4%) described their area as clean, while 161(41.1%) said it was moderately polluted. Climatic conditions were reported as moderately hot by 285(72.7%) and very hot by 40(10.2%). About 37(9.4%) lived or spent extended time in hot environments. Environmental exposure showed 102(26%) lived near agricultural fields, and 76(19.4%) near industrial areas.

Table 2 Environmental factors of CKD patients at Black lion and SPMMCH 2024/25 (n = 401)

Variables	Categories	Frequency(%)
Primary source of drinking water	Tap water	295(75.3)
	Protected well water	20(5.1)
	Unprotected well water	10(2.6)
	Protected spring water	27(6.9)
	Unprotected Spring water	8(2.0)
	River/Stream	14(3.6)
	Bottled/Packaged water	18(4.6)
drinking water treatment	Yes, by boiling	24(6.1)
	Yes by filtration	47(12)
	Yes, by chemicals	16(4.1)
	No	321(81.9)
Climatic condition of living area	Hot	40(10.2)
	Cold	67(17.1)
spend prolonged periods in hot environments	Yes	37(9.4)
	No	3(0.8)
	Industrial areas/factories	76(19.4)
	Agricultural fields	102(26.0)
	Mining sites	29(7.4)
	Waste disposal sites/landfills	45(11.5)
	Rivers or streams with reported contamination	146(37.2)

Section 3 Personal factor and health condition

Most respondents 337 (86%) had never smoked, while 1(0.3%) were current smokers and 54(13.8%) were former smokers. Regular secondhand smoke exposure was reported by 153(39%) among those 92(23.5) and 58(14.8) were exposed frequently and occasionally respectively. Alcohol was consumed occasionally by 216(55.1%). About 164(41.8%) exercised daily, and 175(44.6%) drank less than 1 liter of water per day. Regarding diet for kidney health,

138(35.2%) rated theirs as very poor. The most common health condition was hypertension 215 (54.8%), while 133(34%) reported no listed conditions.

Table 3 Personal factor and health condition of CKD patients at Black lion and SPMMCH 2024/25

Variables	Categories	Frequency (%)
smoked tobacco	Yes, currently a smoker	1(0.3)
	Yes, Former smoker	54(13.8)
	Never smoker	337(86.0)
secondhand smoke	Yes	153(39.0)
	No	239(61.0)
Place of secondhand smoke exposure	Home	14(3.6)
	Workplace	114(29.1)
	Social settings	102(26.0)
	Other (please specify)	0
Frequency secondhand smoke	Rarely	3(0.8)
	Occasionally (1–2 times a week)	58(14.8)
	Frequently (3–5 times a week)	92(23.5)
Consumtion alcohol	Yes, daily	15(3.8)
	Yes, occasionally	216(55.1)
	Never	161(41.1)
Amount of alcohol	1-2	9(2.3)
	3-4	3(0.8)
	5 and more	3(0.8)
Regular exercise per week	Daily	164(41.8)
	Weekly	86(21.9)
	Rarely	35(8.9)
Average daily water intake	Less than 1 liter	175(44.6)
	1-2 liters	176(44.9)
	More than 2 liters	41(10.5)
How would you rate your diet in terms of kidney health (low salt, low protein, etc.)?	Good	66(16.9)
	Average	105(26.8)
	poor	221(56.4)
Co-morbidity	Hypertension	215(54.8)
	Diabetes	111(28.3)
	Cardiovascular disease	83(21.2)
	Cancer	7(1.8)
	HIV	7(1.8)
	Stroke	19(4,8)
	Urinary tract infections	52(13.3)
	None	133(34)
kidney function checking	At least once a year	101(25.8)
	Every few years	11(2.8)
	Only when symptoms arise	226(57.7)
	Never	54(13.8)

Section 4 General occupational history

The most common occupation among respondents was office work 83(21.2%), followed by agriculture/farming 58 (14.8%). Most 316 (80.6%) were employed full-time, with 15 (3.8%) doing shift work 14 (3.6%) of whom worked night shifts. About 157 (40.1%) had over 15 years of work experience. Daily working hours varied: 116 (29.6%) worked 12 hours, 86 (21.9%) worked 10 hours, and 79 (20.2%) worked 8 hours. Nearly half 177 (45.2%) worked in indoor environments.

Table 4 General occupational history of CKD patients at Black lion and SPMMCH 2024/25

Variables	Categories	Frequency(percent)
Current occupation	Agriculture/Farming	58(14.8)
	Manufacturing/Factory Work	35(8.9)
	Construction	17(4.3)
	Healthcare	14(3.6)
	Mining	2(0.5)
	Transportation	28(7.1)
	Office Worker	83(21.2)
	Merchants	51(13.0)
	Religious leaders (priest, pastor, sheh)	4(1.0)
	Housewife	34(8.7)
	Students	22(5.6)
	Non employed	4(1.0)
	Private employed	40(10.2)
Type of factory	Metal work	5(1.3)
	Woodwork	12(3.1)
	Soap and Detergent	5(1.3)
	Automotive repair/Garaj	7(1.8)
	Textile	6(1.5)
Work status	Full-time	316(80.6)
	Part-time	5(1.3)
	Shift work	15(3.8)
	Less than 1 year	5(1.3)
	1-5 years	37(9.4)
Current occupation	6-10 years	70(17.9)
	11-15 years	65(16.6)
	More than 15 years	157(40.1)
hours of work	8.00	79(20.2)
	Above 8.00	253(64.5)
	Outdoor	108(27.6)
Work environment	Indoor	177(45.2)
	Both	47(12.0)

Section 5: Occupational Hazard Exposure

Regarding workplace hazards, physical hazards were the most frequently reported, 293(74.7%), followed by psychosocial hazards, 226 (57.7%) and chemical hazards 107 (27.3%).

Fig 2 Bar graph of occupational hazards

I. Physical work hazards

Most respondents 293(74.7%) worked in roles requiring prolonged standing or sitting, indicating high static postural demands. About 117(29.8%) reported frequent exposure to heat or dehydration risk at work. Noise exposure was common for 69(17.6%), mainly from machinery 45(11.5%). Noise was experienced daily by 48(12.2%) and frequently (3–5 times/week) by 24(6.1%). Hearing protection use was low only 2(0.5%) used it consistently, 6(2.6%) occasionally, and 61(17.9%) not at all

Table 5: Physical work hazards of CKD patients at Black Lion and SPMMCH 2024/25

Variables	Categories	Frequency (%)
Prolonged sitting	Yes	293(74.7)
	No	29(7.4)
High temperatures	Yes, frequently	117(29.8)
	Yes, occasionally	78(19.9)
	No	137(34.9)
High levels of noise	Yes	69(17.6)
	No	259(66.1)
Type of noise sources	Machinery	45(11.5)
	Transportation vehicles	37(9.4)
	Tools	26(6.6)
Frequency of exposure to high noise levels	Occasionally (1–2 times a week)	3(0.8)
	Frequently (3–5 times a week)	24(6.1)
	Daily	48(12.2)
Duration of exposure to high noise levels per shift	Less than 8 hrs	1(0.3)
	8 hrs	11(2.8)
	greater than 8 hrs	36(9.2)
Hearing protection equipment	Yes,	8(3.1)
	No	61(15.6)

II. Chemical and Dust hazards

About 111(28.3%) of respondents reported workplace chemical exposure, mainly to pesticides/herbicides 59(15.1%), Heavy metals 22(5.9) organic solvents 27(6.9%), and cleaning agents 23(5.9%). Key exposure sources included handling raw chemicals 93(23.7%) and manufacturing processes 21(5.4%). Daily contact was reported by 44(11.2%), with 22(5.7%) exposed for over 8 hours per shift. PPE use was low only 31(7.9%) used gloves, 19(4.8%) wore masks or respirators, while 64(16.3%) used no protection at all.

Table 6: Chemical and Dust hazards of CKD patients at Black lion and SPMMCH 2024/25

Variables	Categories	Frequency(%t)
Contact with any chemicals at work	Yes	111(28.3)
	No	221(56.9)
Types of chemicals:	Heavy metals	23(5.9)
	Organic solvents	27(6.9)
	Pesticides/herbicides	59(15.1)
	Cleaning agents	23(5.9)
Primary sources of chemical exposure	Handling raw chemicals	93(23.7)
	Manufacturing processes	21(5.4)
use chemicals in your workplace	Daily	44(11.2)
	Monthly	32(8.2)

	Rarely	15(3.9)
	Weekly	18(4.6)
Duration of exposure per shift	8 hrs	16(4.1)
	Less than 8 hrs	6(1.5)
	more than 8 hrs	22(5.7)
Protective equipment when handling chemicals	Gloves	31(7.9)
	Masks/respirators	19(4.8)
	Goggles	9(2.3)
	Protective clothing	16(4.1)
	None	64(16.3)
Area where chemical exposure occurs:	Well-ventilated	100(25.5)
	Limited ventilation	6(1.5)
	Poor ventilation	1(0.3)
	Yes	24(6.1)
Conducted in enclosed areas	No	84(21.4)
Chemical exposure areas	Yes	22(5.6)
	No	86(21.9)
Training on safe chemical handling	Yes	13(3.3)
	No	95(24.2)
Material Safety Data Sheets (MSDS) for the chemicals you handle	Yes	8(2.0)
	No	100(25.5)
health screenings	Yes	7(1.8)
	No	101(25.8)
High levels of dust	Yes	168(42.9)
	No	165(42.1)
Types of dust	Mineral dust	8(2.0)
	Metal dust	19(4.8)
	Organic dust	54(13.8)
	Synthetic dust	18(4.6)
	Soil or construction dust	124(31.6)
	Soot or carbon-based particles	7(1.8)
	Vehicles/ transportation	43(11.0)
	Daily	147(37.5)
	Weekly	17(4.3)
Exposure frequency	Monthly	4(1.0)
	Rarely	6(1.5)
duration of exposure per shift	Less than 8 hrs	22(5.6)
	8hrs	43(11.0)
	More than 8 hrs	82(20.9)

III. Biological Hazards

Of all respondents, 53(13.5%) reported working in environments with potential exposure to infectious agents, mainly fungi or molds like aspergillus 45(11.5%). Common sources included animals or animal waste 42(10.7%) and contact with patients in healthcare or labs 12(3.1%).

Daily exposure was reported by 32(7.9%), with 22(5.6%) exposed for over 8 hours per shift. Only 12(3.1%) used PPE such as gloves or masks, while 34(8.7%) used no protection at al

Table 6: Biological work hazards of CKD patients at Black lion and SPMMCH 2024/25(n = 401**)**

Variables	Categories	Frequency(%)
Exposure to infectious agents	Yes	53(13.5)
	No	279(70.6)
Types of biological agents	Bloodborne pathogens	16(4.1)
	Bacteria	15(3.8)
	Viruses	17(4.3)
	Fungi or molds	45(11.5)
	Parasites	17(4.3)
	Animal or human bodily fluids	26(6.6)
Primary source of biological hazard exposure	Human patients	12(3.1)
	Animals or animal waste	42(10.7)
	Contaminated	1(0.3)
	Daily	32(7.9)
Frequency of exposure to biological agents:	Weekly	19(2.3)
	Rarely	2(0.8)
Duration of exposure	Less than 8 hrs	2(0.5)
	8hrs	8(2.0)
	More than 8 hrs	22(5.6)
Protective equipment for biological hazards	Yes	12(3.1)
	No	34(8.7)

IV. Psychosocial Factors

The results of the study indicate that a majority of respondents 221(56.4%) of participants reported experiencing high work-related stress. When asked about the frequency of stressful situations at work, 112 (28.6%) reported experiencing stress on a daily basis. Among those who reported daily work-related stress, 70(17.9%) indicated that the stress lasts for more than 8 hours.

Table 7 Psychosocial hazards of CKD patients at Black lion and SPMMCH 2024/25

Variables	Categories	Frequency(%)
High work-related stress	Yes	221(56.4)
	No	113(28.8)
Under pressure due to deadlines	Yes	192(49.0)
	No	29(7.4)
Frequency of stressful situations	Daily	112(28.6)
	Weekly	74(18.9)
	Monthly	5(1.3)
	Rarely	13(3.3)
Duration of stress	8 hrs	29(7.4)
	Less than 8 hrs	14(3.6)

More than 8 hrs	70(17.9)

Section 6 Work Productivity and Activity Impairment (WPAI)

Among the 392 respondents, 165(42.1%) were employed in the past 7 days, while 169 (43.1%) were not. WPAI results show a significant impact of health conditions on productivity: 28.1% of work time was missed (absenteeism), and 165(54.7%) reported reduced productivity while at work (presenteeism), leading to an overall work impairment of 165(70.3%). Additionally, 165(60.7%) experienced limitations in daily non-work activities, showing that the condition affects overall functioning beyond the workplace.

Table 8 WPAI summary of CKD patients at Black lion and SPMMCH 2024/25 (n = 401)

WPAI components	Valid (N)	Mean (%)
Work Time Missed (Absenteeism	165	28.1(10.65)
Reduced Productivity While Working (Presenteeism)	165	54.7(18.8)
Overall Work Impairment (Absenteeism + Presenteeism)	165	70.3(53.2)
Activity Impairment Outside of Work:	392	60.7(14.8)

Section 7 Awareness and Preventive Measures

About 10.2% (40) reported significant health changes due to their job, and 44.4% (174) believed their work negatively affected their well-being. Only 18.1% (71) were aware of job-related CKD risks, while 79.1% (310) had not received any related training or information. Most (76%, 298) lacked access to regular health checkups, and 81.4% (319) said their workplace lacked safety protocols like training or PPE. However, 82.4% (323) reported their work areas were well-ventilated.

Table 9 Awareness and preventive Measure of CKD patients at Black lion and SPMMCH2024/25

Variables	Categories	Frequency (%)
Risks for chronic kidney disease related to job	Yes	71(18.1)
	No	262(66.8)
Training about occupational hazards linked to CKD	Yes	20(5.1)
	No	310(79.1)
Regular medical checkups through your workplace	Yes	35(8.9)
	No	298(76.0)
Safety protocols for handling occupational hazards	Yes	14(3.6)
	No	319(81.4)
Safety concerns	Yes	11(2.8)
	No	323(82.4)
Ventilation in your work area	Well-ventilated	323(82.4)

	Limited ventilation	11(2.8)
	Poor ventilation	1(0.3)
Are you currently employed within 7 days (working for pay)	Yes	165(42.1)
	No	169(43.1)

Characterization of the Top Six Occupations with Occupational Hazards

1. Office Workers

Among respondents, office work was the most common occupation 83(21.2%). Most office workers 61(72.9%) were over age 41 and smaller groups aged 18–30age 21(25.4%) and 31–40 7(8.8%). Among office workers, 74(89%) reported physical hazards,35 (41.8%) ergonomic hazards and 72(86.8%) of office workers reporting high stress levels due to job demands, tight deadlines, and low control over tasks. About 51(61.5%) experienced pressure from deadlines, with 29(39.7%) and 18(24.2%) facing this stress daily or weekly. Of those exposed daily, 22(74.8%) reported 8-hour daily stress.

Among office workers, 54(64.8%) reported no diagnosed health condition, yet only 12(14.3%) noted minor health changes. Nearly half 39(47.3%) felt their job negatively affected their health, and 32(38.5%) perceived a CKD risk. However, 76(91.2%) lacked access to regular medical checkups, and 43(51.8%) had no workplace accommodations to reduce exposure to hazards.

