ASSESSMENT OF OCCUPATIONAL SAFETY AND HEALTH MEASURES AND ASSOCIATED FACTORS AMONG KYAMBOGO AND UGANDA CHRISTIAN UNIVERSITY STAFF

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DECLARATION

This dissertation is my original work and has not been presented for a degree in a university or any other academic institution.

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DECLARATION BY THE SUPERVISOR

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LIST OF ABBREVIATIONS

HBM	Health Belief Model
ILO	International Labor Organization
ITEK	Institute of Teacher Education Kyambogo
KYU	Kyambogo University
LDC	Low Developing Countries
OSH	Occupational Safety and Health
OSU	Oregon State University
SSA	Sub Saharan Africa
UCU	Uganda Christian University
UCU-REC	Uganda Christian University Research and Ethics Committee
UPK	Uganda Polytechnic Kyambogo
WHO	World Health Organization

DEFINITION OF KEY TERMS

Occupational hazard- any workplace condition that causes a risk to employee health.

Occupation health- the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations

Practices- Activities and processes, including codes and norms in the workplace.

Hazard- a potentially damaging physical event, human activity or phenomenon with the potential to cause loss of life or injury, property damage, social and economic disruption of life, and environmental degradation, among other effects

Risks- This is the likelihood of identified hazards causing harm in exposed populations.

Occupational- A work-related event.

Assessment- Finding to ascertain the status of the facility and activities in regard to occupational health and safety practices.

ABSTRACT

This study aimed to assess the common occupational health hazards, the level of implementation of occupational safety and health (OSH) measures and the associated factors among staff of universities in Uganda. This was a cross-sectional study that utilised both quantitative and qualitative methods to collect the data. The study involved 394 participants.

The factors that were significantly associated with the implementation of OSH measures were; working in the institution for 5-10 years (APR=0.83, 95% CI: 0.71-0.99), P-value = 0.036; working in the institution for >10 years (APR=0.72, 95% CI: 0.58-0.92), P-value = 0.007); knowledge on OSH (APR=0.70, 95%CI:0.59-0.83), P-value < 0.001; feeling very good about the OSH in place (APR=3.49, 95% CI:1.56-7.77), P-value=0.002 and commitment by the management (APR=1.77, 95% CI: 1.09-2.87), P-value=0.021. Similarly, factors that were found to influence the implementation of OSH measures from the qualitative findings included Working in the university for long hours, knowledge levels, presence of policies regarding OSH, and good leadership.

The study revealed that half of the respondents were exposed to occupational hazards ranging from ergonomic, physical, chemical and psychosocial hazards. In addition, more than half of the respondents reported a high implementation of occupational safety and health measures at the universities. Years of work at the institution, knowledge of OSH, perceptions regarding OSH, and commitment from management were significantly associated with the implementation of OSH measures. There is a need to prioritize OSH measures in Ugandan universities through staff training, policy enforcement, and good leadership and management commitment to promote a safer working environment for staff.

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Every year, approximately 2 million people globally succumb to diseases and injuries related to their work environments (WHO&ILO, 2021). These unfortunate occurrences stem from various occupational health hazards, including long working hours, air pollution, exposure to asthmagens, carcinogens, chemical substances, ergonomic challenges, and noise (Henry et al., 2017). Occupational health hazards, as (Maier, 2009, ILO, 2019) notes, are risks to the health and safety of workers who are not home-based. Occupational safety and health (OSH) is a multidisciplinary field focused on enhancing and maintaining the highest level of physical, mental, and social well-being of workers across all professions (WHO&ILO, 2022). Despite efforts by organizations to establish a robust occupational safety and health culture to achieve their corporate goals (Wariowei and Nwogu, 2018), challenges in managing occupational health hazards persist.

These hazards not only impact economic stability but also significantly affect the physical and emotional well-being of workers and their families (ILO, 2019). For instance, in countries like China and Bangladesh, many workplace accidents and injuries have been directly linked to occupational health hazards (Islam et al., 2017; Zhou et al., 2019). Although data on OSH in Ugandan universities are scarce, studies from universities in Canada, the United Kingdom, and Australia indicate that staff are concerned about working under precarious conditions with insecure contracts, which expose them to various occupational health complications (Thomas et al., 2020; University and College Union, 2020; Jerg-Bretzke et al., 2021).

The WHO reports that occupational safety and health hazards and work-related deaths majorly occur in low-developing countries (LDCs) in Southeast Asia, the Western Pacific and Africa

(WHO, 2021). No wonder these countries continue to report a high number of cases due to occupational related non-communicable diseases emanating from exposure to poor working conditions (WHO, 2020a, Akseer *et al*., 2020, Akpansung and Peter, 2021). The world has made significant progress in improving the health and well-being of the population, as reaffirmed in the 2030 Agenda for Sustainable Development (United Nations, 2015). This progress is evidenced by a reduction in maternal, neonatal, and child deaths, as well as a decrease in deaths from HIV/AIDS, malaria, tuberculosis, and vaccine-preventable diseases (WHO, 2020b). However, occupational hazards have not received enough attention, despite being a significant threat to population health in the workplace.

Previous studies in China and Bangladesh have reported that occupational accidents and hazards are associated with occupational health hazards (Islam *et al*., 2017, Zhou *et al*., 2019). Similarly, in Canada, United kingdom and Australia, studies revealed that university staff expressed concern over working under precarious conditions coupled with insecure contracts and unfavourable work conditions that exposed them occupational health complications (Thomas *et al.*, 2020, University and college Union, 2020, Jerg-Bretzke *et al.*, 2021). In sub-Saharan Africa (SSA), there are limited studies that have been conducted on occupational health hazards and safety practices among university staff. Therefore, the implementation of safety practices is not clear although educators and researchers in universities are expected to be at the forefront in the implementation of OSH practices (Li, 2022).

The factors that have been reported to influence the implementation of occupational safety and health measures include both institutional and individual such as unsafe working environment, work overload, lack of personal protective equipment (PPE), lack of enough work facilities and long working hours (Senso, 2017, Simukonda *et al*., 2020), However, these factors have been

studied in health and engineering workers and may not necessarily apply among the university staff. To achieve the commitments made in the declaration of Astana for universal health coverage (WHO, 2018), occupational hazards such as, biological, chemical, physical, ergonomic, psychosocial, fire and explosion, and electrical hazards that affect the population's health at work need to be given focus in all professions.

In Uganda, although the Occupational Safety and Health Act (2006) stipulates the conditions under which an employee must work, and the conditions that make a workplace safe for workers (Government of Uganda, 2006). However, it is not clear whether the institutions of higher learning, like universities in Uganda, have clear occupational health and safety policies in place to prevent, control and improve the work environment in order to control the associated hazards. Elsewhere, unsafe learning and teaching environments have been reported to expose both teaching and non-teaching staff to various safety and health risks. These risks include workplace accidents, work stress, drug abuse, suicide attempts, fights, rapes, and diseases such as lung diseases, HIV and AIDS among others (Njeru, 2015, USAID, 2013). This study aimed to assess the common occupational health hazards, level of implementation of occupational health and safety measures and the associated factors among staff in Kyambogo and Uganda Christian University.

1.2 Statement of the problem

Although the world is committed to achieving UHC through joint actions to build stronger and sustainable PHC (WHO, 2019), occupational safety and health have not been given attention. Available data reveals that occupational safety and health hazards are a great public health concern resulting in increased occupational illnesses and injuries (Awudu, 2018). In Uganda, a study among workers on a construction reported a prevalence of occupation injuries at 32.4%

(Kiconco et al., 2019a). However, this study cannot be generalised for university staff, given that they work under different conditions. The common safety and health hazards and implementation of occupational safety and health measures are not well studied in universities in Uganda. The factors associated with the implementation of occupational safety and health measures in these institutions are also not known.

The government of Uganda has put in place measures to ensure the safety of workers (Government of Uganda, 2011), however these measures are silent on OSH in the universities. Moreover, the country's OSH policy framework is also not clear (Atusingwize et al., 2019). As a result, safety practices may not be adequate which leaves the working conditions in the universities unsafe for the staff. An unsafe environment exposes the teaching and non-teaching staff to various safety and health risks such as accidents, stress, drug abuse, suicide attempts, fights, rapes, and other diseases such as lung disease.

If this study is not conducted, universities risk exposing staff to preventable occupational hazards, missing critical opportunities to improve safety policies, and failing to meet legal and ethical obligations, which could lead to reduced staff morale, higher turnover and compromised institutional productivity This study aimed to determine the common occupational safety and health hazards, the level of implementation of occupational health and safety measures and the associated factors among staff in Kyambogo and Uganda Christian University.

1.3 Objectives of the study

1.3.1 General objective

To assess the occupational safety and health measures and associated factors among staff in Kyambogo and Uganda Christian University o as to enhance workplace safety, inform policy

development, and promote a safer working environment in Uganda's higher education institutions.

1.3.2 Specific objectives

1) To investigate the common occupational hazards among staff in Kyambogo and Uganda Christian University.
2) To assess the level of implementation of occupational safety and health measures among in staff in Kyambogo and Uganda Christian University.
3) To investigate the factors influencing the implementation of occupational safety and health measures among staff in Kyambogo and Uganda Christian University.

1.3.3 Research questions

1) What are the occupational safety and health hazards among staff in Kyambogo and Uganda Christian University?
2) What is the level of implementation of occupational safety and health measures among staff in Kyambogo and Uganda Christian University?
3) What are the factors associated with the implementation of occupational safety and health measures among staff in Kyambogo and Uganda Christian University?

1.4 Significance of the Study

There is limited data on occupational hazards and the level of implementation of occupational health and safety measures among the universities in Uganda. The associated factors are also not clear. Assessing the common occupational hazards, the level of implementation of occupational safety and health measures and the associated factors among the university staff is very crucial in understanding the burden of the occupational health hazards in this segment of the population. The findings of this study will inform sensitization programs aimed at improving occupational

safety and health measures among staff in universities in Uganda. The findings of this study will also supplement the existing knowledge on common occupational hazards, safety and health measures at the universities in Uganda. The suggested recommendations will aid in improving working conditions of the people which is beneficial to both individuals and the community. The findings will contribute to the attainment of the sustainable Development Goal (SDG) 3 (Good Health and Well-being) by promoting safer work environments, and SDG 8 (Decent Work and Economic Growth) through advocating for improved workplace conditions and safety standards. The study will also support regional efforts in Sub-Saharan Africa to enhance educational environments, which aligns with the international health and safety standards and contributing to the global agenda on workplace safety in educational settings

1.4.1 Justification of the Study

Despite the growing body of research on OSH in various professional settings, there is a paucity of studies focused on educational institutions, especially in Uganda. Current literature primarily concentrates on OSH in industrial and healthcare environments, with limited attention to the hazards faced by university staff. This oversight is critical as university environments pose distinct challenges, including a mix of administrative, academic, and operational hazards that are not typically found in other work settings. Moreover, existing studies tend to generalize findings without considering the diverse settings within higher education, such as differences between public and private institutions and between various academic disciplines. This study aimed to address this gap in knowledge.

1.5 Scope of the study

1.5.1 Geographical scope

The study was conducted in two universities, one public and another private in Uganda. The two universities were selected to give an understanding of the common occupational hazards and the level of implementation of occupational safety and health measures between public and private universities.

1.5.2 Content scope

The study determined the common occupational health hazards, the level of implementation of occupational health and safety measures and the associated factors among university staff.

1.5.3 Time scope

The study was conducted for nine months. It commenced with the selection of the topic in April 2022 which was followed by proposal writing in May and it was completed with the submission of the final dissertation in June 2023.

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview of Occupational Safety and Health

The OSH is multidisciplinary field that focuses on ensuring the safety, health, and welfare of individuals in the workplace. OSH plays a critical role across all sectors by preventing occupational diseases, injuries, and fatalities and promoting safer work environments through safety protocols and health protection practices. While occupational hazards are commonly associated with manufacturing, healthcare, and construction industries, universities also present unique OSH challenges (IOE, 2024). University academic and administrative staff are exposed to risks such as ergonomic stress from prolonged standing or sitting, chemical exposure in laboratories, biological hazards, and psychosocial pressures from workload demands (Occupational Medicine Partners, 2024). In higher education institutions, particularly in sub-Saharan Africa, the implementation of OSH measures is not well documented, yet university staff are vulnerable to these hazards (MGLSD, 2024).

2.2 Global overview of occupational safety and health

Each year, an estimated 2 million people die from work-related diseases and injuries globally (WHO&ILO, 2021). These diseases and injuries result from exposure to occupational health hazards such as; long working hours, air pollution, asthmagens, carcinogens, chemical and ergonomic risk factors, and noise while at work (Henry et al., 2017). According to Maier (2009), occupational health hazards are the possible risks to the health and safety of workers who work outside the home. Occupational safety and health is a multidisciplinary area of work aiming at the promotion and maintenance of the highest degree of physical, mental, and social well-being of workers in all occupations (WHO&ILO, 2022). Although every organization strives to achieve its corporate objectives by ensuring a competent workforce with established

occupational safety and health culture and practices, occupational health hazards still persist. Yet, these hazards pose a significant threat to health within work environments (Wariowei and Nwogu, 2018).

The occupational safety and health hazards result in accidents and illnesses that have a major impact on individuals and their families, not only in economic terms but also in terms of their physical and emotional well-being (Islam et al., 2017, Zhou et al., 2019).

2.3 Regional Differences in Occupational Safety and Health

World Health Organization (WHO) reports that occupational safety and health hazards and work-related deaths majorly occur in low developing countries (LDCs) in South-East Asia, Western Pacific and Africa (WHO, 2021). No wonder these areas are experiencing an upsurge of non-communicable diseases and other occupational-related diseases that mostly emanate from exposure to poor working conditions (WHO, 2020a, Akseer et al., 2020, Akpansung and Peter, 2021). The implementation of OSH measures also varies significantly across regions, influenced by economic, cultural, and regulatory factors. For instance, European countries, with their stringent EU regulations, tend to have lower rates of workplace accidents compared to regions with less rigorous oversight (European Agency for Safety and Health, 2023). In contrast, developing regions like South-East Asia and Africa face greater challenges due to limited regulatory enforcement and economic constraints, which hinder effective OSH practices (Ahmad et al., 2016).

2.4 Occupational safety and health across different sectors

The implementation of OSH varies significantly across sectors, each presenting unique challenges and requiring tailored approaches. In the healthcare sector, healthcare workers face a range of occupational hazards, including biological hazards from exposure to infectious diseases

like tuberculosis, hepatitis B/C, and COVID-19, chemical exposures from handling hazardous substances, and ergonomic challenges due to long hours of patient care and physically demanding tasks (Roze et al., 2021, WHO, 2023).

The construction sector is characterized by a high risk of physical injuries from machinery and falls, leading the industry to prioritize rigorous safety training and protective equipment. Building construction workers are three to four times more likely to be killed and twice as likely to be injured compared to workers in other occupations (Kiconco et al., 2019b). Physical hazards such as falls from heights on scaffolding or ladders significantly contribute to injuries and fatalities, along with risks from being struck by machinery, equipment, or falling objects (Shrestha, 2020, Kiconco et al., 2019b). Workers also face exposure to extreme temperatures, noise, vibration, and radiation. Chemical hazards are prevalent, with exposure to substances like cement, solvents, paints, and asbestos causing skin conditions and respiratory diseases, while dust from demolition and cutting poses additional risks (Shrestha, 2020, Kiconco et al., 2019b). Biological hazards include potential diseases from contact with bird droppings and insect bites. Ergonomically, the industry sees a high incidence of musculoskeletal disorders due to heavy lifting, repetitive motions, and awkward postures, exacerbated by vibrations from power tools (Shrestha, 2020). Additionally, psychosocial hazards such as stress, fatigue, and interpersonal conflicts can significantly impact mental health and safety (Shrestha, 2020).

The manufacturing industry contends with a spectrum of occupational hazards that necessitate robust safety protocols (Domínguez et al., 2021, Uddin, 2021, Bao et al., 2020). Physical hazards include exposure to loud and dangerous machinery, with risks of injury from being struck by equipment or falling objects, and ergonomic challenges like repetitive motions and heavy lifting that often led to musculoskeletal disorders. Workers also face risks from extreme temperatures,

vibrations, and radiation. Chemical hazards are prevalent as well, with workers exposed to hazardous airborne particles, dust, and chemicals that can cause respiratory issues and skin conditions. Biological hazards include the potential exposure to infectious diseases, particularly in close working environments. Electrical risks involve the danger of electrocution from improperly installed or maintained equipment and wiring. Additionally, the handling and storage of flammable materials introduce significant fire and explosion risks. The industry also faces high-risk activities such as working at heights, in confined spaces, and operating powered industrial vehicles, each requiring specific safety measures to mitigate associated dangers (Domínguez et al., 2021, Uddin, 2021, Bao et al., 2020).

Similarly, the services industry, encompassing retail, hospitality, healthcare, and education, encounters occupational hazards that affect both physical and mental health. Ergonomic risks from repetitive tasks and prolonged periods of standing are common, as are psychosocial challenges stemming from high-stress environments and customer interactions. Chemical and biological hazards also pose significant risks, particularly in settings like hospitals and salons where exposure to infectious agents is more likely. Furthermore, the sector is prone to accidents such as slips, trips, and falls, which necessitate vigilant hazard management and safety training (Arnold et al., 2019, Elshaer et al., 2023, Putz Anderson et al., 2020).