2. Agriculture

Agriculture/farming was the second most common occupation among respondents, accounting for 58(14.8%). Among these, 37(64%) reported working in "very hot" conditions and 11(18%) in "moderately hot" climates. Physical hazards were reported by 39(67.2%), frequent or occasional exposure to heat and dehydration was reported by 23(40%) and 16(27.3%), respectively. Chemical exposure was high 51(86.4%), mostly from pesticides and herbicides, with 35(69%) handling raw chemicals without protective equipment. Only 4(6.8%) reported biological exposure.

Among agricultural workers, 55(96.4%) reported working in dusty environments, with 36(65%) frequently exposed to soil or construction dust and 19(34.4%) to organic dust. Self-rating on kidney related nutrition 7(12%) and 6(10%) rating theirs as "poor" or "very poor." Among farmers,34 (58.2%) drank less than 1 liter of water daily, 22(38.2%) consumed 1–2 liters, and only 3(3.9%) drank more than 2 liters. While 32(55.1%) of farmers reported no diagnosed health conditions.

2. Manufacturing/factory

Of the 392 respondents, 35 (8.7%) worked in manufacturing or factory settings. Among them were metal workers 5(14.2%), wood workers 12(34.3%), soap/detergent workers 5(14.2%), garage/automotive repair workers 7(20%), and textile workers 6(17.2%). A large majority 31(88.2%) reported spending extended time in hot environments, while 17(47.1%) were occasionally exposed to high temperatures or dehydration at work.

In the manufacturing sector, prolonged standing and exposure to high noise levels are prevalent. Approximately10(26.5%) of respondents reported exposure to noise levels exceeding 85 dB. Among those worker exposed to noise 2(17.6%) daily, out of those exposed 3(32.4%) for more than 8 hours. Only 3(26.5%) consistently used hearing protection, while 7(70%) did not use

Among 35 manufacturing workers with CKD reported exposure to chemical hazards 29(82.3%), The most frequently cited chemical types among this group include heavy metals 16(52.2%), organic solvents 19(63%), and cleaning agents 13(43.5%).

Primary sources of these chemical hazards are handling raw chemicals 5(14.7%) and manufacturing processes 11(38.2%). Daily exposure was reported by 18(61.7%) of respondents, with 7(35.3%) exposed for more than 8 hours. Only 4(14.7%) reported using gloves alone, while 25(72%) indicated not using any protective equipment. Among these workers, 32(91.2%) reported working in dusty environments. The most common types of dust reported were: Metal dust: 13(40.6%), 15(46.9%) organic dust, 11(34.4%) soil or construction dust and 2(4.6%) mineral dust, substances like silica and asbestos.

Among factory workers, common dust exposure sources included cutting, grinding, or drilling 7(20.5%) and operating heavy machinery 4(11.8%). Most 25(79.4%) reported daily exposure to dust, fumes, or gases, with 9(35.3%) exposed for 8 hours and 11(41.2%) for over 8 hours per shift.

Psychosocial hazards were reported by 31(88.2%) of workers with CKD. 26(82.4%) worked under pressure from deadlines. Over half faced weekly stress and 11.8% reported daily stress. Most manufacturing workers with CKD (76.5%) were full-time; 23.5% did shift work. Long shifts were common 20(65.3%) worked 12-hour days, and 9(29.4%) worked 14-hour days—while only 2(5.9%) had 8-hour shifts.

Regarding lifestyle, 22.6(64.7%) occasionally consumed alcohol, and most rated their diets poorly 12(35.3%) as very poor and 26.5% as poor. Only 5(14.7%) drank more than 2 liters of water daily. About 17(47.1%) felt their job negatively impacted their health, while 11(29.4%) noticed significant health changes due to work. Nearly a quarter 8(23.5%) believed their job increased their CKD risk. Despite these challenges, 32(91.2%) reported working in well-ventilated spaces. Notably, 17(47.1) had no diagnosed health condition.

4. Merchants

Among the 392 respondents, merchants were 51(13%). Respondents reported that: Physical hazards 40(78.9%), ergonomic risks 6(12.3%), and prolonged standing 40(77.2%) were prevalent among merchants.

Noise exposure was also notable, with 10(17.5%) merchants regularly exposed to levels above 85 dB and 7(70%) reporting daily exposure. Additionally, 31(60%) faced frequent or occasional heat and dehydration risks at work. 30(59%) merchants exposed to dusty environment. Work-related stress was widespread 29(57.8%) experienced high stress, 19(68%) daily, and 7(24.5%) weekly. Of those with CKD, 14(75.4%) endured stress for over 8 hours daily.

Regarding lifestyle factors: 27(52.6%) were non-smokers, 5(10.5%) were former smokers, but secondhand smoke exposure was higher among CKD individuals. Over half 28(54.4%) with CKD abstained from alcohol, and 22(43.9%) exercised daily. Diet awareness was moderate 12(22.8%) had a good-to-excellent diet, though 23(45.6%) had low water intake. Furthermore, 21(42.1%) felt their job harmed their health, and over half acknowledged occupational risk for kidney disease. Only 5(8.8%) reported a family history of CKD, and just 8(15.8%) had no prior health issues.

5.Transportation

Among the 392 respondents, transportation worker was 28(7.1%). All 28 transportation workers reported exposure to physical hazards. Nearly all 27(96.4%) worked in roles requiring prolonged sitting. Additionally, 11(39.3%) experienced regular noise exposure above 85 dB, mainly from vehicles and machinery. Most exposure was occasional 17(60.7%), while 4(14.3%) experienced it daily. No workers reported using hearing protection. Ergonomic hazards were reported by 12(42.9%).

Psychosocial hazards were nearly universal 27(96.4%), with 9(32.1%) of CKD cases working 12-hour days. Among CKD cases, the most reported exposures were vehicle/transport dust 13(46.4%) and construction/soil dust 9(32.1%).

Among the respondents, 15(53.6%) were former smokers and 13(46.4%) had never smoked, with no current smokers identified. However, 15(53.6%) reported regular secondhand smoke exposure 6(21.4%) of them exposed frequently and they were primarily exposed in social settings and workplaces, with a notable portion 8(28.6%) Alcohol was consumed occasionally by 16(57.1%) of participants. Exercise habits varied, with 15(53.5%) exercising occasionally and 5(17.9%) daily. Diet quality was low: 12(42.9%) rated it as very poor and 7(25%) as poor.

Job-related health concerns were common 13(44.4%) felt their job negatively affected their health, and 3(10.7%) noticed minor changes. Most 24(85.7%) lacked regular workplace medical checkups and access to safety modifications. Only 1(0.3%) reported a family history of CKD. Finally, 20(71.4%) reported no diagnosed health conditions.

6. Construction

Out of 392 respondents, 17 (4.3%) were construction workers. Among construction workers 15(88.2) reported prolonged standing, and 8(53.3%) faced frequent heat and dehydration exposure. Regular noise exposure (>85 dB) affected 11(73.3%), with most exposed for over 8 hours per shift from tools and machinery. Nearly half 8(72.7%) did not use hearing protection.

Ergonomic hazards affected 10(58.8) workers and chemical exposure was reported by 12(70.5%), including raw chemical handling 7(58.3%) and exposure related to manufacturing processes 10(83%). Only 8(66,6%) worked in enclosed, ventilated areas. Most were exposed for under 8 hours daily. About 9(75%) said their employer provided health screenings, and 8(66.7%) used gloves, sometimes with additional PPE.

All construction workers 17(100%) reported working in dusty environments, with 15(85.7%) exposed daily. Of those, 6(38.1%) were exposed for over 8 hours. Common particulates included construction dust, vehicle exhaust, synthetic fibers, and metal particles often in combination 12(68%).

Work-related stress was also widespread, with 16(94.1%) experiencing high stress and pressure from deadlines or productivity demands. Stress frequency was reported as daily 7(43.75%), weekly 3(18.75%), and monthly 6(37.5%). Additionally, 5(71.4%) of workers reported working more than 10 hours per day. Among construction workers, 8(47%) were former smokers, and none were current smokers. However, 9(52.9%) were regularly exposed to secondhand smoke, 5(29.4%) in social and workplace settings.

Among construction workers, 6(32.1%) reported frequent exposure to occupational hazards. Most used alcohol occasionally, and 3(17.9%) exercised daily. Water intake was moderate, with 10(57.1%) consuming 1–2 liters daily. Only 3(14.3%) believed their job somewhat increased their risk of kidney disease. In the construction sector, 15(85.7%) reported no workplace modifications to reduce hazard exposure, and only 3(14.3%) had access to employer-provided medical checkups. While 13(76.4%) had no diagnosed health conditions.

Table 10 characterization of occupational risk factors of CKD

Variable	Category	Frequency (%)
Office worker	Physical hazards	74(89%)
	Ergonomics hazards	35(41.8%)
	Psychosocial hazards	72(86.8%)
Agriculture/farming	Physical hazards	39(67.2%)
	Chemical hazards	51(86.4%)
	Biological hazards	4(6.8%)
Manufacturing/factory worker	Physical hazards	35(100%)
	Chemical hazards	29(82.3%)
	Psychosocial hazards	31(88.2%)
Merchant	Physical hazards	40(78.9%)
	Ergonomics hazards	6(12.3%)
	Psychosocial hazards	29(57.8%)
Transportation	Physical hazards	28(100%)
	Ergonomics hazards	12(42.9%)
	Psychosocial hazards	27(96.4%)
Construction	Physical hazards	16(94.1%)
	Ergonomics hazards	10(58.8%)
	Chemical hazards	13(76.5%)
	Psychosocial hazards	16(94.1%)

Discussion

Out of 401 participants, 392 responded (97.8% response rate). The findings show distinct variations in occupational hazard exposure by job type. Physical hazards were most prevalent among factory, transportation, and construction workers, reflecting the risks of physically demanding roles. Ergonomic hazards were frequently reported by construction and office workers, primarily due to poor posture, repetitive tasks, and inadequate workstations factors linked to musculoskeletal problems and potential indirect effects on kidney health [69].

Prolonged sitting was reported by 74(89%) of office worker and 27(96.4%) of transportation workers sedentary behavior associated with obesity, hypertension, and metabolic syndrome, all risk factors for CKD [138]. This may explain why the study found that 28(34.2%) of office workers under the age of 40 are more vulnerable to CKD. Consistent with these findings, several studies have linked prolonged occupational sitting to increased kidney disease risk. Sedentary behavior has been associated with a higher likelihood of proteinuria, an early marker of kidney damage [6,138]. One study reported a significant association between extended sitting and chronic kidney disease (CKD), with an odds ratio of 1.26 [139]. In support of this, the 2020 KDIGO guidelines advised reducing sedentary time due to its link with higher CKD-related hospitalization and mortality [140].

Heat exposure in the workplace is significant, especially among merchants, transportation workers, and construction workers. Prolonged heat exposure without proper hydration increases the risk of heat stress nephropathy, particularly in outdoor jobs [89].These findings align with previous research. A UK cohort study reported that physically demanding jobs and poor working conditions increase the risk of dehydration, with occupational heat exposure linked to a 1.24 times higher risk of chronic kidney disease (CKD) [69]. Similarly, a study in Central America identified working-age male agricultural workers especially sugarcane laborers—as high-risk due to heat stress, intense labor, limited shade, and poor access to clean water. Other vulnerable occupations include port workers, rice farmers, miners, construction workers, and cotton industry laborers [87–89].

High noise exposure (>85 dB) was reported by manufacturing workers, merchants, and transportation workers. Chronic noise can lead to hypertension, oxidative stress, and vascular damage factors contributing to CKD [136]. Supporting this finding, cross-sectional studies from China and Korea reported significantly higher CKD prevalence among workers exposed to occupational noise, with odds ratios of 1.77 and 2.72, respectively [134,135]. Further evidence from a cross-sectional study, meta-analysis, and cohort study showed odds ratios of 1.2, 1.39, and 1.25, respectively, linking occupational noise exposure to increased hypertension risk a key contributor to CKD [136,137]. These studies highlight a significant association between noise exposure and both hypertension and CKD.

According to this finding chemical hazards were common in agriculture and nearly half of farmers were exposed to pesticides/herbicides without protective equipment. These findings are consistent with studies from India, which found a strong link between agricultural work and CKD, particularly in areas with high pesticide use, where farming remained an independent risk factor [74,75]. In Indonesia, CKD prevalence among male farmers was reported at 24.9%, with risk increasing alongside longer and more frequent insecticide use [76]. Similarly, agricultural work in countries such as Cameroon, Malawi, Morocco, and Kenya have been associated with over twice the risk of CKD, with prevalence rates ranging from 6.5% to 16.2% [44,77,78]. Further evidence from African studies reinforces this link. A Moroccan study found a 1.4-fold increased CKD risk from agrochemical exposure, including pesticides and insecticides [78]. In Ghana, agricultural workers exposed to these chemicals had a three-fold higher CKD rate [81]. Similarly, in rural Nigeria, agrochemical applicators faced an 81.6% greater risk of CKD compared to non-exposed individuals [82].

Manufacturing workers commonly reported exposure to heavy metals, organic solvents, cleaning agents, and harmful dust particles such as silica and metal dust. These substances are known to cause kidney inflammation and toxicity. Studies have linked prolonged exposure to heavy metals and solvents in such settings to impaired kidney function and potential renal failure [83–86]. Additional research highlights nephrotoxic substances like lead, mercury, glycol ethers, chromium, and welding fumes as key occupational CKD risk factors [19,66,67]. In addition, a study from North Carolina Memorial Hospital found a 40% increased CKD risk from silica exposure [29], while research from Pakistan showed elevated CKD-related biomarkers among garage workers exposed to chemicals [72].

Psychosocial hazards were most common among transportation, construction, and office workers, and most participants reported full-time work, with shift work especially night shifts primarily observed among factory workers. Chronic stress often tied to job pressure, long hours, and low autonomy, from these conditions may elevate cortisol and blood pressure, increasing CKD risk [109]. Prior studies have linked shift work to circadian rhythm disruption, poor sleep hypertension, obesity, metabolic syndrome, and heightened stress and inflammation [69]. In addition, a U.S. study found that occupations involving workplace stressors such as job strain and shift work were linked to increased CKD risk due to heightened sympathetic activity.[71]

This study results showed that the WPAI results indicate that chronic kidney disease (CKD) significantly impairs both work productivity and daily functioning.

CKD patients missed over a quarter of their working hours, largely due to medical appointments, dialysis, and managing health complications. Supporting this finding, studies in Bishoftu town and Lume district in Ethiopia reported sickness absenteeism rates of 54.5% and 58.8%, respectively, with contributing factors including lack of regular medical checkups, shift work, occupational stress, and job dissatisfaction [129,130]. Similarly, a multi-country study (France, Germany, Italy, Spain, the UK, USA, and China) found a mean absenteeism rate of 18.6% among CKD patients with low hemoglobin levels [128], while a U.S. survey reported an even higher rate of 21.6% among dialysis patients [142].

Among those attending work, productivity dropped by over half, likely due to CKD-related fatigue, anemia, cognitive issues, and treatment side effects. This finding is consistent with a multinational study across seven countries that reported a mean presenteeism rate of 26.5% among CKD patients with low hemoglobin levels, indicating significantly reduced productivity despite being present at work [138].

Overall work impairment was high among CKD patients, reflecting significant economic and personal burdens, including job instability, financial strain, and limited career advancement. multinational study reported a 42.7% overall work impairment among CKD patients with low hemoglobin levels, while a U.S. survey showed a 44.3% activity impairment in dialysis patients, underscoring CKD's significant impact on work performance [138].

CKD patients experienced high activity impairment beyond the workplace. This finding is consistent with a multinational study reporting 55.6% among those with low hemoglobin levels [138], and a U.S. survey showing a similar rate of 55.5% indicating significant limitations in daily tasks, household management, and social engagement [142].

The study findings showed that a high percentage of workers reported no diagnosed co-morbid conditions: office workers 43 (51.8%), farmers 32 (55.1%), factory workers 17 (47.1%), merchants 8 (15.8%), transportation workers 20 (71.4%), and construction workers 13 (76.4%). This suggests that the occupational hazards mentioned above may contribute to the development of CKD even in the absence of pre-existing co-morbidities.

6. STRENGTH AND LIMITATION

Strength: The study employed an optimal sample size and included the two leading referral hospitals, which serve a high volume of patients from across the nation. This provided easier access to CKD patients and enabled the characterization of various occupational sectors along with their associated hazards and implications**.**

Limitation: This study lacked a control group, preventing bivariate and multivariate analysis to assess statistical associations between specific occupational hazards and CKD. Renal function tests are required to confirm CKD-free status, but most patients at the two referral hospitals present with chronic or severe conditions, making it difficult to identify true controls. Future studies should consider cohort or case-control designs with adequate time and budget to include confirmatory kidney testing.

7. Conclusion

The findings reveal that occupational hazards are common across all employment sectors, with physical hazards emerging as the most widespread concern. Psychosocial hazards also appear frequently, suggesting significant levels of job-related stress and mental health challenges in both manual and office-based occupations. Ergonomic risks are notable in sectors involving either physically demanding labor or prolonged sitting. Chemical hazards are primarily associated with agriculture, manufacturing, and construction, while biological hazards are limited and mainly observed in agricultural settings. Overall, each occupation demonstrates a distinct combination of hazard exposures, emphasizing the importance of developing targeted occupational health and safety strategies tailored to the specific risks present in different work environments.

8. Recommendations

- Implement tailored safety programs with regular training and audits to address job-specific risks.
- Prioritize mental health support through stress management resources and open communication.
- Improve ergonomic conditions by redesigning tasks and workstations to reduce physical strain.

- Ensure proper and consistent use of personal protective equipment (PPE) with clear usage guidelines.
- Establish proactive risk assessments to identify and mitigate hazards across all sectors.
- Future research should aim to evaluate the occupational risk factors for CKD through cohort and case-control study designs

9. REFERENCES

1. Ababio GK, Bosomprah S, Olumide A, Aperkor N, Aimakhu C, et al. (2017) Predictors of quality of life in patients with diabetes mellitus in two tertiary health institutions in Ghana and Nigeria. Niger Postgrad Med J 24: 48-55.
2. Amira O, Taslim B, William R (2014) Chronic kidney disease: a ten-year study of aetiology and epidemiological trends in Lagos, Nigeria. Brit J Renal Med 19: 19-23.
3. Rajapakse, S., Shivanthan, M. C., & Selvarajah, M. (2016). Chronic kidney disease of unknown etiology in Sri Lanka. International Journal of Occupational and Environmental Health, 22(3), 259–264. https://doi.org/10.1080/10773525.2016.1203097.
4. Floris M, Lepori N, Angioi A, et al. Chronic kidney disease of undetermined etiology around the world. Kidney Blood Press Res. 2021; 46(2): 142-451.
5. Johnson RJ, Wesseling C, Newman LS. Chronic Kidney Disease of unknown cause in Agricultural communities. N Engl J Med. 2019;380(19):1843–52.
6. Uhm JY, et al. The association between shift work and chronic Kidney Disease in manual labor workers using data from the Korea National Health and Nutrition Examination Survey (KNHANES 2011–2014). Ann Occup Environ Med. 2018;30:69.
7. Lee DW, et al. Long work hours and decreased glomerular filtration rate in the Korean working population. Occup Environ Med. 2020;77(10):699–705.
8. Moyce S, et al. Heat strain, volume depletion and kidney function in California agricultural workers. Occup Environ Med. 2017;74(6):402–9.
9. Nugent RA, Fathima SF, Feigl AB, Chyung D (2011) He burden of chronic kidney disease on developing nations: A 21st century challenge in global health. Nephron Clin Pract 118: 269-277.
10. Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017Bikbov, Boris et al.The Lancet, Volume 395, Issue 10225, 709 – 733.
11. Jager KJ, Fraser SDS. The ascending rank of chronic kidney disease in the global burden of disease study. Nephrol Dial Transplant. 2017;32(suppl 2):ii121–ii128.
12. Ke C, Liang J, Liu M, Liu S, Wang C. Burden of chronic kidney disease and its risk-attributable burden in 137 low- and middle-income countries, 1990-2019: results from the global burden of disease study 2019. BMC Nephrol. 2022;23(1):17.
13. Jha V, Garcia-Garcia G, Iseki K, et al. Chronic kidney disease: global dimension and perspectives. Lancet. 2013;382(9888): 260-272.
14. Paidi G, Iroshani Jayarathna AI, Salibindla DBAMR, et al. Chronic kidney disease of unknown origin: a mysterious epidemic. Cureus. 2021; 13(8):e17132.
15. Kaze AD, Ilori T, Jaar BG, Echouffo-Tcheugui JB. Burden of chronic kidney disease on the African continent: a systematic review and meta-analysis. BMC Nephrol. 2018;19(1):125.
16. Stanifer JW, Jing B, Tolan S, et al. The epidemiology of chronic kidney disease in Sub-Saharan Africa: a systematic review and metaanalysis. Lancet Glob Health. 2014;2(3):e174-e181.
17. Kebede KM, Abateneh DD, Teferi MB, Asres A. Chronic kidney disease and associated factors among adult population in Southwest Ethiopia. PLoS One. 2022;17(3):e0264611.

18. Ibrahim A, Ahmed MM, Kedir S, Bekele D (2016) Clinical profile and outcome of patients with acute kidney injury requiring dialysis: An experience from a haemodialysis unit in a developing country. BMC Nephrology 17: 1-5.
19. Landrigan PJ, Goyer RA, Clarkson TW, et al. The work-relatedness ofrenal disease. Arch Environ Health. 1984;39(3):225–230.
20. Nuyts GD, Van Vlem E, Thys J, et al. New occupational risk factorsfor chronic renal failure. Lancet. 1995;346(8966):7–11.
21. Rhoads CS, Daniell WE. Renal and bladder disorders. In: Rosenstock L,Cullen MR, Brodkin CA, Redlich CA, editors. Textbook of ClinicalOccupational and Environmental Medicine, 2nd ed. Philadelphia:Elsevier Health Sciences; 2005:565–586. Available at: http://www.sciencedirect.com/science/article/pii/B9780721689746500294.
22. Stengel B, Cénée S, Limasset JC, et al. Organic solvent exposure mayincrease the risk of glomerular nephropathies with chronic renal failure.Int J Epidemiol. 1995;24(2):427–434.
23. Reviere R, Schneider S, Woolbright K. Associations between diseaseand occupation: hypotheses generated from the National MortalityFollowback Survey. Am J Ind Med.1995;27(2):195–205.
24. https://www.Global burden of diseasehealthdata.org/research-analysis.
25. Hosseinpanah F, Kasraei F, Nassiri AA, et al. High prevalence of chronic kidney disease in Iran: a large population-based study. BMC Public Health 2009; 9: 44.
26. Shan Y, Zhang Q, Liu Z, et al. Prevalence and risk factors associated with chronic kidney disease in adults over 40 years: a population study from Central China. Nephrology (Carlton) 2010; 15(3): 354–361.
27. Kim S, Lim CS, Han DC, et al. The prevalence of chronic kidney disease (CKD) and the associated factors to CKD in urban Korea: a population-based cross-sectional epidemiologic study. J Korean Med Sci 2009; 24 Suppl: S11–S21.
28. Hasan M, Sutradhar I, Gupta RD, et al. Prevalence of chronic kidney disease in South Asia: a systematic review. BMC Nephrol 2018; 19: 291.
29. Vupputuri, S., Parks, C. G., Nylander-French, L. A., Owen-Smith, A., Hogan, S. L., & Sandler, D. P. (2011). Occupational Silica Exposure and Chronic Kidney Disease. Renal Failure, 34(1), 40–46. https://doi.org/10.3109/0886022X.2011.623496.
30. Lola N, Kever RT, Uba MN, Sambo BD, Dathini H, et al. (2014) Predisposing factors to chronic renal failure among clients attending kidney center of University of Maiduguri Teaching Hospital, NorthEastern, Nigeria. J Res Nurs Midwifery.
31. Hill, N.R.; Fatoba, S.T.; Oke, J.L.; Hirst, J.A.; O'Callaghan, C.A.; Lasserson, D.S. Global Prevalence of Chronic Kidney Disease—A Systematic Review and Meta-Analysis. PLoS ONE 2016, 11, e0158765.
32. Hooi, L.S.; Ong, L.M.; Ahmad, G.; Bavanandan, S.; Ahmad, N.A.; Naidu, B.M.; Mohamud, W.M.W.; Yusoff, M.F.M. A population-based study measuring the prevalence of chronic kidney disease among adults in West Malaysia. Kidney Int. 2013, 84, 1034–1040.
33. Abd ElHafeez S, Bolignano D, D'Arrigo G, et al. Prevalence and burden of chronic kidney disease among the general population and high-risk groups in Africa: a systematic review. BMJ Open 2018;8:e015069. doi:10.1136/ bmjopen-2016-015069.

34. Seck SM, Doupa D, Gueye L, et al. Prevalence of chronic kidney disease and associated factors in senegalese populations: a community-based study in saint-louis. Nephrourol Mon 2014; 6(5): e19085.
35. Oluyombo R. The prevalence, risk factors and pattern of chronic kidney disease in Ilie, Osun state, south-west Nigeria. 2010.
36. Rwegerera GM, Bayani M, Taolo EK, et al. The prevalence of chronic kidney disease and associated factors among patients admitted at princess marina hospital, Gaborone, Botswana. Niger J Clin Pract 2017; 20(3): 313–319.
37. Elsharif ME, Abdullha SM, Abdalla SM, et al. The magnitude of chronic kidney diseases among primary health care attendees in Gezira state, Sudan. Saudi J Kidney Dis Transpl 2013; 24(4): 807–809.
38. Moosa MR, Van der Walt I, Naicker S, Meyers AM (2015) Important causes of chronic kidney disease in South Africa. S Afr Med J 105: 320-327.
39. Kore C, Tadesse A, Teshome B, Daniel K, Kassa A, et al. (2018) The Magnitude of Chronic Kidney Disease and its Risk Factors at Zewditu Memorial Hospital, Addis Ababa, Ethiopia. J Nephrol Ther 8: 313. doi:10.4172/2161-0959.1000313.
40. Sertsu A, Worku T, Fekadu G, Tura AK. Prevalence of chronic kidney disease and associated factors among patients visiting renal unit of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia: A cross-sectional study design. SAGE Open Medicine. 2022;10. doi:10.1177/20503121221116942.
41. Kore C, Yohannes HM (2018) Prevalence of Chronic Kidney Disease and Associated factors among Patients with Kidney Problems Public Hospitals in Addis Ababa, Ethiopia. J Kidney 4: 162. doi:10.4172/2472-1220.1000162.
42. Ali A, Mulatu K, Feleke SF and Wassie GT (2023) Prevalence of chronic kidney disease and associated factors among patients with underlying chronic disease at Dessie Referral Hospital, East Amhara Region, Ethiopia. Front. Epidemiol. 3:1154522. doi: 10.3389/fepid.2023.1154522.
43. Muiru AN, Charlebois ED, Balzer LB, et al. The epidemiology of chronic kidney disease (CKD) in rural East Africa: a population-based study. PLoS One. 2020; 15(3)e0229649.
44. Nakanga WP, Prynn JE, Banda L, et al. Prevalence of impaired renal function among rural and urban populations: findings of a cross-sectional study in Malawi. Wellcome Open Res. 2019; 4: 92.
45. Peck R, Baisley K, Kavishe B, et al. Decreased renal function and associated factors in cities, towns and rural areas of Tanzania: a community-based population survey. Trop Med Int Health. 2016; 21(3): 393-404.
46. Wis K. Chronic kidney disease: when scientists disagree. Colombo, Sri Lanka: National Academy of Sciences of Sri Lanka; 2013.
47. Torres C, Aragón A, González M, López I, Jakobsson K, Elinder CG, et al. Decreased kidney function of unknown cause in Nicaragua: a community-based survey. Am J Kidney Dis. 2010; 55(3): 485–96.
48. Raines N, González M, Wyatt C, Kurzrok M, Pool C, Lemma T, et al. Risk factors for reduced glomerular filtration rate in a nicaraguan community affected by mesoamerican nephropathy. MEDICC Rev. 2014; 16(2): 16–22.
49. Cerdas M. Chronic kidney disease in Costa Rica. Kidney Int Suppl. 2005; 68(97): S31–3.

50. Laux TS, Barnoya J, Guerrero DR, Rothstein M. Dialysis enrollment patterns in Guatemala: evidence of the chronic kidney disease of non-traditional causes epidemic in Mesoamerica. BMC Nephrol. 2015; 16(1): 54.
51. Peraza S, Wesseling C, Aragon A, Leiva R, García-Trabanino RA, Torres C, et al. Decreased kidney function among agricultural workers in El Salvador. Am J Kidney Dis. 2012; 59(4): 531–40.
52. Oyebisi OO, Okunola OO, Jaiyesimi AE, et al. Prevalence and pattern of chronic kidney disease and its associated risk factors in a rural community in South Western Nigeria. West Afr J Med. 2018; 35(2):109-116.
53. George JA, Brandenburg JT, Fabian J, et al. Kidney damage and associated risk factors in rural and urban Sub-Saharan Africa (AWI-Gen): a cross-sectional population study. Lancet Glob Health. 2019;7(12): e1632-e1643.
54. Ulasi II, Ijoma CK. The enormity of chronic kidney disease in Nigeria: the situation in a teaching hospital in South-East Nigeria. J Trop Med. 2010;2010:501957.
55. Wachukwu CM, Emem-Chioma PC, Wokoma FS, Oko-Jaja RI. Pattern and outcome of renal admissions at the University of Port Harcourt Teaching Hospital, Nigeria: a 4 years review. Ann Afr Med. 2016;15(2):63-68.
56. Diouf B, Ka EF, Niang A, Diouf ML, Mbengue M, Diop TM. Etiologies of chronic renal insufficiency in a adult internal medicine service in Dakar. Dakar Med. 2000;45(1):62-65.
57. El Minshawy O. End-stage renal disease in the El-Minia governorate, upper Egypt: an epidemiological study. Saudi J Kidney Dis Transpl. 2011;22(5):1048-1054.
58. Desta BZ, Derseh BT, Dadi AF. Mortality and predictors of chronic kidney diseases (CKD) in selected dialysis centers in Addis Ababa, Ethiopia. medRxiv. Preprint posted online December 19, 2022. 2022. doi:10.1101/2022.01.27.22269879
59. Banaga ASI, Mohammed EB, Siddig RM, et al. Causes of end stage renal failure among haemodialysis patients in Khartoum state/Sudan. BMC Res Notes. 2015;8:502. 31. Elsharif ME, Elsharif EG. Causes of end-stage renal disease in Sudan: a single-center experience. Saudi J Kidney Dis Transpl. 2011;22(2): 373-376.
60. Rage HI, Jha PK, Kahin A, Hersi S, Mohamed A, Elmi M. Causes of end stage renal disease among patients undergoing hemodialysis in Somalia: a multi-center stud. Research Square. 2022.
61. Weaver VM, Fadrowski JJ, Jaar BG. Global dimensions of chronic kidney disease of unknown etiology (CKDu): a modern era environmental and/or occupational nephropathy? BMC Nephrol. 2015; 16:145.
62. Wimalawansa SJ, Dissanayake CB. Factors affecting the environmentally induced, chronic kidney disease of unknown aetiology in dry zonal regions in tropical countries—novel findings. Environments. 2020;7(1):265. Wimalawansa SJ, Dissanayake CB. Factors affecting the environmentally induced, chronic kidney disease of unknown aetiology in dry zonal regions in tropical countries—novel findings. Environments. 2020;7(1):2.
63. Nafar M, Mousavi SM, Mahdavi-Mazdeh M, et al. Burden of chronic kidney disease in Iran: a screening program is of essential need. Iran J Kidney Dis. 2008;2(4):183-192.
64. Tabatabaei-Malazy O, Saeedi Moghaddam S, Khashayar P, et al. Regional burden of chronic kidney disease in North Africa and Middle East during 1990-2019; results from global burden of disease study 2019. Front Public Health. 2022;10:1015902.