Each of these sectors demonstrates the need for tailored OSH strategies that address the specific risks and challenges inherent to their respective environments. Implementing these strategies effectively not only enhances worker safety and health but also contributes to the overall productivity and sustainability of the industries.

2.5 Work and Tasks in universities

Universities are complex environments where a diverse range of tasks are performed by different groups of staff, each facing unique occupational hazards. This section reviews the literature on the specific tasks undertaken in university settings and discusses the associated safety and health risks.

Academic staff

Academic staff engage extensively in teaching activities that involve prolonged periods of standing or sitting, which can lead to musculoskeletal disorders (MSDs). For example, a previous study in the United Kingdom found that university lecturers are at a significant risk of developing lower back pain and other ergonomic-related issues due to poor classroom furniture design (Venables and Allender, 2006, Balanay et al., 2014). Similarly, research activities often expose staff to chemical, biological, and physical hazards (Cornell University, 2020). Jones and Peters (2018) highlights that researchers working in scientific laboratories encounter risks from handling hazardous substances, requiring stringent safety measures and training to mitigate potential accidents and health issues.

Administrative staff

Administrative personnel in universities perform tasks that involve high levels of screen time and data processing, leading to eye strain and repetitive strain injuries. Sengo et al. (2023) reported a high prevalence of computer vision syndrome (CVS) among administrative staff that arises while using a computer or other Video Display Terminal (DVT).

Support staff

Existing evidence shows that those involved in the maintenance of university facilities face risks from electrical systems, mechanical repairs, and other maintenance activities that can result in

severe injuries. Research by Lee and Kim (2021) suggests that comprehensive safety training and proper personal protective equipment (PPE) are crucial to ensure the safety of maintenance workers. Custodial staff encounter chemical hazards from cleaning agents and risk of physical injuries from slips, trips, and falls. IT staff deal with electrical hazards and the stress associated with system downtimes and troubleshooting. Panigrahi (2016) recommend regular stress management workshops and updated safety protocols to address the unique challenges faced by these workers.

2.6 Occupational safety and health hazards among university staff

Academic institutions are not only places of learning but also work environments with distinct risks. Laboratories, libraries, and classrooms all present specific challenges—from chemical hazards in science labs to ergonomic risks in libraries and administrative offices (Amoakohene, 2022).

Studies from universities in high-income countries like Canada, United Kingdom and Australia have reported that staff work under precarious conditions coupled with insecure contracts and unfavourable that expose them to work occupational health complications (Thomas et al., 2020, University and college Union, 2020, Jerg-Bretzke et al., 2021).

University staff are exposed to an environment that makes them vulnerable to a range of physical, psychosocial, chemical and ergonomic hazards (Amoakohene, 2022, Kebede *et al.*, 2019, Njeru, 2015). For instance, a review of existing evidence indicates that office and workstation design in learning institutions is linked to exposure to ergonomic hazards (Amoakohene, 2022). Furthermore, lifting heavy loads and materials like books, overhead projectors, and other equipment as well as the postures required to execute their tasks increase the risk of musculoskeletal disorders (Kebede *et al.*, 2019). In this regard, a cross-sectional study

conducted in Saudi Arabia reported that 93.6% of the teachers developed musculoskeletal disorders within the last 12 months preceding the survey; with the lower back as the commonest site (72.9%), followed by the shoulders (66.9%), neck (49.8%), knees (46.6%), hips/thighs/buttocks (43.0%), upper back (42.6%), wrists/hands (39.4%), ankles/feet (37.9%), and elbows (17.9%) (Althomali, 2022). Similarly, another cross-sectional study in Ethiopia reported that all the college and university teachers in the survey experienced low back pain throughout their job career, with a 53.8% 12-month prevalence of low back pain (Beyen *et al.*, 2013). Musculoskeletal disorders have a substantial effect on school teachers' health and quality of life (Njeru, 2015).

In a cross-sectional study conducted in Kenya at Egerton University campuses, the prevalence of biological hazards was 11% (Njeru, 2015). The study identified biological hazards mainly in three areas, including the overcrowded classrooms and sanatorium where sick workers and students went for treatment. Regarding physical hazards, Amoakohene (2022) reported that open doors and drawers, sharp corners of filing cabinets, and carpets with bulges or broken seams often caused tripping accidents, cuts, abrasions and sprains. Slipping hazards caused by wet or dusty floors and unsuitable footwear or floor coverings or sloping floors were also reported. Besides, the study also indicated that electricity can be a safety hazard if not well handled and can lead to electric shocks, burns, electric fires and explosions (Amoakohene, 2022). Similarly, a Kenyan study conducted by Njeru (2015) reported a 13% prevalence of physical hazards. The study further reported that physical hazards were common, especially among workers in the kitchen where the temperatures were high, as well as in some offices which had dim light and were ill-ventilated.

Chemical hazards have also been reported in higher institutions of learning. For instance, a cross-sectional study conducted in Kenya reported that the prevalence of chemical hazards was 32% (Njeru, 2015). These were identified in offices where chemicals were used as detergents for cleaning and in teaching labs.

With regards to psychosocial hazards, a systematic review conducted in Malaysia reported that the prevalence of stress was high, especially among educators from higher institutions of learning (colleges and universities) ranging from 5.5% to 25.9%. The risk factors for stress reported in the review included high or heavy workloads and job demands among educators, research work, teaching and a low salary (pay benefit or income) (Tai *et al.*, 2019). Similarly, a cross-sectional study conducted in Northern Ghana reported similar findings (Issakah *et al*., 2021). In East Africa, a study in a Kenyan University reported a 15% prevalence of psychosocial hazards among the staff (Njeru, 2015). In Uganda, evidence of occupational hazards among university staff is limited.

2.7 Implementation of occupational safety and health measures in universities

Universities have a responsibility to ensure the safety and well-being of their staff. In high-income countries, universities have OSH policies which guide the implementation of OSH practices (OSU, 2021). In contrast, Njeru (2015) reported that there were no structures for implementing OSH on the campuses and the focus was more on worker compensation than prevention and control of the hazards. In particular, the university lacked a written and publicised policy on OSH which is a drawback to the implementation of OSH. The other implementation components were done in an unstructured manner due to the lack of a policy document.

Regarding personal protective equipment, the majority (68%) of the respondents in a study conducted in Kenya indicated that they did not have PPE. In addition, the majority reported that

the working machines, tools or equipment were inadequate at their work site and as a result, they were forced to improvise with un-ergonomic tools or equipment and hence exposing them to hazards (Njeru, 2015).

Routine medical examination of employees and training is a very crucial component of OSH and health. Despite this, a study conducted in Cairo indicated that only 12.2 % of the respondents reported previous training on occupational hazards (Mostafa, 2014). This concurs with findings in a study conducted in Kenya where the majority (88%) indicated that they had not attended any training on safety and health (Njeru, 2015). In addition, the majority (82%) had a medical examination on employment, the frequency of medical examination was low. The majority 60% of the respondents indicated that they had not been examined at any point in a year.

2.8 Factors that influence the implementation of occupational safety and health measures in universities

Several individual, organizational and societal factors facilitate or impede the implementation of OSH measures in institutions. For instance, a scoping review conducted by Siame *et al.* (2022) reported that workers' knowledge level and attitude towards OSH were focused on individual-level facilitators for the implementation of OSH measures, leaving individual-level facilitators for the implementation of OSH measures out of other factors. This was because knowledge improved their attitudes and, as a result, enabled them to effectively take part in the implementation of safety programs. These findings are similar to those reported in a cross-sectional study at Egerton University in Kenya which showed that the participants had higher knowledge levels (Njeru, 2015).

At the institutional level, management's commitment to safety, (which is the degree to which managers valued and supported safe working and were dedicated to workers' safety),

institutional policies and leadership were facilitators for the implementation of the OSH (Njeru, 2015, Siame *et* al., 2022). Collaborative practices, supportive policies and enforcement of regulation, OSH support and authority, external audit, certification, external incentives, pressure from customers, market competition, corporate image, and international trends were reported in literature as facilitators at the societal level. Some countries have put in place and enforced regulations which promote and support the uptake of OSH interventions in institutions (Siame *et al.*, 2022, Rahmi and Ramdhan, 2021).

A scoping review conducted by Siame *et al.* (2022) indicated that the barriers to implementation of OSH measures included low-risk perception, lack of time, inadequate skills, cultural and social norms, lack of support from management, high compliance cost, lack of harmonization of regulations, inadequate enforcement guidelines, lack of funding and weak coordination. Similarly, a cross-sectional study conducted among workers in universities indicated that the barriers to the implementation of OSH measures included; inadequate resources (28%), limited knowledge of OSH (25%), and inadequate financial support from management (20%) (Njeru, 2015). In Uganda, Atusingwize *et al.* (2019) in a qualitative study reported that gaps in the legal framework, low public awareness about OSH, poor planning, and limited human capacity, transparency, and accountability affected implementation.