65. Steenland K, Burnett C, Lalich N Ward E Hurrell J Dying for work: The magnitude of US mortality from selected causes of death associated with occupation Am J Ind Med200343546148212704620.
66. Nuyts GD Van V lemE ThysJ New occupational risk factors for chronic renal failureLancet199534689667117603180.
67. Rhoads CS, Daniell WE, Renal and bladder disorders Rosenstock L Cullen MR Brodkin CA Redlich CA: Textbook of Clinical Occupational and Environmental Medicine2nd edPhiladelphia Elsevier Health Sciences2005565586.
68. Dieperink HH: Identification of groups at risk for renal diseases (including nephrotoxicity)Toxicol Lett1989461–32572682650032.
69. Ho FK, et al. Association and pathways between shift work and Cardiovascular Disease: a prospective cohort study of 238 661 participants from UK Biobank. Int J Epidemiol. 2022;51(2):579–90.
70. Kivimaki M, et al. Long working hours and risk of coronary Heart Disease and Stroke: a systematic review and meta-analysis of published and unpublished data for 603,838 individuals. Lancet. 2015;386(10005):1739–46.
71. Rubinstein, S., Wang, C., & Qu, W. (2013). Occupational risk and chronic kidney disease: a population-based study in the United States adult population. International Journal of Nephrology and Renovascular Disease, 6, 53–59. https://doi.org/10.2147/IJNRD.S39522.
72. http://creativecommons.org/licenses/by/4.0/isky working_kideny_failure.pdf.
73. Uhm, J.Y., Kim, HR., Kang, G.H. et al. The association between shift work and chronic kidney disease in manual labor workers using data from the Korea National Health and Nutrition Examination Survey (KNHANES 2011–2014). Ann of Occup and Environ Med 30, 69 (2018). https://doi.org/10.1186/s40557-018-0279-z.
74. Jayasinghe, S. Chronic kidney disease of unknown etiology should be renamed chronic agrochemical nephropathy. MEDICC Rev. 2014, 16, 72–74.
75. Valcke, M.; Levasseur, M.E.; da Silva, A.S.; Wesseling, C. Pesticide exposures and chronic kidney disease of unknown etiology: An epidemiologic review. Environ. Health 2017, 16.
76. J. Environ. Res. Public Health 2020, 17(12), 4521; https://doi.org/10.3390/ijerph17124521.
77. Ashuntantang G, Akwi EA, Teuwafeu DG, Shey DN. SAT-208 high prevalence of chronic kidney disease among cocoa farmers in Cameroon, a possible contribution of chronic kidney disease of unknown aetiology (CKDu). Kidney Int Rep. 2019; 4(7):S94.
78. Ben Khadda Z, Berni I, Sqalli HT. Prevalence and risk factors associated with chronic kidney disease in Moroccan rural communes: FezMeknes region. Nephro.
79. Arije A, Michael O, Raji Y, et al. SAT-133 blood acetylcholinesterase activity and comparative eGFR in rural farmers with low, intermediate, and high exposure to organophosphorous containing agrochemicals. Kidney Int Rep. 2020;5(3):S57.
80. Raji Y, Ajayi S, Michael O, et al. SAT-424 awareness, practices and risk factors for kidney disease among dwellers of rural farming communities in south West Nigeria. Kidney Int Rep. 2020;5(3):S177. 98. Arije A, Michael O, Raji Y, et al. SAT-133 blood acetylcholinesterase activity and comparative eGFR in rural farmers with low, intermediate, and high exposure to organophosphorous containing agrochemicals. Kidney Int Rep. 2020;5(3):S57.

81. Adu P, Forkuo EK, Issah A, et al. High incidence of moderately reduced renal function and lead bioaccumulation in agricultural workers in Assin South District, Ghana: a community-based casecontrol study. Int J Nephrol. 2019;2019:5368427.
82. Arije A, Ajayi S, Michael O, Adewole D, Raji Y, Bello A. SAT-205 farming practices as risk factors for CKD in Nigeria: a preliminary report. Kidney Int Rep. 2019;4(7):S93.
83. Ataro Z, Geremew A, Urgessa F. Chemical exposure in garage workers and related health risks on the biochemical levels: A comparative study in Harar town, eastern Ethiopia. SAGE Open Medicine. 2019;7. doi:10.1177/2050312119846792.
84. Gebre Teklu, Mikias Negash, Tsegay Asefaw, Feven Tesfay, Gebreslassie Gebremariam, https://doi.org/10.2147/JBM.S286743 839-847, DOI: 10.2147/JBM.S286743.
85. Abebe, M.T., Kumie, A., Ayana, S.W. et al. Assessment of occupational exposure to lead among workers engaged in a city bus garage in Addis Ababa, Ethiopia: a comparative cross-sectional study. J Occup Med Toxicol 19, 26 (2024). https://doi.org/10.1186/s12995-024-00422-9.
86. Adela, Y., Ambelu, A. & Tessema, D.A. Occupational lead exposure among automotive garage workers – a case study for Jimma town, Ethiopia. J Occup Med Toxicol 7, 15 (2012). https://doi.org/10.1186/1745-6673-7-15.
87. Couser WG, Remuzzi G, Mendis S, Tonelli M. The contribution of chronic kidney disease to the global burden of major non-communicable diseases. Kidney Int. 2011;80(open in a new window)(12(open in a new window)):1258–1270. doi:10.1038/ki.2011.36821993585.
88. Ramirez-Rubio O, McClean MD, Amador JJ, Brooks DR. An Epidemic of Chronic Kidney Disease in Central America: An Overview. 2013:123–125.
89. Wesseling C, Crowe J, Hogstedt C, Jakobsson K, Lucas R, Wegman D. Mesoamerican nephropathy: report from the first international research workshop on MeN. Heredia: SALTRA, IRET-UNA; 2013 Available from: http://www.regionalnephropathy.org/wp-content/uploads/2013/04/Techn.
90. Weaver, V.M.; Fadrowski, J.J.; Jaar, B.G. Global dimensions of chronic kidney disease of unknown etiology (CKDu): A modern era environmental and/or occupational nephropathy? BMC Nephrol. 2015, 16, 145.
91. Stanifer JW, Maro V, Egger J, et al. The epidemiology of chronic kidney disease in Northern Tanzania: a population-based survey. PLoS One. 2015;10(4):e0124506.
92. Navise NH, Mokwatsi GG, Gafane-Matemane LF, Fabian J, Lammertyn L. Kidney dysfunction: prevalence and associated risk factors in a communitybased study from the North West Province of South Africa. BMC Nephrol. 2023;24:23.
93. Adjei DN, Stronks K, Adu D, et al. Chronic kidney disease burden among African migrants in three European countries and in urban and rural Ghana: the RODAM cross-sectional study. Nephrol Dial Transplant. 2018;33:1812-1822.
94. Masimango MI, Sumaili EK, Wallemacq P, et al. Prevalence and risk factors of CKD in South Kivu, Democratic Republic of Congo: a large-scale population study. Kidney Int Rep. 2020;5:1251-1260.
95. Juma K, Juma PA, Shumba C, Otieno P, Asiki G. Non-communicable diseases and urbanization in African cities: a narrative review. Public Health Dev Ctries Chall Oppor. IntechOpen. 2022. doi:10.5772/ intechopen.8950.

96. Kamel E, El-Minshawy O. Environmental factors incriminated in the development of end stage renal disease in El-Minia Governorate Upper Egypt. Int J Nephro Urol. 2010;2(3):431-437.
97. Kalyesubula R, Nankabirwa JI, Ssinabulya I, et al. Kidney disease in Uganda: a community based study. BMC Nephrol. 2017;18(1):116.
98. Ulasi II, Ijoma CK, Onodugo OD, Arodiwe EB, Ifebunandu NA, Okoye JU. Towards prevention of chronic kidney disease in Nigeria: a community-based study in Southeast Nigeria. Kidney Int Suppl. 2013;3(2):195-201.
99. Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work GroupKDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease Kidney Int Suppl, 3 (2013), pp. 1-150.
100. Ricardo AC, Anderson CA, Yang W: Healthy lifestyle and risk of kidney disease progression, atherosclerotic events, and death in CKD J Kidney Disease 65: 412–424, 2015 https://doi.org/10.1053/j.ajkd.2014.09.016.
101. Beddhu S, Baird BC, Zitterkoph J, Neilson J, Greene T: Physical activity and mortality in chronic kidney disease (NHANES III). Clin J Am Soc Nephrol 4: 1901–1906, 2009 https://doi.org/10.2215/CJN.01970309.
102. Schrauben SJ, Hsu JY, Amaral S, Anderson AH, Feldman HI, Dember LM: Effect of kidney function on relationships between lifestyle behaviors and mortality or cardiovascular outcomes: A pooled cohort analysis. J Am Soc Nephrol 32: 663–675, 2021 https://doi.org/10.1681/ASN.2020040394.
103. Namkee G. Choi, John E. Sullivan, Diana M. DiNitto, Mark E. Kunik, Associations between psychological distress and health-related behaviors among adults with chronic kidney disease, Volume 126, 2019.
104. A.A. Lopes, J. Bragg, E. Young, et al.Depression as a predictor of mortality and hospitalization among hemodialysis patients in the United States and Europe Kidney Int, 62 (2002), pp. 199-207.
105. S.S. Hedayati, S.C. Grambow, L.A. Szczech, et al. Physician-diagnosed depression as a correlate of hospitalization in patients receiving long-term hemodialysis Am J Kidney Dis, 46 (2005), pp. 642-649.
106. R.A. Drayer, B. Piraino, C.F. Reynolds, et al. Characteristics of depression in hemodialysis patients: symptoms, quality of life and mortality risk Gen Hosp Psychiatry, 28 (2006), pp. 306-312.
107. S. Watnick, P.L. Wang, T. Demadura, et al.Validation of 2 depression screening tools in dialysis patientsAm J Kidney Dis, 46 (2005), pp. 919-924.
108. S.S. Hedayati, H.B. Bosworth, M. Kuchibhatla, et al.The predictive value of self-report scales compared with physician diagnosis of depression in hemodialysis patients.
109. Roskoden FC, Krüger J, Vogt LJ, Gärtner S, Hannich HJ, Steveling A, et al. Physical activity, energy expenditure, nutritional habits, quality of sleep and stress levels in shift-working health care personnel. PLoS One. 2017;12(1):e0169983. doi: 10.1371/journal.pone.0169983.
110. NATIONAL STRATEGIC PLAN FOR THE PREVENTION AND CONTROL OF MAJOR NON-COMMUNICABLE DISEASES2013-2017 EFY (2020/21-2024/25).
111. Yewondwossen T. Mengistu and Addisu M. Ejigu KIDNEY360 3: 1431–1434, 2022. doi: https://doi.org/10.34067/KID.0006902021.

112. Van Allen, E. M., Miao, D., Schilling, B., Shukla, S. A., Blank, C., Zimmer, L., ... & Garraway, L. A. (2015). Genomic correlates of response to CTLA-4 blockade in metastatic melanoma. Science, 350(6257), 207-211.
113. Caplin B, Yang CW, Anand S, et al. The International Society of Nephrology's International Consortium of Collaborators on Chronic Kidney Disease of Unknown Etiology: report of the working group on approaches to population-level detection strategies and recommendations for a minimum dataset. Kidney Int. 2019; 95(1):4-10.
114. Kidney Disease: Improving Global, Outcomes (KDIGO) CKD Work Group. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. Kidney Int Suppl. 2013; 3:1-150.

115. Desta BZ, Derseh BT, Dadi AF. Mortality and predictors of chronic kidney diseases (CKD) in selected dialysis centers in Addis Ababa, Ethiopia. Med Rxiv. 2022 Jan 29:2022 01

116. Sertsu A, Worku T, Fekadu G, Tura AK. Prevalence of chronic kidney disease and associated factors among patients visiting renal unit of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia: A cross-sectional study design. SAGE Open Med. 2022 Aug 9

117.Alma MA, van der Mei SF, Brouwer S, Hilbrands LB, van der Boog PJM, Uiterwijk H, Waanders F, Hengst M, Gansevoort RT, Visser A. Sustained employment, work disability and work functioning in CKD patients: a cross-sectional survey study. J Nephrol. 2023 Apr;36(3):731-743. doi: 10.1007/s40620-022-01476-w. Epub 2022 Oct 31. PMID: 36315355

118. Juma K, Juma PA, Shumba C, Otieno P, Asiki G. Non-communicable diseases and urbanization in African cities: a narrative review. Public Health Dev Ctries Chall Oppor. IntechOpen. 2022. doi:10.5772/ intechopen.89507

119. Reilly Associates. WPAI references. 2015. Available at: http://www.reillyassociates.net/WPAI_References.html. Accessed 19 Mar 2019.

120. van Haalen, H., Jackson, J., Spinowitz, B. *et al.* Impact of chronic kidney disease and anemia on health-related quality of life and work productivity: analysis of multinational real-world data. *BMC Nephrol* **21**, 88 (2020). https://doi.org/10.1186/s12882-020-01746-4

121. Jha V, Wang AY, Wang H. The impact of CKD identification in large countries: the burden of illness. Nephrol Dial Transplant. 2012 Oct;27 Suppl 3:iii32–8. pmid:23115140

122. Vaidya SR, Aeddula NR. Chronic Renal Failure. 2022 Oct 24. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2023 Jan

123. Bay SS, Kamaruzaman L, Mohd R, Azhar Shah S (2024) Work disability and employment status among advanced chronic kidney disease patients. PLoS ONE 19(3): e0297378. https://doi.org/10.1371/journal.pone.0297378

124. Chowdhury MZI, Turin TC. Variable selection strategies and its importance in clinical prediction modelling. Fam Med Community Health. 2020;8. pmid:32148735

125. Alma MA, van der Mei SF, Brouwer S, Hilbrands LB, van der Boog PJM, Uiterwijk H, et al. Sustained employment, work disability and work functioning in CKD patients: a cross-sectional survey study. J Nephrol. 2023 Apr;36(3):731–743. pmid:36315355

126. Fujino Y, Shazuki S, Izumi H, et al. Prospective cohort study of work functioning impairment and subsequent absenteeism among Japanese workers. J Occup Environ Med. 2016;58:e264–7

127. Goetzel RZ, Long SR, Ozminkowski RJ, et al. Health, absence, disability, and presenteeism cost estimates of certain physical and mental health conditions affecting U.S. employers. J Occup Environ Med. 2004;46:398–412.