While literature specifically addressing the educational sector is somewhat limited, insights can be gleaned from parallel industries known for their structured safety protocols, such as the construction industry. A notable study conducted in South Africa examined the myriad of factors influencing Occupational Safety and Health (OSH) practices within the construction sector. This study illuminated how external pressures such as client demands on project timelines, the imperative of maintaining a company's reputation, stringent OSH enforcement, and the

overarching framework of government legislation significantly shape OSH implementations (Kunodzia et al., 2024). These findings suggest that while the context may differ, the underlying principles governing effective OSH management—such as the integration of comprehensive safety policies, active management participation, and regulatory compliance—remain universally applicable and could potentially enhance OSH practices in the educational domain as well.

Additionally, a systematic review by Rahmi and Ramdhan (2021) expands on this by categorizing both internal factors like management commitment, employee morale, and sufficient resources, and external factors such as regulatory enforcement and market pressures, as influential to the effectiveness of OSH measures. This comprehensive understanding aids in pinpointing the multifaceted approaches necessary to enhance OSH practices in the academic sector and beyond. (Rahmi and Ramdhan, 2021).

2.9 Summary of literature and Research Gaps

The review of existing literature reveals significant gaps in the understanding and application of occupational safety and health (OSH) measures across various sectors, with particular emphasis on academic institutions. While existing literature extensively documents the prevalence and impact of occupational safety and health (OSH) hazards, there is a noticeable gap in focused research on the specific context of higher education institutions, particularly in Uganda. Most studies such as those by Njeru (2015) in Kenya and Amoakohene (2022) in Ghana generate evidence on the general conditions within educational settings but do not delve into the differences between academic disciplines or the distinct roles within universities that might experience varied risk levels.

This gap is pronounced in the scant documentation and analysis of physical, chemical, and biological hazards that specifically impact both teaching and non-teaching staff within university

environments in studies in Saudi Arabia and Ghana (Althomali, 2022, Issakah et al., 2021).. Existing studies predominantly focus on ergonomic and psychosocial hazards, often overlooking the broader spectrum of risks that include chemical exposures in laboratories and workshops, physical dangers from campus maintenance operations, and biological risks in medical and biological science departments. Moreover, there is a noticeable lack of data concerning the implementation strategies and effectiveness of OSH measures within the university setting, particularly in low and middle-income countries.

Additionally, while some literature touches upon the factors influencing OSH implementations, such as institutional policies and management commitment, there is a scarcity of studies that critically examine how these factors operate specifically within university contexts. The interaction between organizational culture, regulatory compliance, and individual behaviour in fostering or hindering effective OSH practices needs further scholarly attention. There is also absence of detailed studies that address the unique vulnerabilities of non-teaching staff in universities, who often face different and possibly more severe risks compared to their academic counterparts. This study addressed these gaps through assessing the occupational health and safety hazards among both teaching and non-teaching staff, the level of implementation and factors influencing the implementation of OSH measures in universities in Uganda.

2.10 Theoretical framework

This study adapted the socio-ecological model to derive the factors associated with the implementation of occupational safety and health measures (Kilanowski, 2017). This model provides a multi-level approach to understanding the factors influencing the implementation of occupational safety and health (OSH) measures. The SEM emphasizes that behaviour is affected

not only by individual attributes but also by the interplay between various levels of influence, including personal, relational, organizational, community, and societal factors.

Individual Level: At this level, the model considers personal knowledge, attitudes, and practices towards OSH. Individual behaviours and decisions related to safety and health practices are seen as foundational to enhancing workplace safety. Employees' awareness and understanding of OSH risks and protocols directly impact their ability to participate in and adhere to safety standards.

Institutional/Organizational Level: This layer focuses on how workplace cultures, policies, and management practices influence OSH implementations. Factors such as leadership commitment to safety, the clarity of safety policies, and the availability of safety training are crucial. Effective leadership and clear communication within an organization foster a culture of safety and encourage compliance with OSH measures.

Societal Level: At the broadest level, the SEM examines external factors such as governmental legislation, societal norms, and economic conditions that influence institutional policies and practices. Regulatory frameworks, enforcement mechanisms, and societal support for OSH initiatives shaping significantly how institutions formulate and execute safety measures.

2.11 Conceptual Framework

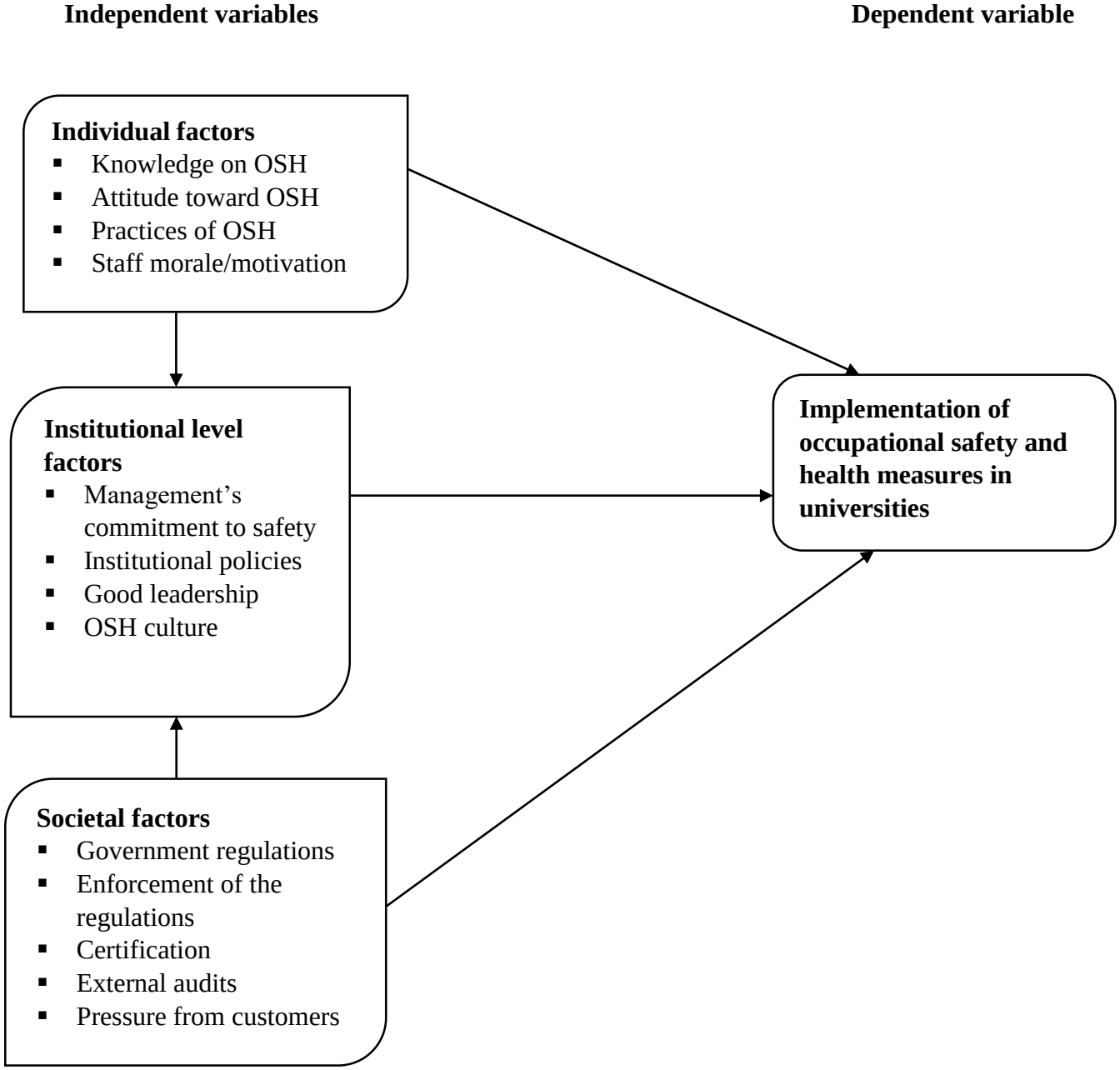

Figure 1: Factors associated with the implementation of occupational safety and health measures in universities in Uganda (Kilanowski, 2017).

The implementation of occupational safety and health measures is influenced by a multitude of individual factors such as the knowledge and attitude of employees toward OSH and their morale have a direct influence on the effective implementation of OSH measures. A high knowledge level and positive attitudes enable employee participation and commitment to the implementation of OSH measures. Similarly, institutional-level factors like management's commitment to safety, institutional policies and good leadership create a conducive environment for the implementation of the measures. Additionally, at societal level, the existence of government regulations on OSH as well as the strict enforcement supports and guides the implementation and uptake of the measures. Individual factors may influence institutional factors. For instance, when employees are well-informed and care about OSH, they can influence institutional policies through advocacy, compliance, and participation in safety programs. Similarly, societal level factors may influence institutional factors. Societal norms and regulations can pressure institutions to adopt rigorous OSH standards, thereby shaping the policies and commitment levels within the university.

CHAPTER THREE: METHODOLOGY

3.1 Description of the study area

This study was conducted at Kyambogo University (KYU) 0.3474 N, 32.6321 E and Uganda Christian University (UCU) 0.3553 N,32.6321 E. Kyambogo University was established in 2003 by the Universities and Other Tertiary Institutions Act of 2001 by merging Uganda Polytechnic Kyambogo (UPK), the Institute of Teacher Education, Kyambogo (ITEK), and the Uganda National Institute of Special Education (UNISE) (Jacob *et al.,* 2009). It is located on Kyambogo Hill, approximately 8 kilometres east of the central business district of Kampala, the capital city of Uganda. It offers courses ranging from Engineering, business, social sciences, education, information technology (I.T) and computer science and biological sciences. Most courses are offered at the undergraduate and postgraduate levels. The university has a total enrolment of 32,724 students as of 2019 (KYU, 2019).

UCU is a privately owned university which was founded in 1997 by the Anglican Church of Uganda from its premier theological seminary/college Bishop Tucker Theological College, which was established in 1913 and named after the pioneer missionary bishop Alfred Robert Tucker (UCU, 2020). It is located in the town of Mukono, approximately 25 kilometres, east of Uganda's capital city, Kampala, on the Kampala-Jinja Highway and has a population of approximately 8,000 students. The university offers courses in biological, social sciences, education, and I.T and computer science at both undergraduate and postgraduate levels. The study will be conducted in these two universities because they have a high number of students despite their limited infrastructure capacity and therefore, we want to know whether the occupation safety is maintained. The two universities were also selected one being private and

another being public to give a comparison between occupation health hazards and safety measures in a private and public university.

Kyambogo University is located at 0.3474 N, 32.6321 E while Uganda Christian University is located at 0.3553 N and 32.7392 E.

3.2 Study design

This was a cross-sectional study which utilized both qualitative and quantitative methods to collect data.

3.3 Study population

The study population included both the teaching and non-teaching staff in both Kyambogo University and Uganda Christian University.

3.4 Selection criteria

3.4.1 Inclusion criteria

All the teaching and non-teaching staff members that were available at the time of data collection were included in the study.

3.4.2 Exclusion criteria

The teaching and non-teaching staff members who were available during data collection but refuse to consent to the interviews.

3.5 Sample size

For the quantitative part of the study;

The sample size was computed using the Kish Leslie formula (Li et al., 2013).

$n = \frac{z^2 Pq}{d^2}$, where,

z is z-statistic at a 95% confidence interval for a 2-tailed test = 1.96

p is the prevalence of outcome of interest, estimated at 50% due to limited evidence=0.5

q is the inverse of the outcome of interest = 0.5

d is the desired degree of precision, estimated at 5% = 0.05

$n = \frac{1.96^2 X 0.5 X 0.5}{0.05^2}$

n = 384 respondents

After adjusting for non-response rate of 10%, the adjusted sample size (n)=422 respondents

For the qualitative part of the study;

The sample size included 10 key informant interviews (KIIs) which were conducted. The number of qualitative interviews were determined based on the theoretical saturation (Lowe et al., 2018). Additional interviews did not add any new information.

3.6 Sampling strategy

Quantitative approach

Stratified random sampling was used to select four departments where the data were collected. Each of the departments acted as a stratum. A complete list of staff members in each of the selected departments was obtained from the departmental heads. Probability proportionate to size was used to determine the number of staff members that were interviewed in each of the departments. The number of staff members to be interviewed was obtained randomly using computer-generated random numbers.

Qualitative approach

Purposive sampling technique was used to select the participants for the key informant interviews (KIIs) based on their knowledge of the occupational health hazards and level of implementation of occupational health and safety measures among the university staff in Kyambogo and Uganda Christian Universities. The participants for KIIs include university administrators and departmental managers in KYU and UCU.

3.7 Study variables

3.7.1 Operationalization and measurement of variables

Outcome variable

The outcome variable was the level of implementation of occupational OSH measures which was measured as a binary outcome. This outcome was measured by a scale of 10-item questions which were asked to the study participants to assess their say on the different OSH measures that are in place. After collecting all the responses, they were grouped to form a binary outcome which was coded as 0=No (OSH measures not in place) and 1=Yes (OSH measures in place).

Independent variables

Factors influencing the implementation of safety and health measures were grouped into individual, institutional and societal factors. The individual factors included knowledge of OSH measures, attitude towards OSH measures and staff morale. Knowledge of occupational safety and health was assessed using a set of 12 statements. For each of the questions, a total score was computed according to the number of correct responses. Each correct response was scored one point, while a wrong/negative response was scored zero. The median score for the level of

knowledge of the staff on OSH was taken as a cut-off point. Those who obtained a score above the median were considered as having a high level of knowledge and those below the median were considered as having a low level of knowledge. Institutional factors included; management's commitment to safety, institutional policies and good leadership. Societal factors included; government regulations in place, enforcement of the regulations, certification, external audits, and pressure from the students.

Other variables

Classification of occupational hazards was based on the International Occupational Hazards Database of the International Labour Organization Occupational Safety and Health Information Centre (ILO, 2022). Study participants were asked how frequently they were exposed to occupational hazards. The frequency of exposure was coded as 0=Never, 1= Rarely, 2= Sometimes, and 3= Always.

3.8 Data Collection and Management

3.8.1 Training research assistants

Four research assistants with a minimum of a bachelor's degree were hired and utilised for data collection. The research assistants underwent a two-day training; the training focused on letting them know the study purpose and objectives as well as administration of the study tools. They were equipped with interviewing techniques as well as knowing how to administer the consent form. The research assistants practised reading through all the questions and agreed on how to ask the questions in both English and the local language.

3.8.2 Data collection procedure and tools

Data were collected by four trained Research Assistants using a pre-tested digitized semi-structured questionnaire. This questionnaire was programmed in open data kit (ODK) software and uploaded on phone tablets. This questionnaire elicited data on the socio-demographic characteristics of the respondents, knowledge of the staff on OSH, and the extent of implementation of safety measures. Research Assistants were required to submit the data to the server daily.

The qualitative data was collected using KII guides and were audio recorded.

3.9 Data management

Quantitative data

The uploaded questionnaires were reviewed and checked daily for completeness by the Principal Investigator. Data was then be downloaded in Microsoft excel 2016 and stored on a password-protected computer.

Qualitative data

The audio-recorded qualitative data was transcribed verbatim so as not to change the meaning. Transcripts were supplemented with notes taken during the interview which were immediately expanded after the interviews in order not to forget the meaning of each reaction. The transcripts were kept on a password protected computer.

3.10 Data Analysis and presentation

Quantitative data

Data were analysed using Stata version 16.0. Descriptive statistics like the mean and proportions were used to present the participants' socio-demographic characteristics. Modified Poisson regression was used in bivariable and multivariable analysis to test for associations between the implementation of occupational safety and health measures and the independent variables. Associations were tested at a 95% confidence interval.

Any factors in the bivariate analysis which had a p-value <0.2 were included in the multivariable analysis. Multivariable analysis was done to identify the factors associated with the implementation of occupational safety and health measures after controlling for background variables. Model building was done by stepwise elimination. Crude and adjusted odds ratios and their 95% CIs and p-values were reported. All the results have been presented in the table.

Qualitative data

The qualitative data from KIIs were analysed manually using the framework method (Gale et al., 2013). This was done by reading through the transcribed material to get familiar with it. Then, the data was coded to identify the emerging themes. A master sheet entailing the emerging themes and subthemes were developed to obtain the frequently mentioned themes. Descriptive statistics was used to summarize the themes and quotes that are most poignant and representative of the responses that were obtained and presented in the report. The views of different individuals were also be highlighted.

3.11 Quality control and assurance

The data collection tools were reviewed and approved by the Uganda Christian University Research and Ethics Committee (UCU-REC). Research assistants were trained for two days so that they understand the objectives of the study as well as the study tools and ethics. The study tools were pretested at Makerere University which was not part of the study area. This guided in refining the questionnaire after getting feedback from the field pre-test. The principal investigator reviewed the completeness and accuracy of the data collected each day. Missing information was verified by the responsible data collector on the next day. Debrief meetings were held at the end of each field day to encourage Research Assistants to share experiences while in the field so that any challenges that may arise are addressed.