128. van Haalen H, Jackson J, Spinowitzet B, et al. Impact of chronic kidney disease and anemia on health-related quality of life and work productivity: analysis of multinational real-world data. BMC Nephrol. 2020;21:88

129. Mekonnen, T.H., Lamessa, S.K. & Wami, S.D. Sickness-related absenteeism and risk factors associated among flower farm industry workers in Bishoftu town, Southeast Ethiopia, 2018: a cross-sectional study. *BMC Res Notes* **12**, 181 (2019). https://doi.org/10.1186/s13104-019-4223-2

130. Tadesse S, Ebrahim K, Gizaw Z. Sickness absenteeism and associated factors among horticulture employees in lume district, southeast Ethiopia. J Occup Med Toxicol. 2015;10(32):1–6

131. Omoloja A, et al. Secondhand smoke exposure is associated with proteinuria in children with chronic Kidney Disease. Pediatr Nephrol. 2013;28(8):1243–51.

132. Jhee JH, et al. Secondhand smoke and CKD. Clin J Am Soc Nephrol. 2019;14(4):515–22.

133. Lan R, et al. Secondhand smoke, genetic susceptibility, and incident chronic Kidney

Disease in never smokers: a prospective study of a selected population from the UK Biobank. Tob Induc Dis. 2023;21:58.

134. Zhou, L., Wu, B., Tang, M. *et al.* Association between exposure to metalworking fluid aerosols, occupational noise and chronic kidney disease: a cross-sectional study in China. *BMC*

135. Kim, Y.J., Choi, WJ., Ham, S. et al. Association between occupational or environmental noise exposure and renal function among middle-aged and older Korean adults: a cross-sectional study. Sci Rep **11**, 24127 (2021). https://doi.org/10.1038/s41598-021-03647-4

136. Bolm-Audorff, U., Hegewald, J., Pretzsch, A., Freiberg, A., Nienhaus, A., & Seidler, A. (2020). Occupational Noise and Hypertension Risk: A Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health, 17(17), 6281. https://doi.org/10.3390/ijerph17176281

137. Inoue, M., Laskar, M. S., & Harada, N. (2005). Cross-Sectional Study on Occupational Noise and Hypertension in the Workplace. Archives of Environmental & Occupational Health, 60(2), 106–110. https://doi.org/10.3200/AEOH.60.2.106-110

138. Tsai, MK., Gao, W., Chien, KL. *et al.* Associations of Prolonged Occupational Sitting with the Spectrum of Kidney Disease: Results from a Cohort of a Half-Million Asian Adults. *Sports Med - Open* **8**, 147 (2022). https://doi.org/10.1186/s40798-022-00542-8

139. Fujii Y, Yamamoto R, Shinzawa M, Kimura Y, Aoki K, Tomi R, et al. Occupational sedentary behavior and prediction of proteinuria in young to middle-aged adults: a retrospective cohort study. J Nephrol. 2021;34(3):719–28.

140. Tsai, MK., Gao, W., Chien, KL. *et al.* Associations of Prolonged Occupational Sitting with the Spectrum of Kidney Disease: Results from a Cohort of a Half-Million Asian Adults. *Sports Med - Open* **8**, 147 (2022). https://doi.org/10.1186/s40798-022-00542-8

141. de Boer IH, Caramori ML, Chan JC, Heerspink HJ, Hurst C, Khunti K, et al. Kidney disease: improving global outcomes diabetes work G. KDIGO 2020 clinical practice guideline for diabetes management in chronic kidney disease. Kidney Int. 2020;98(4S):S1–115.

142. Steven Chadban, Ciro Esposito, Janani Rangaswami, Mai-Szu Wu, Richard Hull, Hesham Elsayed, Helmut Reichel, Juan Jose Garcia Sanchez, Surendra Pentakota, Thames Kularatne, Simon Fifer, #4529 PACE-CKD: FINANCIAL BURDEN AND WORK PRODUCTIVITY OF PATIENTS WITH CKD AND CAREGIVERS: RESULTS FROM A US SURVEY, *Nephrology Dialysis Transplantation*, Volume 38, Issue Supplement_1, June 2023, gfad063c_4529, https://doi.org/10.1093/ndt/gfad063c_4529

143 Reilly MC, Zbrozek AS, Dukes EM: The validity and reproducibility of a work productivity and activity impairment instrument. Pharmacoeconomics 1993, 4:353-365.

144. Reilly Associates Health Outcomes Research. [http://www.reillyassociates. net]

ANNEXES

Annex 1: English Participant's information sheet

Introduction: Greetings; this is Yetemwerk Dagmawi. I came from Addis Ababa University, College of Health Science, School of Public Health to conducted to characterizing occupational risk factors of chronic kidney diseases and its impact on work productivity and activity impairment. I will conduct a face-to-face interview on investigate the **c**haracterizin**g** occupational risk factors of chronic kidney diseases and its impact on work productivity and activity impairment, So, I am inviting you/ your child to take part in the survey. For each participant will be asked to complete a questionnaire. I ask you to consider this information sheet, and if you agree to you/ your child taking part in the survey, I would like you to put a tick in the 'Yes' box. Then you will complete the attached questionnaire This study will be designed to generate information on the chronic kidney disease and occupational risk factors, as well as their impact on work productivity and activity impairment. This study will not give any direct benefit to the participants, but the information that will be gained from the participants will help to design an appropriate intervention.

The study will have an ethical approval form School of Public Health Ethical Committee. The study will not impose any risk on participants expect few minutes spent on interviewing. By assuring that information that you provide will be treated with strict confidentiality and honesty, you will be invited to participate in this study voluntarily. At any time, you can quit answering the questionnaire that you are not willing to answer or even withdraw any time you want without being affected. Whom to contact: If you have any question about the research you may contact

Yetemwerk Dagmawi (PI): +251-947709886

Dr. Samson Wakuma (Primary Advisor): +251-923940998

Prof. Abera Kumie (Secondary Advisor): +251-911882912

At this time, do you want to ask me anything about the purpose or content of this interview? Are you willing to participate in the study? ☐ YES ☐ NO

Annex 2: English Consent form

English version questionnaire Consent form Assessments of characterizing occupational risk factors of chronic kidney diseases and its impact on work productivity and activity impairment

I: Individual consent form

Section : Questionnaire Identification Date___/____/_____

Qustionnaire Identification Number _____

health institution _____

Dear Participant

Dear Participant,

You are invited to take part in this research study, which has received ethical approval from the Addis Ababa University Ethical Review Board. Permission has also been granted by the Ethical Boards of Black Lion Specialized Hospital and St. Paul's Hospital Millennium Medical College.

Your participation in this study is entirely voluntary. You have the right to agree or decline to take part in the research at any time without any consequences.

The purpose of this study is to characterizing occupational risk factors of chronic kidney diseases and its impact on work productivity and activity impairment. The findings may be used by Black Lion Specialized Hospital, St. Paul's Hospital Millennium Medical College, Addis Ababa University, the Ministry of Labor and Social Affairs (MoLSA), and other relevant stakeholders to guide future interventions in occupational health and safety.

Participating in this study involves completing a questionnaire, which will take approximately 15–25 minutes of your time. Your honest and sincere responses are highly valued and will significantly contribute to the success of the study. Your responses will be kept strictly confidential, and your name will not appear on any form or report.

You may choose not to answer any question or to withdraw from the interview at any time if you feel uncomfortable. However, your full participation will greatly assist in identifying key occupational risk factors related to CKD.

Please initial box

1. I confirm that I have heared and have understood the information sheet dated [_____] for the above study, or it has been read to me. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that s/he is free to stop taking part and can withdraw from the study at any time without giving any reason and without his/her rights being affected. In addition, I understand that I am free to decline to answer any particular question or questions. ☐

3. I understand that I can ask for access to the information I provide and I can request the destruction of that information if I wish at any time prior to publication of the results. I understand that following publication I will no longer be able to request access to or withdrawal of the information I provide. ☐

4. I understand that other authorised researchers may use my words in publications, reports, webpages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form. ☐

5. I understand that the information I provide will be held securely and in line with data protection requirements ☐

6. I agree that to participate in the above study. ☐

Annex 3: Amharic Participant's information sheet

አባሪ 3 የአሚርኛ የተሳታፊዎች መረጃ

የተሳታፊውየ መረጃ ወረቀት እና

መግቢያ፡ ሰላምታ፡ ሰላም ስሜየ ትምወርቅ ዳግማዊ ይባላል ከአዲስ አበባ ዩኒቨርሲቲ፣ ጠፍ ሳይንስ ኮሌጅ፣ የህብረተሰብ ጠፍ ትምህርት ቤት ምርመራ ለማካሄድ መጥቻለሁ። ይህ ጥናት ሥር የሰደደ የኩላሊት በሽታ እና የሥራ ሁኔታዎች እና የስራ ምርታማነ ት እና የተግባር እክል ማጠይቅ መረጃን ለመመንጨት ይዘጋጃል። ስለዚህ፣ እርስዎ በዳሰሳ ጥናቱ ላይ እንዲሳተፉ እየጋበዝኳችሁ ነው። ለእያንዳንዱ ተሳታፊ ማጠይቁን እንዲያጠቅቅ ይጠየቃል። ይህን የመረጃ ሉክ እንድታጩት እጠይቃለሁ፣ እና እርስዎ በዳሰሳ ጥናቱ ላይ ለመሳተፉ ከተስማሙ 'አዎ' በሚለው ሳጥን ላይ ምልክት እንድታስቀምጡ እፈልጋለሁ።

ከዚያም የተያያዘውን ማጠይቅ ያጠናቅቃሉ ይህ ጥናት ሥር የሰደደ የኩላሊት በሽታን እና የሥራ ሁኔታዎችን እና የስራ ምርታማነ ት እና የተግባር እክል ማጠይቅ መረጃ ለመመንጨት የተነደፈ ይሆናል። ይህ ጥናት ለተሳታፊዎች ምንም አይነ ት ቀጥተኛ ጥቅም አይሰጥም, ነገር ግን ከተሳታፊዎች የሚገኘውመረጃ ተገቢውን ጣልቃገብነ ት ለመንደፍ ይረዳልጥናቱ የስነ -ምግባር ሚጋገጫቅጽ ይኖረዋል የህዝብ ጠፍ ሥነ -ምግባር ኮሚቴ።

ጥናቱ በቃለ ማጠይቅ ላይ ጥቂት ደቂቃዎችን በሚጠበቁ ተሳታፊዎች ላይ ምንም አይነ ት አደጋ አይፈጥርም። ያቀረቡት መረጃ በጥብቅ ሚስጥራዊ እና ታማኝነ ት እንደሚስተናገድ በሚጋገጥ፣ በዚህ ጥናት ላይ በፈቃደኝነ ት እንዲሳተፉ ይጋበዛሉ። በማንኛውም ጊዜ፣ መልስ ለማጠት ፈቃደኛ ያልሆኑትን ማጠይቁን መማለስ ማቆም ወይም በፈለጉት ጊዜ ሳይነ ኩ ማንሳት ይችላሉ።

ማን ማ ጋገር እንዳለብዎ፡ ስለ ጥናቱ ምንም አይነ ት ጥያቄ ካሎት ማ ጋገር ይችላሉ።

የ መጀመሪያ ደረጃ መርማሪ የትምወርቅ ዳግማዊ : +251-947709886

ዋና አማካሪ ዶ/ር ሳምሶን ዋቁማ +251-923940998

ሁለተኛ ደረጃ አማካሪ ፕሮፌሰር አበራ ኩማ +251-911882912

Annex 4: Amharic consent form

አባሪ 4 የ ስ ምምነ ት ቅጽ

ወድ ተሳ ታፊ

ከአዲስ አበባ ዩኒቨርስቲ ሥነ-ምግባር ክለሳ ቦርድ የሥነ ምግባር ፍቃድ ባገኘው በዚህ የምርምር ጥናት ላይ እንድትካፈሉ ተጋብዛችኋል። በጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል ና በቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ህክምና ኮሌጅ የሥነ ምግባር ቦርድም ፈቃድ ተሰጥቶታል.

በዚህ ጥናት ላይ ያለህ ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት የሚደረግ ነው ። ምንም ዓይነት መዘዝ ሳያስከትል በማንኛውም ጊዜ በምርምሩ የመስማማት ወይም የመካፈል መብት አለህ ።
የዚህ ጥናት ዓላማ በሥራ ላይ ለሚከሰቱ አደጋዎች መጋለጥንና በጤና ላይ የሚያሳድረውን ተጽዕኖ በተለይም ሥር የሰደደ የኩላሊት በሽታ ሊያስከትሉ የሚችሉ ነገሮችን መመርመር ነው ። ግኝቶቹን በጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል፣ በቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ሜዲካል ኮሌጅ፣ በአዲስ አበባ ዩኒቨርስቲ፣ የሠራተኛና ማህበራዊ ጉዳይ ሚኒስቴር (MoLSA) እና ሌሎች ተያያዥ ባለድርሻ አካላት ወደፊት በስራ ጤናና ደህንነት ላይ የሚደረጉ ጣልቃ ገብነትዎችን ለመምራት ሊጠቀሙበት ይችላሉ።

በዚህ ጥናት ላይ መሳተፍ ጥያቄ ማጠናቀቅን ያጠቃልላል። ይህ ጥያቄ ከ15 እስከ 25 ደቂቃ ገደማ ይወስዳል። በሐቀኝነትና በቅንነት የምትሰጠው ምላሽ ከፍ ያለ ግምት የሚሰጠው ከመሆኑም በላይ ጥናቱ ስኬታማ እንዲሆን ከፍተኛ አስተዋጽኦ ያበረክታል ። ምላሾችህ ምሥጢራዊ ሆነው ይቆያሉ፤ እንዲሁም ስምህ በማንኛውም ዓይነት መልክ ወይም ሪፖርት ላይ አይታይም። ለማንኛውም ጥያቄ መልስ ላለመስጠት ወይም ቅር ከሰኛችሁ በማንኛውም ጊዜ ከቃለ መጠይቁ ላለመውጣት ትመርጡ ይሆናል። ይሁን እንጂ የተሟላ ተሳትፎ ማድረግህ ከሲኬዲ ጋር ተያይዘው የሚመጡ ችግሮችን ለይተህ ለማወቅ ይረዳሃል።
እባክዎ የመጀመሪያ ሳጥን

1. ከላይ ለተቀመጠው ጥናት [____] የተጻፈውን መረጃ አዳምጬ እንደተረዳሁት አረጋግጣለሁ። ወይም ለኔ የተነበበልኝ። መረጃውን የማጤን ፣ ጥያቄ የመጠየቅና አጥጋቢ መልስ የማገኛቸው አጋጣሚ አግኝቼያለሁ ። ☐

2. የኔ ተሳትፎ በፍቃደኝነት እንደሆነና ሰ/ት/ቤቱ ምክኒያት ሳይሰጥ ና ምንም አይነት ምክንያት ሳይሰጥና መብቱ ሳይነካ በማንኛውም ጊዜ ከጥናቱ ሊላቀቅ እንደሚችል ተረድቻለሁ። በተጨማሪም ለማንኛውም ጥያቄ ወይም ጥያቄ መልስ ለመስጠት ፈቃደኛ እንዳልሆንኩ ተረድቻለሁ ። ☐

3. የምሰጠውን መረጃ ለማግኘት መጠየቅ የምችል ከመሆኑም በላይ ውጤቱ ከመታተሙ በፊት በማንኛውም ጊዜ ብፈልግ የዚያ መረጃ እንዲጠፋ መጠየቅ እችላለሁ። ከዚያ በኋላ የምሰጠውን መረጃ ማግኘትም ሆነ ማውጣት እንደማልችል ተገንዝቤያለሁ ። ☐

4. ሌሎች የተፈቀደ ተመራማሪዎች ቃሌን በጽሑፎች፣ ሪፖርቶች፣ ድረ ገጾች ላይ ሊጠቀሙበት እንደሚችሉ ተረድቻለሁ። ☐

5. የምሰጠው መረጃ በአስተማማኝ ሁኔታና ከመረጃ ጥበቃ መስፈርት

6 ጋር በሚስማማ መልኩ እንደሚካሄድ ገብቶኛል። ከላይ በተጠቀሰው ጥናት ለመካፈል እስማማለሁ ።

Annex 5: English questionnaire

Section 1: Socio-demographic Information

1. What is your age?

A. 18-30
B. 31-40
C. 41-50
D. 51-60
E. 61 and above

2. What is your gender?

A. Male B. Female

3. Religion

A. Orthodox B. Muslim C. Protestant D. Others ____

4. What is your current marital status?

A. single B. married C. divorced D. widowed

5. What is your level of education?

A. Unable to read and write

B. Primary school (1-8 grade)

C. High school (9-12 grade)

D. collage /University graduate and above

6. Place of your current Residence

A. Rural B. Urban C. Semi-urban

7. Did you live other than the current resident

A. Yes B. No

8. If yes, where did you live?

A. Rural B. Urban C. Semi-urban

Section 2: Environmental Factors

9. What is your primary source of drinking water?

A. Tap water B. Well water C. Borehole D. River/Stream

D. Bottled/Packaged water E. other (specify)

10. Do you treat your drinking water?

A. Yes, by boiling B. Yes, by filtration C. yes (other specify) D. No

11. Air Quality in Living Area:

A. Very polluted B. Moderately polluted C. very clean D. Clean

12. The weather/ climatic condition in your living area

A. Very hot B. Moderately hot C. Very cold D. Cold

13. Do you live near any of the following? (Select all that apply):

A. Industrial areas/factories where there is smoke, dust, chemical spill or discharges reach your living area

B. Agricultural fields (pesticide, insecticides or fertilizer use)

C. Mining sites

D. Waste disposal sites/landfills

E. Rivers or streams with reported contamination

14. Do you live or spend prolonged periods in hot environments?

A. Yes B. No

Section 3: General Occupational History

15. What is your current occupation?

A. Agriculture/Farming

B. Manufacturing/Factory Work
C. Construction
D. Healthcare
E. Mining
F. Transportation
G. Office Worker
H. Merchants
I. Religious leaders (priest, pastor, sheh)
J. Housewife
K. Students
L. Non employed

16. What kind of risks are there in your workplace?

A. Physical hazards B. Chemical hazards C. Biological hazards

D. Ergonomics Hazards E. Psychosocial hazards F. Other specify

17. What is a Work schedule?

A. Full-time B. Part-time C. Shift work D. Other (specify)

18. If the answer of Q19 is "C" what is your occupation shift pattern?

B. A. Day B. Night C. Rotational D. if other specify

19. How long have you been working in your current occupation?

A. Less than 1 year

B. 1-5 years

C. 6-10 years

D. 11-15 years

E. More than 15 years

20. On average, how many hours do you work per day?

A. Less than 8 hrs B. 8 hrs D. More than 8 hours

21. What type of work environment do you have?

A. Outdoor

B. Indoor

C. Both

Section 3 Occupational Hazard Exposure

I. Physical work hazards

22. Do you work in positions that prolonged standing and sitting?

A. Yes B. No

23. Are you exposed to high temperatures (extreme heat) or risk of dehydration in your workplace?

A. Yes, frequently B. Yes, occasionally C. No

24. Do you experience regular exposure to high levels of noise (>85 dB)?

A. Yes B. No

25. If yes, type of noise sources (check all that apply):

A. Machinery
B. Transportation vehicles
C. Tools (e.g., drills, saws)
D. Other (specify)_____

26. Frequency of exposure to high noise levels:

A. Occasionally (1–2 times a week) B. Frequently (3–5 times a week) C. Daily

27. If Daily, Duration of exposure per shift:

A. Less than 8 hrs B. 8 hrs D. More than 8 hours

28. Do you use any hearing protection equipment? (e.g earplugs, noise-canceling headphones)?

A. Yes, always

B. Yes, occasionally

C. No

II. Chemical hazards

29. Do you handle or come into contact with any chemicals at work?

A. Yes B. No

30. If yes, specify types of chemicals:

A. Heavy metals (e.g., lead, mercury, cadmium)

B. Organic solvents (e.g., benzene, toluene)

C. Pesticides/herbicides

D. Cleaning agents

E. Other (please specify)

F. None of the above

31. Primary sources of chemical exposure (check all that apply):

A. Handling raw chemicals B. Manufacturing processes C. Other (specify):

32. How often do you come into contact with or use chemicals in your workplace?

A. Daily B. Weekly C. Monthly D. Rarely E. Never

33. If Daily, Duration of exposure per shift

A. A. Less than 8 hrs B. 8 hrs D. More than 8 hours

34. Do you use any of the following protective equipment when handling chemicals?

(Check all that apply)

A. Gloves B. Masks/respirators C. Goggles

D. Protective clothing E. if other specify_____ f. None

35. Describe the ventilation in your work area where chemical exposure occurs:

A. Well-ventilated (e.g., open windows, exhaust fans)

B. Limited ventilation (e.g., occasional airflow)

C. Poor ventilation (e.g., enclosed or poorly ventilated spaces)

36. Does your workplace have exhaust systems or air purifiers to manage airborne chemicals?

A. Yes B. No

37. Is chemical handling conducted in enclosed areas or with fume hoods?

A. Yes B. No

38. Do you take regular breaks away from chemical exposure areas?

A. Yes b. No

39. Have you received any training on safe chemical handling and hazard identification?

A. Yes B. No

40. Does your employer conduct regular safety briefings or refreshers?

A. Yes B. No

41. Do you have access to Material Safety Data Sheets (MSDS) for the chemicals you handle?

A. Yes B. No

42. Does your employer provide health screenings related to chemical exposure (e.g., blood tests for heavy metals)?

A. Yes B. No

43. Have you ever been diagnosed with any chronic health condition that could be related to chemical exposure (e.g. Cancer, heart disease, respiratory conditions, liver or kidney issues)?

A. Yes (specify condition) B. No

44. Have you been diagnosed with any kidney-related conditions that could be associated with chemical exposure?

A. Yes (specify condition) B. No

45. Do you work in an environment with high levels of dust or particulate matter?

A. Yes B. No

46. If yes, types of dust or particulate matter encountered (check all that apply):

A. Mineral dust (e.g., silica, asbestos)

B. Metal dust (e.g., aluminum, lead, chromium)

C. Organic dust (e.g., wood, grain, flour)

D. Synthetic dust (e.g., fiberglass, carbon fibers)

E. Soil or construction dust

F. Soot or carbon-based particles

G. Other (specify):

47. Source of dust or particulate matter exposure (check all that apply):

A. Cutting, grinding, or drilling materials

B. Operating heavy machinery

C. Using chemicals or powders

D. Handling bulk materials (e.g., sand, gravel, soil)

E. Working in confined spaces (e.g., mines, tunnels)

F. Other (specify):

48. How often are you exposed to dust, fumes, smoke or gases at work?

A. Daily B. Weekly C. Monthly D. Rarely E. Never

49. If Daily, Duration of exposure per shift:

A. Less than 8 hrs B. 8 hrs D. More than 8 hours

50. Do you use respiratory protective equipment (e.g., masks, respirators)?

A. Yes B. No

III. Biological Hazards

51. Do you work in an environment with potential exposure to infectious agents?

A. Yes B. No

52. If yes, types of biological agents potentially encountered in the workplace (check all that apply):

A. Bloodborne pathogens (e.g., hepatitis B, hepatitis C, HIV)

B. Bacteria (e.g., tuberculosis, E. coli)

C. Viruses (e.g., influenza, COVID-19)

D. Fungi or molds (e.g., aspergillus)

E. Parasites (e.g., toxoplasma, schistosomes)

F. Animal or human bodily fluids (e.g., blood, saliva, urine)

G. Other (specify):

53. Primary source of biological hazard exposure (check all that apply):

A. Human patients (e.g., healthcare, laboratory)

B. Animals or animal waste (e.g., veterinary, farming)

C. Contaminated

54. Frequency of exposure to biological agents:

A. Daily B. Weekly C. Monthly D. Rarely

55. Use of protective equipment for biological hazards?

A. Yes B. No

IV. Psychosocial Factors

56. Do you experience high work-related stress?

A. Yes B. No

57. Do you work under pressure due to deadlines or productivity targets?

A. Yes B. No

58. Frequency of stressful situations at work:

A. Daily B. Weekly C. Monthly

Section 5: Personal factor and health condition

59. Have you ever smoked tobacco?

A. Yes, currently smoker B. Yes, Former smoker C. Never smoker

60. Have you ever been regularly exposed to secondhand smoke?

A. Yes B. No

61. If yes, where have you been exposed to secondhand smoke?

A. Home B. Workplace C. Social settings D. Other (please specify)

62. How often were/are you exposed to secondhand smoke?

A. Rarely B. Occasionally C. Frequently

63. Have you ever consume alcohol?

A. Yes, daily B. Yes, occasionally

C. Yes, previous not now D. Never

64. How often do you exercise per week?

A. Daily

B. A few times per week

C. Weekly

D. Rarely

65. How often do you consume processed or salty foods?

A. Rarely B. Occasionally C. Frequently

66. How would you rate your diet in terms of kidney health (low salt, low protein, etc.)?

A. Excellent

B. Good

C. Average

D. Poor

E. Very poor

67. What is your average daily water intake?

A. Less than 1 liter B. 1-2 liters C. More than 2 liters

68. Ever been told you had any of the following health conditions?

(Check all that apply)

A. Hypertension
B. Diabetes
C. Cardiovascular disease
D. Cancer
E. HIV
F. Stroke
G. Urinary tract infections
H. Other (specify)
I. None

69. How often do you get your kidney function checked?

A. At least once a year

B. Every few years

C. Only when symptoms arise

D. Never

Section 6: Awareness and Preventive Measures

70. Do you know the potential health risks associated with your occupational exposure?

A. Yes, fully

B. Yes, somewhat

C. No, not at all

71. Have you received any workplace training on reducing exposure to occupational hazards?

A. Yes B. No

72. Do you regularly take any measures to reduce your exposure to harmful substances at work?

A. Yes, always

B. Yes, occasionally

C. No

73. Have you noticed any changes in your health that you think may be related to your job?

A. Yes, significant changes

B. Yes, minor changes

C. No, no changes noticed

74. How satisfied are you with your current job?

A. Very satisfied B. Satisfied C. Neutral

D. Dissatisfied E. Very dissatisfied

75. Do you feel that your job positively or negatively impacts your physical and mental well-being?

A. Positively B. Neutral C. Negatively

76. Perceived Impact of Occupational and Environmental Factors on Health:

A. Significant B. Moderate C. Minimal D. None

77. Are you aware of any risks for chronic kidney disease related to your job?

A. Yes B. No

78. Did you believe your job may increase your risk of kidney disease?

A. Yes, significantly B. Yes, somewhat C. No

79. Have you received information or training about occupational hazards linked to CKD?

A. Yes B. No

80. Do you have a family history of CKD or kidney-related health issues?

A. Yes B. No C. Unsure

81. Did you take any measures outside of work to protect kidney health (e.g., drinking water, avoiding certain substances)?

A. Yes (specify) B. No

82. Had you screened for kidney function in the before diagnosed CKD?

A. Yes B. No

83. Had you noticed any symptoms that may indicate kidney issues at working days (e.g., swelling, changes in urination)?

A. Yes (specify symptoms) B. No

Section 7: Protective Measures and Workplace Safety

84. Do you have access to clean drinking water at work?

A. Yes, always B. Yes, occasionally C. No

85. Do you have access to regular medical checkups through your workplace?

A. Yes, always

B. Yes, occasionally

C. No

86. Is personal protective equipment (PPE) available and provided at your workplace?

(Check all that apply)

A. Yes, always

B. Yes, occasionally

C. No

87. Do you have any work modifications available for reducing occupational hazards exposure?

A. Yes, always

B. Yes, occasionally

C. No

88. Do you have access to resources for managing workplace stress and potential hazards?

A. Yes B. No

89. Does your workplace have safety protocols for handling occupational hazards?

A. Yes B. No

90. Have you received training on workplace health and safety practices?

A. Yes, comprehensive B. Yes, minimal C. No

91. How often is health and safety training provided?

A. Annually B. Every few years C. Only once, during onboarding

92. Do you feel your workplace is committed to occupational safety?

A. Yes B. No

93. Is there health monitoring in place (e.g., regular check-ups for exposure effects)?

A. Yes B. No

94. Are there procedures for reporting and addressing health and safety concerns?

A. Yes B. No

Section 8: Work Productivity and Activity Impairment Questionnaire

The following questions ask about the effect of your PROBLEM on your ability to work and perform regular activities. Please fill in the blanks or circle a number, as indicated.

1.Are you currently employed (working for pay)?

A. Yes B. No

If NO, check "NO" and skip to question 6

2.During the past seven days, how many hours did you miss from work because of problems associated with your PROBLEM? Include hours you missed on sick days, times you went in late, left early, etc., because of your PROBLEM. Do not include time you missed to participate in this study.

___ ___ HOUR

3.During the past seven days, how many hours did you miss from work because of any other reason, such as vacation, holidays, time off to participate in this study?

___ ___ HOURS

4. During the past seven days, how many hours did you actually work? _____HOURS (If "0", skip to question 6.)

5. During the past seven days, how much did your PROBLEM affect your productivity while you were working?

> Think about days you were limited in the amount or kind of work you could do, days you accomplished less than you would like, or days you could not do your work as carefully as usual. If PROBLEM affected your work only a little, choose a low number. Choose a high number if PROBLEM affected your work a great deal.

Consider only how much PROBLEM affected productivity while you were working.

PROBLEM had no effect on my work

PROBLEM completely prevented me from working

1 2 3 4 5 6 7 8 9 10

SELECT A NUMBER

Annex 6: Amharic questionnaire

አባሪ 6: የአማርኛ ማጠይቆች

ክፍል 1 የስነ -ሕዝብ ሚጃ

1. እድሜህ ስንት ነ ወ?

ሀ. ከ20 በታች ለ. 21-30 ሐ. 31-40

መ41-50 ሠ. 51-60 ረ. 61 እና ከዚያ በላይ

2. ፆታህ ምንድን ነ ወ?

ሀ. ወንድ ለ. ሴት

3. ሃይማኖት

ሀ. አርቶዶክስ ለ. ማቅሊም ሐ. ፕሮቴስታንት መ ሌሎች ____

4. አሁን ያለህበት የትዳር ሁኔታ ምን ያህል ነ ወ?

ሀ. ያላገባ ለ. ያገባች ሐ የተፋታ መ ባል የሞተባት

5. የትምህርት ደረጃዎ ስንት ነ ወ?

ሀ. ማንበብና መጻፍ አይቻልም

ለ. የመጀመሪያ ደረጃ ትምህርት ቤት (1-8 ክፍል)

ሐ ሀለተኛ ደረጃ ትምህርት ቤት (9-12 ክፍል)

መ ኮሌጅ/የዩኒቨርሲቲ ምሩቅ እና ከዚያ በላይ

6. የመኖሪያ ቦታዎ የት ነ ወ?

ሀ. ገጠር ለ. ከተማ ሐ. ከፊል ከተማ

7. ከአሁኑ መኖሪያ ቦታ ሌላ ኖረዋል?

ሀ. አዎ ለ. አይ

8. አዎ ከሆነ የት ነበር የምትኖረው?

ሀ. ገጠር ለ. ከተማ ሐ. ከፊል-ከተማ

ክፍል 2: የአካባቢ ሁኔታዎች

9. ዋናውየ ማጠጥ ወሃ ምንጭምን ድን ነው?