3.12 Ethical consideration

Ethical clearance for the study was obtained from the study was submitted to the Uganda Christian University Research Ethics Committee (UCU-REC); reference number UCUREC-2023-454. Administrative clearance to conduct the study was sought from the Administrations of both KYU and UCU.

The respondents were requested to give informed consent before participating in the study, and confidentiality and privacy were maintained. There were no anticipated major risks or discomfort associated with taking part in this study.

Confidentiality of the respondents was maintained by keeping the data on password-protected computers. Also, the questionnaires did not bear the names of the respondents for anonymity.

CHAPTER FOUR: RESULTS

4.1 Socio demographic characteristics

Table 1 shows the socio-demographic characteristics of the study participants. The results are stratified by the study sites. More than half, 55.3% (218/394), were male, with a notably higher percentage at UCU (63.3%) compared to Kyambogo (48.6%). This indicates a gender disparity that is more pronounced at UCU. About 51.3% (202/394) were aged between 30-45 years, suggesting a workforce that is relatively mature and possibly more experienced. A significant majority, 72.6% (286/394), reported being married, with a higher prevalence at Kyambogo (79.0%) than at UCU (65.0%). This could imply a more stable social environment, potentially affecting job satisfaction and stability. About a third, 33.2% (131/394) held a master's degree and 30.7% (121/394) a bachelor's degree, which is reflective of the staff requirements at academic institutions. Among the respondents, lecturers constituted the largest professional group at 33.2% (131/394), with Kyambogo having a higher proportion of lecturers (37.9%) compared to UCU (27.8%). In terms of tenure, 40.6% (160/394) have worked for 5-10 years, with a larger proportion at UCU (50.0%) in this range compared to Kyambogo (32.7%). This may suggest higher staff retention or recent expansions at UCU.

Table 1: Socio-demographic characteristics of the university staff in Kyambogo and Uganda Christian University

Variable	Attribute	Overall N=394 (%)	University	
			Kyambogo n=214 (%)	UCU n=180 (%)
Sex of the respondent	Male	218 (55.3)	104 (48.6)	114 (63.3)
	Female	176 (44.7)	110 (51.4)	66 (36.7)
Age	Below 30	57 (14.5)	36 (16.8)	21 (11.7)
	30- 45	202 (51.3)	89 (41.6)	113 (62.8)
	Above 45	135 (34.3)	89 (41.6)	46 (25.6)
Marital status	Married	286 (72.6)	169 (79.0)	117 (65.0)
	Single	85 (21.6)	30 (14.0)	55 (30.6)
	Widowed	16 (4.1)	11 (5.1)	5 (2.8)
	Others	7 (1.8)	4 (1.9)	3 (1.7)
Education level	Certificate	27 (6.9)	23 (10.7)	4 (2.20
	Diploma	37 (9.4)	21 (9.8)	16 (8.9)
	Bachelor's degree	121 (30.7)	51 (23.8)	70 (38.9)
	Master's degree	131 (33.2)	59 (27.6)	72 (40.0)
	PhD	59 (15.0)	41 (19.2)	18 (10.0)
	Others	19 (4.8)	19 (8.9)	0 (0.0)
Designation	Support staff	109 (27.7)	53 (24.8)	56 (31.1)
	Lecturer	131 (33.2)	81 (37.9)	50 (27.8)
	Administrator	80 (20.3)	34 (15.9)	46 (25.6)
	Other	74 (18.8)	46 (21.5)	28 (15.6)
Period worked in the institution	Below 5	122 (31.0)	65 (30.4)	57 (31.7)
	5-10	160 (40.6)	70 (32.7)	90 (50.0)
	Above 10	112 (28.4)	79 (36.9)	33 (18.3)
Average work hours per week	48 hours and below	343 (87.1)	187 (87.4)	156 (86.7)
	More than 48 hours	51 (12.9)	27 (12.6)	24 (13.3)
Resting days per week	No rest	46 (11.7)	27 (12.6)	19 (10.6)
	1-2 days	303 (76.9)	162 (75.7)	141 (78.3)
	More than 2 days	45 (11.4)	25 (11.7)	20 (11.1)

4.2 Exposure to occupational hazards among university staff

Overall, about half, 50.3% (198/394) reported a high level of exposure to occupational hazards. The most prevalent hazards experienced by university staff were predominantly ergonomic. Notably, 57.1% (225/394) of the respondents consistently experienced repetitive movement with their hands for at least 3 hours during the day, pointing to a significant ergonomic risk. Additionally, 37.3% (147/394) frequently worked in awkward positions, such as bending,

twisting, or engaging in heavy manual labour—factors that significantly contribute to musculoskeletal disorders. Other significant ergonomic concerns included prolonged standing and poor sitting postures, with 39.1% (154/394) of staff frequently standing for more than three hours daily, and 38.6% (152/394) exposed to poor sitting postures. While still critically important, the least prevalent hazards among university staff were exposure to electric shock and workplace violence including physical, sexual, and emotional harm, with only 20.8% (82/394) and 22.6% (79/394) always experienced these respectively. (Table 2).

Table 2: Exposure to occupational hazards among university staff in Kyambogo and Uganda Christiana University

Variable	Attribute	Frequency (N=394)	Percentage (%)
Level of exposure	Low	196	49.7
	High	198	50.3
Repetitive movement with their hands for at least 3 hours during the day	Never	46	11.7
	Rarely	35	8.9
	Sometimes	88	22.3
	Always	225	57.1
Interaction with chemicals or inflammable substances	Never	88	22.3
	Rarely	71	18.0
	Sometimes	117	29.7
	Always	118	29.9
Working in awkward positions (bend, twist, heavy manual labor)	Never	51	12.9
	Rarely	68	17.3
	Sometimes	128	32.5
	Always	147	37.3
Working in high noise levels	Never	27	6.9
	Rarely	62	15.7
	Sometimes	154	39.1
	Always	151	38.3
Standing for more than 3 hours a day	Never	19	4.8
	Rarely	48	12.2
	Sometimes	154	39.1
	Always	173	43.9
Work involving sitting without changing position for prolonged hours	Never	57	14.5
	Rarely	77	19.5
	Sometimes	164	41.6
	Always	96	24.4
Occurrence of exposure to improperly adjusted workstations and chairs	Never	41	10.4
	Rarely	64	16.2

	Sometimes	157	39.8
	Always	132	33.5
Occurrence of exposure to poor sitting postures	Never	58	14.7
	Rarely	61	15.5
	Sometimes	152	38.6
	Always	123	31.2
Occurrence of exposure to frequent lifting	Never	51	12.9
	Rarely	60	15.2
	Sometimes	154	39.1
	Always	129	32.7
Manually push or lift items that are more than 20 Kgs	Never	112	28.4
	Rarely	70	17.8
	Sometimes	123	31.2
	Always	89	22.6
Occurrence of exposure to poor lighting	Never	72	18.3
	Rarely	84	21.3
	Sometimes	137	34.8
	Always	101	25.6
Occurrence of exposure to toxic fumes and gases	Never	64	16.2
	Rarely	98	24.9
	Sometimes	137	34.8
	Always	95	24.1
Occurrence of exposure to slips/Falls/trips	Never	61	15.5
	Rarely	81	20.6
	Sometimes	152	38.6
	Always	100	25.4
Occurrence of exposure to cuts, needle prick and injuries from sharps	Never	72	18.3
	Rarely	79	20.1
	Sometimes	151	38.3
	Always	92	23.4
Occurrence of exposure to violence including physical, sexual and emotional in their workplace	Never	101	25.6
	Rarely	71	18.0
	Sometimes	133	33.8
	Always	89	22.6
Occurrence of exposure to electric shock	Never	112	28.4
	Rarely	83	21.1
	Sometimes	117	29.7
	Always	82	20.8
Occurrence of exposure to vibrations	Never	84	21.3
	Rarely	93	23.6
	Sometimes	138	35.0
	Always	79	20.1
Occurrence of exposure to contagious pathogens/agents or microorganisms	Never	104	26.4
	Rarely	75	19.0
	Sometimes	128	32.5
	Always	87	22.1