ሀ. የቧንቧ ወሃ ለ. የጉድጓድ ወሃ ሐ. ወንዝ/ጅረት

መ የታሸገ /የታሸገ ወሃ ሠ. ሌላ (ይግለጹ)

10. የ ማጠጥ ወሃዎን ታክመዋል?

ሀ. አዎ፣ በመፍላት B. አዎ፣ በማጣራት ሐ. አዎ፣ ሌላ (ይግለጹ) መ አይ

11. በመኖሪያ አካባቢ ያለውየአየር ጥራት፡ -

ሀ. በጣምሞቃት ለ. መካከለኛ ሐ. ቀዝቃዛ መ. በጣምቀዝቃዛ

12. የሚሩት ከሚከተሉት ወስጥ በአንዱአጠገብ ነ ወ? (የሚሟላከተወዳ ሁሉ ይምረጡ)

ሀ. የኢንዱስትሪ ቦታዎች / ፋብሪካዎች

ለ. የእርሻ ማሳዎች (ፀረ-ተባይ ወይምየ ማዳበሪያ አጠቃቀም)

ሐ. የሜዳ ድን ቦታዎች

መ የቆሻሻ ማስወገጃ ቦታዎች/የ ቆሻሻ ማጠራቀሚያዎች

ሠ.. ወንዞች ወይምጅረቶች ሪፖርት የ ተደረገ ብክለት

13. በሞቃታማአካባቢዎች ወስጥ ረዘ ምያለ ጊዜ ይኖራሉ ወይምያሳልፋሉ?

ሀ. አዎ ለ. አይደለም

ክፍል 2: አጠቃላይ የሙያ ታሪክ

14. አሁን ያለህበት ሥራ ምንድን ነ ወ?

ሀ. ግብርና /እርሻ

ለ. የ ማምረት / የ ፋብሪካ ሥራ

ሐ. ግንባታ

መ የ ጠፍ እንክብካቤ

ሠ. ሜዳ ድን ማውጣት

ረ. መጓጓ

ሰ. ቢሮ ሰራተኛ

ሸ. ነ ጋዴዎች

ቀ. የ ሃይማኖት መሪዎች (ቄስ፣ ፓስተር፣ ሸህ)

በ. የ ቤት እመቤት

ተ. ተማሪዎች

ቸ. ስር ፈላጊ/ ስራ አጥ

15. በስራ ቦታዎ ወስጥ ምን አይነ ት አደጋዎች አሉ?

ሀ. አካላዊ አደጋዎች ለ. የ ኬሚካል አደጋዎች ሐ. ባዮሎጂካል አደጋዎች

መ. ኤርጎኖሚክስ አደጋዎች ሠ. ሳይኮሶሻል አደጋዎች ረ. ሌላ ይግለጹ

16. የ ሥራ መርሃ ግብር ምንድን ነ ው?

ሀ. የ ሙሉ ጊዜ ለ. የ ትርፍ ሰዓት ሐ.. የ መቀየ ሪያ ሥራ መ. ሌላ (ይግለጹ)

17.የ እርስዎ የ ስራ ፈረቃ ንድፍ ምንድን ነ ው?

ሀ. ቀን ለ. ምሽት ሐ. ማዞሪያ መ. ሌላ (ይግለጹ)

18. አሁን ባለህበት ሥራ ምን ያህል ጊዜ እየ ሠራህ ነ ው?

ሀ. ከ1 አመት በታች ለ. 1-5 ዓመታት ሐ. 6-10 ዓመታት

መ11-15 ዓመታት ሠ. ከ 15 ዓመት በላይ

19. በአማካይ በቀን ስንት ሰዓት ነ ውየ ምትሰራው?

ሀ. ከ8 ሰአት በታች ለ. 8 ሰዓታት ሐ ከ 8 ሰአታት በላይ

20. ምን አይነ ት የ ስራ አካባቢ አለህ?

ሀ. ከቤት ውጭ ለ. የ ቤት ወስጥ ሐ. ሁለቱም

ክፍል 3 የሙያ አደጋ ተጋላጭነት

I. የአካል ሥራ አደጋዎች

21. በስራ ቦታዎ ውስጥ ለረጅም ጊዜ መቀመጥ እና መቆም አለህ?

ሀ. አዎ ለ. አይ

22 በስራ ቦታዎ ውስጥ ለከፍተኛ ሙቀት (ከፍተኛ ሙቀት) ወይም ለድርቀት የተጋለጡ ናቸው?

ሀ. አዎ፣ በተደጋጋሚ ለ. አዎ፣ አልፎ አልፎ ሐ. አይ

23. ለከፍተኛ ጫጫታ (> 85 ዲቢቢ) በመደበኛነት መጋለጥ ያጋጥምዎታል?

ሀ. አዎ ለ. አይ

24. አዎ ከሆነ፣ የድምጽ ምንጮች አይነት (የሚመለከተውን ሁሉ ያረጋግጡ)

ሀ. ማሽን ለ. የመጓጓዣ ተሽከርካሪዎች

ሐ. መሳሪያዎች (ለምሳሌ፣ መሰርሰሪያ፣ መጋዝ) መ.ሌላ (ይግለጹ)_____

25. ለከፍተኛ የድምፅ ደረጃዎች የመጋለጥ ድግግሞሽ;

ሀ. አልፎ አልፎ (በሳምንት 1-2 ጊዜ) ለ. ብዙ ጊዜ (በሳምንት 3-5 ጊዜ) ሐ. በየቀኑ

26. በአንድ ፈረቃ ለከፍተኛ የድምፅ ደረጃዎች የመጋለጥ ቆይታ፡-

ሀ. ከ8 ሰአት በታች ለ. 8 ሰዓታት ሐ. ከ 8 ሰአታት በላይ

27. ማንኛውንም የመስማት ችሎታ መከላከያ መሳሪያ ይጠቀማሉ?

(ለምሳሌ የጆሮ ማዳመጫዎች፣ ጫጫታ የሚሰርዙ የጆሮ ማዳመጫዎች)?

ሀ. አዎ፣ ሁልጊዜ ለ. አዎ አልፎ አልፎ ሐ. አይ

II.የኬሚካል አደጋዎች

28. በስራ ላይ ካሉ ኬሚካሎች ጋር ይገናኛሉ ወይም ይገናኛሉ?

ሀ. አዎ ለ. አይ

29. አዎ ከሆነ፣ የኬሚካል ዓይነቶችን ይግለጹ፡-

ሀ. ከባድ ብረቶች (ለምሳሌ እርሳስ፣ ሜርኩሪ፣ ካድሚየም)

ለ. ኦርጋኒክ መሟሟት (ለምሳሌ፡ ቤንዚን፣ ቶሉይን)

ሐ. ፀረ-ተባይ/አረም ማጥፊያዎች

መ. የጽዳት ወኪሎች

ሠ. ሌላ (እባክዎ ይግለጹ)

ረ. ከላይ ከተጠቀሱት ውስጥ አንዳቸውም

30. ዋና የኬሚካል መጋለጥ ምንጮች (የሚመለከተውን ሁሉ ያረጋግጡ)

ሀ. ጥሬ ኬሚካሎችን አያያዝ ለ. የማምረት ሂደቶች ሐ. ሌላ (ይግለጹ)

31. በስራ ቦታዎ ውስጥ ኬሚካሎችን ምን ያህል ጊዜ ይገናኛሉ ወይም ይጠቀማሉ?

ሀ. ዕለታዊ ለ. ሳምንታዊ ሐ. ወርሃዊ መ. አልፎ አልፎ ሠ. በጭራሽ

32. የተጋላጭነት ጊዜ በአንድ ፈረቃ

ሀ. ከ8 ሰአት በታች ለ. 8 ሰዓታት ሐ. ከ 8 ሰአታት በላይ

33. ኬሚካሎችን በሚይዙበት ጊዜ ከሚከተሉት የመከላከያ መሳሪያዎች ውስጥ አንዱን ይጠቀማሉ?

(የሚመለከተውን ሁሉ አረጋግጥ)

ሀ. ጓንት ለ. ጭምብሎች / የመተንፈሻ አካላት ሐ. መነጽር

መ. መከላከያ ልብስ ሠ. ሌላ ከተገለጸ___ ረ. ምንም

34. የኬሚካል መጋለጥ በሚከሰትበት የስራ ቦታዎ ውስጥ ያለውን አየር ማናፈሻ ይግለጹ፡-

ሀ. በደንብ አየር የተሞላ (ለምሳሌ፣ ክፍት መስኮቶች፣ የጭስ ማውጫ አድናቂዎች)

ለ. የተወሰነ የአየር ማናፈሻ (ለምሳሌ፣ አልፎ አልፎ የአየር ፍሰት)

ሐ. ደካማ አየር ማናፈሻ (ለምሳሌ፣ የታሸጉ ወይም በደንብ ያልተነፈሱ ቦታዎች)

35. የስራ ቦታዎ የአየር ወለድ ኬሚካሎችን ለማስተዳደር የጭስ ማውጫ ዘዴዎች ወይም አየር ማጽጃዎች አሉት?

A. አዎ ለ. አይደለም

36. ኬሚካላዊ አያያዝ የሚከናወነው በተዘጉ ቦታዎች ነው ወይንስ በጢስ ማውጫ ውስጥ?

ሀ. አዎ ለ. አይደለም

37. ከኬሚካል መጋለጥ ቦታዎች ርቀህ መደበኛ እረፍት ታደርጋለህ?

ሀ. አዎ ለ. አይ

38. በአስተማማኝ ኬሚካላዊ አያያዝ እና አደጋን መለየት ላይ ስልጠና ወስደዋል?

ሀ. አዎ ለ. አይ

39.ቀጣሪዎ መደበኛ የደህንነት መግለጫዎችን ወይም ማደሻዎችን ያካሂዳል?

ሀ. አዎ ለ. አይ

40. ከኬሚካላዊ ተጋላጭነት ጋር ሊዛመዱ ከሚችሉ ከኩላሊት ጋር የተዛመዱ በሽታዎች ታውቀዋል?

ሀ. አዎ (ሁኔታን ይግለጹ) ለ. አይ

III. ባዮሎጂካል አደጋዎች

41. ለተላላፊ በሽታዎች ተጋላጭነት ባለው አካባቢ ውስጥ ይሰራሉ?

ሀ. አዎ ለ. አይደለም

42. አዎ ከሆነ፣ በስራ ቦታ ሊያጋጥሟቸው የሚችሉ የባዮሎጂካል ወኪሎች ዓይነቶች (የሚመለከተውን ሁሉ ያረጋግጡ)

ሀ. የደም ወለድ በሽታ አምጪ ተህዋሲያን (ለምሳሌ፡ ሄፓታይተስ ቢ፣ ሄፓታይተስ ሲ፣ ኤች አይ ቪ)

ለ. ባክቴሪያ (ለምሳሌ ቲዩበርክሎሲስ፣ ኢ. ኮላይ)

ሐ. ቫይረሶች (ለምሳሌ፡ ኢንፍሉዌንዛ፣ ኮቪድ-19)

መ. ፈንገሶች ወይም ሻጋታዎች (ለምሳሌ፣ አስፐርጊለስ)\

ሠ. ጥገኛ ተውሳኮች (ለምሳሌ፡ ቶክሶፕላስማ፣ ስኪስቶሶም)

ረ. የእንስሳት ወይም የሰው አካል ፈሳሾች (ለምሳሌ፡ ደም፣ ምራቅ፣ ሽንት)

ሰ. ሌላ (ይግለጹ)

43. ዋናው የባዮሎጂካል አደጋ መጋለጥ ምንጭ (የሚመለከተውን ሁሉ ያረጋግጡ)

ሀ. የሰዎች ሕመምተኞች (ለምሳሌ፡ የጤና እንክብካቤ፣ ቤተ ሙከራ)

ለ. የእንስሳት ወይም የእንስሳት ቆሻሻ (ለምሳሌ፡ የእንስሳት ህክምና፣ እርሻ)

ሐ. የተበከለ

44. ለባዮሎጂካል ወኪሎች የመጋለጥ ድግግሞሽ;

ሀ. ዕለታዊ ለ. ሳምንታዊ ሐ. ወርሃዊ D. አልፎ አልፎ

45. ለባዮሎጂካል አደጋዎች የመከላከያ መሳሪያዎችን መጠቀም?

ሀ. አዎ ለ. አይደለም

IV. ሳይኮሶሻል እና ኤርጎኖሚክ ምክንያቶች

46. ከሥራ ጋር የተያያዘ ከፍተኛ ጭንቀት ያጋጥምዎታል?

ሀ. አዎ ለ. አይደለም

47. በጊዜ ገደብ ወይም በምርታማነት ዒላማዎች ምክንያት በግፊት ይሰራሉ?

ሀ. አዎ ለ. አይ

48. በሥራ ላይ የጭንቀት ሁኔታዎች ድግግሞሽ;

ሀ. ዕለታዊ ለ. ሳምንታዊ ሐ. ወርሃዊ

49. የተጋላጭነት ጊዜ በአንድ ፈረቃ

ሀ. ከ8 ሰአት በታች ለ. 8 ሰዓታት ሐ. ከ 8 ሰአታት በላይ

V. ለአቧራ እና ለከፊል ቁስ መጋለጥ

50. ከፍተኛ መጠን ያለው አቧራ ወይም ብናኝ በሆነ አካባቢ ውስጥ ይሰራሉ?

ሀ. አዎ ለ. አይ

51. አዎ ከሆነ፣ የአቧራ ዓይነቶች ወይም ጥቃቅን ቁስ አካላት አጋጥሟቸዋል (የሚመለከተውን ሁሉ ያረጋግጡ)

ሀ. የማዕድን አቧራ (ለምሳሌ፣ ሲሊካ፣ አስቤስቶስ)

ለ. ብረት ብናኝ (ለምሳሌ፡ አሉሚኒየም፣ እርሳስ፣ ክሮሚየም)

ሐ. ኦርጋኒክ አቧራ (ለምሳሌ እንጨት፣ እህል፣ ዱቄት)

መ. ሰው ሠራሽ አቧራ (ለምሳሌ፣ ፋይበርግላስ፣ የካርቦን ፋይበር)

ሠ. አፈር ወይም የግንባታ አቧራ

ረ. ሶት ወይም ካርቦን-ተኮር ቅንጣቶች

ሰ. ሌላ (ይግለጹ

52. የአቧራ ወይም የንጥረ ነገሮች መጋለጥ ምንጭ (የሚመለከተውን ሁሉ ያረጋግጡ)

ሀ. ቁሶችን መቁረጥ፣ መፍጨት ወይም ቁፋሮ

ለ. ከባድ ማሽነሪዎችን መሥራት

ሐ. ኬሚካሎችን ወይም ዱቄትን መጠቀም

መ. የጅምላ ቁሳቁሶችን (ለምሳሌ አሸዋ፣ ጠጠር፣ አፈር) አያያዝ

ሠ. በተከለከሉ ቦታዎች ውስጥ መሥራት (ለምሳሌ፣ ፈንጂዎች፣ ዋሻዎች)

ረ. ሌላ (ይግለጹ):

53. የተጋላጭነት ጊዜ በአንድ ፈረቃ፡-

ሀ. ከ1 ሰአት ባነሰ ጊዜ ለ. 1-3 ሰአታት ሐ. 4-6 ሰአታት መ. ከ 6 ሰአት በላይ

54. በሥራ ቦታ ለአቧራ፣ ለጭስ፣ ለጭስ ወይም ለጋዞች ምን ያህል ጊዜ ይጋለጣሉ?

ሀ. ዕለታዊ ለ. ሳምንታዊ ሐ. ወርሃዊ መ. አልፎ አልፎ ሠ. በጭራሽ

55. የመተንፈሻ መከላከያ መሳሪያዎችን (ለምሳሌ, ጭምብሎች, መተንፈሻዎች) ይጠቀማሉ?

ሀ. አዎ ለ. አይ

ክፍል 4፡ የጤና እና የአኗኗር ዘይቤዎች

56. ለሲጋራ ማጨስ ምን ያህል ጊዜ ተጋልጠዋል?

ሀ. አልፎ አልፎ ለ. በተደጋጋሚ

57. አልኮል ጠጥተው ያውቃሉ?

ሀ. አዎ፣ በየቀኑ ለ. አዎ፣ አልፎ አልፎ ሐ. አዎ፣ ያለፈው አሁን አይደለም መ. በጭራሽ

58. በሳምንት ስንት ጊዜ የአካል ብቃት እንቅስቃሴ ያደርጋሉ?

ሀ. በየቀኑ ለ በሳምንት ጥቂት ጊዜ ሐ. በየሳምንቱ መ. አልፎ አልፎ

59. የተሻሻሉ ወይም ጨዋማ ምግቦችን ምን ያህል ጊዜ ይጠቀማሉ?

ሀ. በየቀኑ ለ. በሳምንት ጥቂት ጊዜ ሐ. በየሳምንቱ መ. አልፎ አልፎ

60. አመጋገብዎን ከኩላሊት ጤና (ዝቅተኛ ጨው፣ ዝቅተኛ ፕሮቲን፣ ወዘተ) አንፃር እንዴት ይመዝኑታል?

ሀ. በጣም ጥሩ ለ. ጥሩ ሐ. አማካኝ መ. ድሆች ሠ.. በጣም ድሆች

61. አማካይ ዕለታዊ የውሃ ፍጆታዎ ስንት ነው?

ሀ. ከ 1 ሊትር ባነሰ ለ. 1-2 ሊትር ሐ. ከ 2 ሊትር በላይ

62. አሁን ካለው ስራ ሌላ ሰርተሃል?

ሀ. አዎ ለ. አይ

63. አዎ ከሆነ ሁሉንም ከላይ ያለውን (ከ21-85) ጥያቄ ይድገሙት

ክፍል 5: የጤና ሁኔታዎች

64. ከሚከተሉት የጤና እክሎች ውስጥ አንዳቸውም እንዳለዎት ተነግሮዎት ያውቃል?(የሚመለከተውን ሁሉ አረጋግጥ)

ሀ. ከፍተኛ የደም ግፊት

ለ. የስኳር በሽታ

ሐ. የካርዲዮቫስኩላር በሽታ

መ. ካንሰር

ሠ. ኤች.አይ.ቪ

ረ. ስትሮክ

ረ. የሽንት ቧንቧ ኢንፌክሽኖች

ሰ. ሌላ (ይግለጹ)

ሸ. የለም

65. የኩላሊትዎን ተግባር ምን ያህል ጊዜ ይመረምራሉ?

ሀ. ቢያንስ በዓመት አንድ ጊዜ

ለ. በየጥቂት ዓመታት

ሐ. ምልክቶች ሲታዩ ብቻ D. በጭራሽ

ክፍል 6፡ የግንዛቤ እና የመከላከያ እርምጃዎች

66. ከስራዎ ተጋላጭነት ጋር ተያይዘው ሊከሰቱ የሚችሉትን የጤና አደጋዎች ያውቃሉ?

ሀ. አዎ፣ ሙሉ በሙሉ ለ. አዎ፣ በመጠኑ ሐ. አይደለም፣ በፍጹም

67. ለሙያ አደጋዎች ተጋላጭነትን ለመቀነስ በስራ ቦታ ስልጠና ወስደዋል

ሀ. አዎ ለ. አይደለም

68. በሥራ ላይ ለጎጂ ንጥረ ነገሮች ተጋላጭነትን ለመቀነስ በመደበኛነት ማንኛውንም እርምጃ ይወስዳሉ?

ሀ. አዎ፣ ሁልጊዜ ለ. አዎ፣ አልፎ አልፎ ሐ. አይ

69. በጤናዎ ላይ ከስራዎ ጋር ሊዛመድ ይችላል ብለው የሚያስቡትን ለውጦች አስተውለዋል?

ሀ. አዎ፣ ጉልህ ለውጦች

ለ. አዎ፣ ጥቃቅን ለውጦች

ሐ. አይ፣ ምንም ለውጦች አልተስተዋሉም።

70. በአሁኑ ስራዎ ምን ያህል ረክተዋል?

ሀ. በጣም ረክቻለሁ ለ. እርካታ ሐ. ገለልተኛ

መ. አልረካም ሠ. በጣም አልረካም

72. ስራዎ በአካላዊ እና በአዕምሮአዊ ደህንነትዎ ላይ አዎንታዊ ወይም አሉታዊ ተጽእኖ እንደሚፈጥር ይሰማዎታል?

ሀ. በአዎንታዊ መልኩ ለ. ገለልተኛ ሐ. በአሉታዊ መልኩ

73. አሉታዊ ከሆነ, ደህንነትዎን የሚነኩ የስራዎን ገፅታዎች ይግለጹ

74. በጤና ላይ የሙያ እና የአካባቢ ሁኔታዎች ተጽእኖ

ሀ. ጠቃሚ ለ. መካከለኛ ሐ. አነስተኛ መ. የለም

75. ከሥራዎ ጋር በተገናኘ ሥር በሰደደ የኩላሊት በሽታ ላይ ሊከሰቱ የሚችሉ አደጋዎችን ያውቃሉ?

ሀ. አዎ ለ. አይደለም

76. ሥራዎ ለኩላሊት በሽታ ሊያጋልጥዎት ይችላል ብለው ያምኑ ነበር?

ሀ. አዎ፣ ጉልህ በሆነ መልኩ ለ. አዎ፣ በመጠኑ ሐ. አይ.

77. ከ ሥር የሰደደ የኩላሊት በሽታ ጋር ስለተያያዙ የሙያ አደጋዎች መረጃ ወይም ስልጠና ወስደዋል?

ሀ. አዎ ለ. አይ

78. የቤተሰብ ሥር የሰደደ የኩላሊት በሽታ ታሪክ አለህ ወይም ከኩላሊት ጋር የተያያዙ የጤና ጉዳዮች?

ሀ. አዎ ለ. አይ ሐ. እርግጠኛ ያልሆነ

79. የኩላሊት ጤናን ለመጠበቅ ከስራ ውጭ ማንኛውንም እርምጃ ወስደዋል (ለምሳሌ የመጠጥ ውሃ፣ አንዳንድ ንጥረ ነገሮችን ማስወገድ)?

ሀ. አዎ (ይግለጹ) ለ. አይ

80. ከታወቀ ሥር የሰደደ የኩላሊት በሽታ በፊት የኩላሊት ሥራን መርምረዋል?

ሀ.አዎ ለ. አይ

81. በስራ ቀናት ውስጥ የኩላሊት ችግሮችን የሚጠቁሙ ምልክቶችን አስተውለዋል (ለምሳሌ እብጠት፣ የሽንት ለውጦች)?

ሀ. አዎ (ምልክቶችን ይግለጹ) ለ. አይ

ክፍል 7፡ የመከላከያ እርምጃዎች እና የስራ ቦታ ደህንነት

82. በስራ ቦታ ንጹህ የመጠጥ ውሃ አሎት?

ሀ. አዎ፣ ሁልጊዜ ለ. አዎ፣ አልፎ አልፎ ሐ. አይ

83. በስራ ቦታዎ አማካኝነት መደበኛ የሕክምና ምርመራ ማድረግ ይችላሉ?

ሀ. አዎ፣ ሁልጊዜ ለ. አዎ አልፎ አልፎ ሐ. አይ

84 የግል መከላከያ መሳሪያዎች (PPE) በስራ ቦታዎ ይገኛሉ እና ይሰጣሉ?

(የሚመለከተውን ሁሉ አረጋግጥ)

ሀ. አዎ፣ ሁልጊዜ ለ. አዎ

85. የስራ ቦታዎ የሙያ አደጋዎችን ለመቆጣጠር የደህንነት ፕሮቶኮሎች አሉት?

ሀ.. አዎ ለ. አይደለም

86. በስራ ቦታ ጤና እና ደህንነት ልምዶች ላይ ስልጠና ወስደዋል?

ሀ. አዎ ለ. አይ

87. የጤና እና የደህንነት ስልጠና ምን ያህል ጊዜ ይሰጣል?

ሀ. በየአመቱ ለ. በየጥቂት አመታት ሲ. አንድ ጊዜ ብቻ፣ በመሳፈር ወቅት

88. የስራ ቦታዎ ለሙያ ደህንነት ቁርጠኛ እንደሆነ ይሰማዎታል?

ሀ.. አዎ ለ. አይደለም

89. የጤንነት ክትትል በቦታው አለ (ለምሳሌ, የተጋላጭነት ተፅእኖዎች መደበኛ ምርመራዎች)?

ሀ. አዎ ለ. አይ

90. የጤና እና የደህንነት ስጋቶችን ሪፖርት ለማድረግ እና ለመፍታት ሂደቶች አሉ?

ሀ.. አዎ ለ. አይ

ክፍል 8፡ የስራ ምርታማነት እና የተግባር እክል መጠይቅ

የእንቅስቃሴ እክል መጠይቅ

የሚከተሉት ጥያቄዎች የእርስዎ ችግር በመሥራት እና መደበኛ እንቅስቃሴዎችን በማከናወን ላይ ስላለው ተጽእኖ ይጠይቃሉ። እባክህ ባዶውን ሙላ ወይም ቁጥር አክብብ፣ እንደተመለከተው።

1. በአሁኑ ጊዜ ተቀጥረው (ለክፍያ እየሰሩ ነው)?

A. አዎ ለ. አይደለም

እይ ከሆነ መልሱ ውድ ስድስተኛው ጥያቄ ይሂዱ

2.ባለፉት ሰባት ቀናት ውስጥ ከችግርህ ጋር በተያያዙ ችግሮች ምክንያት ከስራ ለምን ያህል ሰአት አምልጠሃል? በችግርዎ ምክንያት በህመም ቀናት ያመለጡዎትን ሰዓቶችን፣ ዘግይተው የገቡበትን ጊዜ፣ ቀደም ብለው የወጡበትን፣ ወዘተ ያካትቱ። በዚህ ጥናት ውስጥ ለመሳተፍ ያመለጠዎትን ጊዜ አያካትቱ።

_ _ ሰአት

3.ባለፉት ሰባት ቀናት ውስጥ በዚህ ጥናት ላይ ለመሳተፍ እንደ ዕረፍት፣ በዓላት፣ የእረፍት ጊዜያት ባሉ ሌሎች ምክንያቶች ከስራ ምን ያህል ሰዓት አምልጠሃል?

_ _ ሰአት

4. ባለፉት ሰባት ቀናት ውስጥ ምን ያህል ሰዓታት በትክክል ሠርተዋል? _

----ሰዐት

5. ባለፉት ሰባት ቀናት ውስጥ፣ እርስዎ በሚሰሩበት ጊዜ ችግርዎ በምርታማነትዎ ላይ ምን ያህል ተጽዕኖ አሳድሯል?

እርስዎ በሚሰሩበት ጊዜ በምርታማነት ላይ ምን ያህል እንደተነዳ ብቻ አስቡበት።

ችግሩ በሥራዬ ላይ ምንም ችግሩ ሙሉ በሙሉ ሥራ

መሥራት ከለከለኝ

ውጤት አልነበረውም

1 2 3 4 5 6 7 8 9 10

ችግሩ በሥራዬ ላይ ምንም ውጤት አልነበረውም ችግሩ ሙሉ በሙሉ ሥራ መሥራት ከለከለኝ

CURRICULUM VITAE

Name	Samson Wakuma Abaya	
E-mail	Samson_wakuma@yahoo.com	
Country of Citizenship/Residence	Ethiopian	
Education and Qualification		
June, 2014- June, 2019	PhD in Public Health, Addis Ababa University, Ethiopia	
Sep, 2008-June, 2010	Master of Public Health, Lund University, Sweden,	
Sep, 2006-June, 2008	Master of Science in Environmental Studies and Sustainability Science, Lund University, Sweden	
Sep, 2001- July, 2004	Bachelor of Science in Environmental Health, Jimma University, Ethiopia	
Sep, 1995- October 1997	Diploma in Sanitary Science, Gondar College of Medical Sciences, Ethiopia	
Employment record relevant to the assignment		
April 2024- till present	Ethiopia	Associate Professor at the Department of Preventive Medicine, School of Public Health, Addis Ababa University
Nov 2019 – Nov 2023	Ethiopia	Head & Assistant Professor at Department of Preventive Medicine, School of Public Health, Addis Ababa University
June 2013-June 2019	Ethiopia	Lecturer, at the School of Public Health, College of Health Sciences, Addis Ababa University
July 2004- Aug, 2006	Ethiopia	Assistant lecturer, Haramaya University, Ethiopia
January 2000-Sep 2001	Ethiopia	Head of Chiro District Health Office, Oromia Region, Ethiopia
Nov 1997- January 2000	Ethiopia	Environmental Health Exper in Chiro District, Oromia Region, Ethiopia
Selected Publications		
Abaya S. Mereta S. Tulu F. Mekonnen Z. Ayana M. Girma M. Vineer H. Mor S. Caminade C. Brown J. Prevalence of Human and Animal Fasciolosis in Butajira and Gilgel Gibe Health Demographic Surveillance System Sites in Ethiopia. Trop Med Infec Dis. 2023; 8(4):208 **DOI:** 10.3390/tropicalmed8040208		
Abaya S. Bråtveit M. Kumie A. Deressa W. Moen B. Bacterial contamination of coffee and personal		

CURRICULUM VITAE

Yetemwerk Dagmawi
Place and date of Birth –Addis Ababa, Dec 23,1999 G.C
Age -23
Address – phone number = +241-94770988
Email = yetemwerkmuludagimawi@gmail.com

CAREER OBJECTIVE

I have been enthusiastically engaged in various management and leadership knowledge with ever growing interest and work. I believe that I possess a fair deal of knowledge and skills.
I am highly self motivated, young, energetic and visionary person.
Having this in mind if your organization considers my application, I am ready to appear for interview and other detail relevant information.

EDUCATION

BSc degree in public health

Mizan Tepi University on February 02,2023

Academic Achievement CGPA of 3.82 out of 4.00

LANGUAGE SKILL

A. Amharic ■■■■
B. English ■■■□

REFERENCE

1. Besufikad Mekonen (Ass. Professor, MPH in Environmental health)
Phone no +251938506759
Email:- besufekad@mtu.edu.et or besusweet12@gmail .com
2. Niguse Shiferaw (Ass. professor, MPH)
Phone no r-+251 93 423 3144
Email:- nigusieshifera@gmail.com

3.Adane Assefa (Ass. professor, MPH in Epidemiology)
Phone no +251910650026
Email:- adane779@gmail.com

exposure to inhalable dust and endotoxin
Medicine.
a W., Kum
n Primary
a W., Kum
ctories in
blic Healt
a W., Kum
rm processing: A concern for the respiratory health of production
ental and Occupational Health. DOI: 10.1080/19338244.2019.1592094
ssa W., Kumie A., Moen B.E. 2019. Respiratory health among hand pickers
actories of Ethiopia. Journal of Occupational and Environmental Health,
inqvist N, 2011. Health officials' perceptions of and preparedness for the
impacts of climate variability on human health in the Somali region Ethiopia. Mitigation and Adaptation
I: 10.1007/s11027-011-9282-1
d G., 2009. Floods and Health in Gambella Region, Ethiopia, A
engths and weakness of coping mechanisms. Global Health Action
9