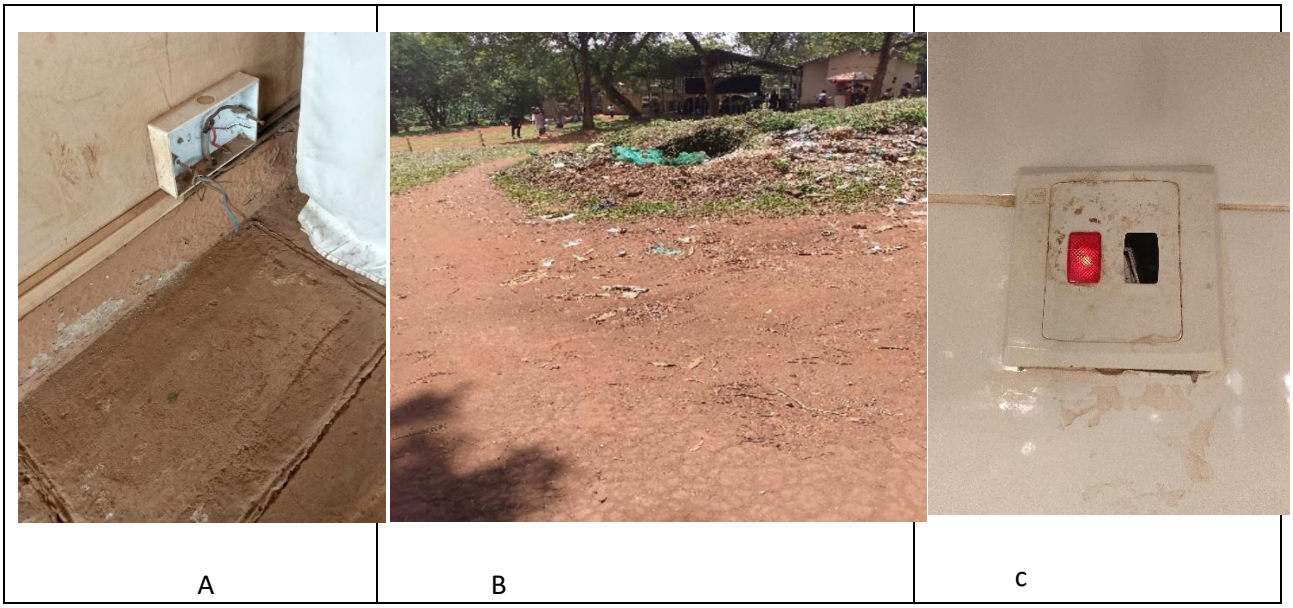

Figure 2: Pictures showing some of the ergonomics/risks observed in KYU and UCU

a shows exposed electric wires, **b** shows unprotected waste disposal site, **c** shows power flow with naked wires

4.3 Knowledge of Occupational Safety and Heath among respondents

Overall, less than half, 49.2% (194/394) has a high level of knowledge. In particular, 89.8% (354/394) of the respondents affirmed that they were aware of the Uganda occupational safety and health act and knew how to protect themselves against occupational hazards. About, 86.5% (341/394) of the respondents said that it is critical for staff to master occupational safety regulations, and 91.9% (362/394) of the respondents agreed that it is important to report injuries or illnesses immediately. Majority, 84.5% (333/394) of the respondents agreed that monitoring, inspection, and evaluation of safety practices are prerequisites for effective OSH, and 87.6% (345/394) agreed that the university should have employee assistance programs that are crucial in preventing occupational hazards to some extent. Table 3).

Table 3: Knowledge of Occupational Safety and Health among university staff

Variable	Attribute	Frequency (N=394)	Percentage (%)
Knowledge	Low	200	50.8
	High	194	49.2
Aware of the Uganda occupational safety and health act and know how to protect themselves against occupational hazards	Yes	354	89.8
	No	16	4.1
	Don't know	24	6.1
Has a right to be part of the process of identifying and resolving workplace health and safety concerns.	Yes	346	87.8
	No	35	8.9
	Don't know	13	3.3
It is critical for staff to master occupational safety regulations	Yes	341	86.5
	No	37	9.4
	Don't know	16	4.1
It is important to know and follow safe work procedures	Yes	373	94.7
	No	9	2.3
	Don't know	12	3.0
It is important to report injuries or illnesses immediately	Yes	362	91.9
	No	14	3.6
	Don't know	18	4.6
I am clear about health and safety regulations at work	Yes	324	82.2
	No	52	13.2
	Don't know	18	4.6
I have a right to refuse hazardous work	Yes	334	84.8
	No	40	10.2
	Don't know	20	5.1
Workers and employers must share the responsibility for occupational safety and health	Yes	345	87.6
	No	26	6.6
	Don't know	23	5.8
The workplace requires adequate lighting but ventilation is a secondary concern	Yes	307	77.9
	No	59	15.0
	Don't know	28	7.1
Occupational health and safety are the responsibility of both employers and employees in order to ensure their rights.	Yes	354	89.8
	No	27	6.9
	Don't know	13	3.3
Monitoring, inspection, and evaluation of safety practices are prerequisites for effective occupational health and safety	Yes	333	84.5
	No	33	8.4
	Don't know	28	7.1
The university should have employee assistance programs that are crucial in preventing occupational hazards to some extent	Yes	345	87.6
	No	22	5.6
	Don't know	27	6.9

Figure 3: Dilapidated lecture rooms with asbestos roof in KYU

4.4 Attitude towards Occupational Safety and Heath among respondents

Overall, more than half (59.6%) of the respondents had a negative attitude towards OSH. A majority, 73.8%, agreed that occupational hazards should be taken seriously and given prompt attention, indicating a strong recognition of the importance of addressing safety issues swiftly. Regarding whether extra attention to occupational hazards is seen as a burden, 61.9% agreed it is not, reflecting a proactive attitude towards safety measures. A substantial 79% agreed that training and the provision of personal protective equipment (PPE) are necessary to reduce exposure to occupational hazards, indicating widespread support for these preventive measures. Over half, 56.1%, agreed that wearing PPE should be mandatory, with a relatively high neutral response at 38.3% and only a small disagreement at 5.6%. This suggests that while there is a majority support for mandatory PPE, a substantial portion of respondents are ambivalent, possibly due to issues such as comfort, convenience, or perceived necessity that violate standard safety precautions and practices. (Table 4).

Table 4: Attitude towards occupational safety and health among university staff in Uganda

Aspect	Agree (%)	Neutral (%)	Disagree (%)
Occupational hazards should be taken seriously and given prompt attention	73.8	20.8	5.4
Paying extra attention to occupational hazard is an unnecessary burden on them	61.9	18.5	19.6
Training of staff and provision of personal protective equipment is necessary to reduce the risk of exposure to occupational hazards	79	16.5	4.6
Protective equipment should be worn in procedures where splash/spill of excreta or other liquid waste is likely	83.2	14.5	2.3
Punitive actions should be taken against workers that violate standard safety precautions and practices	75.1	19.8	5.1
Workplace risk assessment is important for occupational safety	52.3	40.9	6.9
Wearing PPE should be mandatory	56.1	38.3	5.6

4.5 Institutional and societal factors

Almost all, 90.1% (355/394) of the respondents affirmed that the university handled occupational safety and health of the staff well, 60.2% (237/394) felt good with the way the occupational health safety measures were in place, and 82.5% (325/394) felt motivated with the way occupational safety and health measures were managed in this university. About, 23.6% (93/394) of the respondents agreed that people in charge of implementing occupational health and safety have done their work well, 41.1% (162/394) were somehow interested in adhering to occupational health and safety measures, and 55.3% (218/394) agreed that the government put in place regulations to help in implementing occupational health and safety. (Table 5).

Table 5: Institutional and societal factors

Variable	Attribute	Frequency (N=394)	Percentage (%)

University handles occupation safety and health of the staff well	Yes	355	90.1
	No	39	9.9
Feelings about the way occupational health safety measures are in place	I feel bad	47	11.9
	I don't know	39	9.9
	I feel good	237	60.2
	I feel very good	71	18.0
Feels motivated with the way occupational safety and health measures are managed in this university	Yes	325	82.5
	No	69	17.5
Feelings about their job in the university	So stressing	49	12.4
	I feel like I want to give up	28	7.1
	Somehow okay	183	46.4
	Very okay	134	34.0
Occupation safety and health measures are well managed in the university	Yes	296	75.1
	No	98	24.9
Feelings about the way the university manages occupational health	Feel very bad	14	3.6
	Feel bad	23	5.8
	Feel good	193	49.0
	Feel very good	64	16.2
	Don’t know	2	0.5
People in charge of implementing occupational safety have done their work well	Yes	301	76.4
	No	93	23.6
Interested in adhering to occupational health safety measures	Not interested	57	14.5
	Interested	175	44.4
	Somehow interested	162	41.1
Government has put in place regulations to help in implementing occupational health and safety	Yes	218	55.3
	No	176	44.7
Certifications done to ensure safety of the work place	Yes	299	75.9
	No	95	24.1
University gets external audits on occupational safety and health from responsible authorities	Yes	252	64.0
	No	142	36.0
Normally gets pressure from the students and other stakeholders requesting them to put in place occupational health measures	Yes	245	62.2
	No	149	37.8
Description of the management’s commitment to safety	Not committed at all	54	13.7
	Somehow committed	146	37.1
	Neutral	99	25.1
	Very committed	95	24.1

Institutional policies in place aimed at facilitating the implementation of occupational health and safety measures	Yes	232	58.9
	No	162	41.1
Description of the leadership of the university in relation to occupational safety and health	Very poor	16	4.1
	Poor	18	4.6
	Fair	43	10.9
	Neutral	67	17.0
	Good	138	35.0
	Very good	84	21.3
	Excellent	28	7.1

4.6 Implementation of occupational safety and health measures

More than half, 53.6% (211/394) of the respondents reported a high level of implementation of occupational safety and health measures (Figure 3). More than half of staff, 59.9%, agreed that the university had a safety and health policy in place, 52.5% agreed that there is always an orientation program for new staff on health and safety, suggesting a strong onboarding process. Additionally, 56.1% agreed that only authorized and adequately trained workers operate equipment, and 54.5% confirmed that equipment was properly maintained to prevent accidents. About 54.6%, agreed that the university promotes safety awareness and information among staff. Less than half of the respondents, 45.4%, agreed that risk assessments are usually done to identify risks and hazards, showing a need for more consistent risk management practices. The establishment of clear communication channels for handling health issues was agreed upon by 44.4% of the respondents. About 45.7% felt that staff members are actively involved in decisions affecting their health and safety. Table 6.

Table 6: Implementation of occupational safety and health measures

Statement	Agree	Neutral	Disagree

	(%)	(%)	(%)
The university has a safety and health policy in place	59.9	31.5	8.7
The university enforces health and safety regulations	47.7	42.6	9.6
There is always an orientation program for new staff on health and safety in the university	52.5	40.4	7.1
The university ensures that only authorized, adequately trained workers operate equipment	56.1	33	10.9
The university ensures that the equipment they use is properly maintained to prevent accidents	54.5	35.5	9.9
The university promotes safety awareness and information among staff	54.6	32.7	12.7
The University provides medical and remedial first aid facilities to staff	55.8	34.3	9.9
The university ensures that personal protective equipment is available to all staff all the time	51	31	18
Firefighting equipment such as fire extinguishers are available and staff is trained on how to use them	55.3	29.4	15.3
There is an emergency response plan on health and safety in the university	53.3	30.7	16
Risk Assessments are usually done to identify risks and hazards in the university	45.4	37.8	16.7
Performance on Health and safety is regularly evaluated in the university	45.5	41.6	13
There is a health and safety committee constituted by staff that meets regularly to review health and safety within the university	49	34.3	16.7
There is a health and safety committee in place to handle occupational health and safety issues	48.7	36.3	14.9
There are mechanisms in this university to reduce the extent and severity of work-related injuries and illnesses	46	37.8	15.2
There are clear established channels of communication in the university for handling occupational health issues and awareness	44.4	36.3	19.3
The staff members are involved in the program and in the decisions that affect their health and safety	45.7	37.6	16.7
The university carries out risk assessments, to identify not only existing hazards but also conditions and operations where changes might occur to create hazards	39.3	43.4	17.2
The university conducts comprehensive baseline and periodic surveys for health and safety	40.6	38.8	20.5
The university investigates the accidents so that their causes and means of prevention are identified	43.7	39.3	17
The university has adequate lighting	51.8	35.3	12.9
There are adequate sanitary facilities such as toilets for all including the disabled people	47.9	39.6	12.5
All the offices and lecture rooms in the university have adequate ventilation facilities	47.5	40.9	11.7
The offices are cleaned regularly	50.5	36.5	12.9
Every staff receives compulsory health and safety training	49.8	33.8	16.5
There's an appointed person within your workplace responsible for	51	31.2	17.7

health and safety matters			
Workplace health and safety is considered extremely important	56.1	33.2	10.7
Every employee receives medical check-ups before employment	54.6	30.5	14.9
Every employee in the university receives frequent medical check-ups	53.3	30.7	16

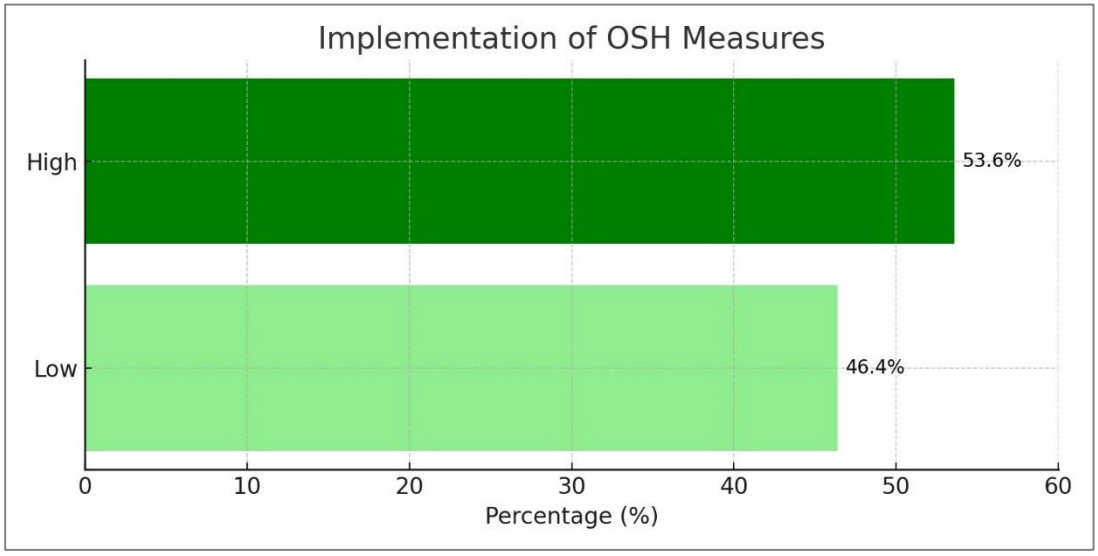

Figure 4: Level of implementation of OSH measures in universities in Uganda

4.7 Individual factors associated with implementation of occupational safety and health measures among university staff in Uganda

At bivariate analysis, the respondent's university, education level, designation, period worked in the institute, and knowledge of OSH were significantly associated with high implementation of OSH measures. Respondents working at UCU had 2.99 times reported a higher level of implementation of OSH measures (CPR=2.99, 95% CI: 2.39-3.74, P-value < 0.001) compared to those working at Kyambogo university. The level of implementation of OSH measures was 2.19, 2.33, and 2.24 times higher among respondents with a diploma (CPR=2.19, 95% CI: 1.09-4.40, P-value = 0.028), those with a bachelor's degree (CPR=2.33, 95% CI:1.21-4.48, P-value = 0.011), and those with a master's degree (CPR=2.24, 95% CI:1.16-4.31, P-value = 0.016) respectively compared to those with certificates. Respondents with more than 10 years working experience in the institution (CPR=0.66, 95% CI:0.50- 0.86, P-value = 0.002) had a 24% lower

level of implementation of OSH measures compared to their counterparts. Furthermore, those with a low knowledge level reported a 25% (CPR=0.65, 95% CI:0.54- 0.79, P-value < 0.001) lower level of implementation of OSH measures compared to those with a high knowledge level.

After adjusting for potential confounders, working experience and knowledge remained significantly associated with the implementation of OSH measures. Respondents with 5-10 years and more than 10 years of experience reported a 16% and 28% lower level of implementation, respectively (Adjusted PR [APR] for 5-10 years = 0.84, 95% CI: 0.71-0.99, P-value = 0.036; APR for >10 years = 0.72, 95% CI: 0.58-0.92, P-value = 0.007). Respondents with a low level of knowledge reported a 30% lower level of implementation compared to those with high knowledge (APR=0.70, 95% CI: 0.59-0.83, P-value < 0.001). (Table 7)

Table 7: Individual factors associated with the implementation of occupational safety and health measures among university staff in Kyambogo and Uganda Christian University

Variable	Attribute	Implementation of OSH measures		Crude PR (95% CI)	P-values	Adjusted PR (95% CI)	P-values
		Low n (%)	High n (%)				
Sex of the respondent	Male	93 (50.8)	125 (59.2)	1			
	Female	90 (49.2)	86 (40.8)	0.85 (0.70-1.03)	0.099		
Age	Below 30	30 (16.4)	27 (12.8)	1			
	30- 45	83 (45.4)	119 (56.4)	1.24 (0 .92- 1.67)	0.15		
	Above 45	70 (38.3)	65 (30.8)	1.02 (0 .73- 1.41)	0.922		
Marital status	Married	138 (75.4)	148 (70.1)	1			
	Single	32 (17.5)	53 (25.1)	1.2 (0.99-1.47)	0.067		
	Widowed	10 (5.5)	6 (2.8)	0.72 (0.38-1.38)	0.326		
	Others	3 (1.6)	4 (1.9)	1.1 (0.57-2.12)	0.766		
Education level	Certificate	20 (10.9)	7 (3.3)	1		1	
	Diploma	16 (8.7)	21 (10.0)	2.19 (1.09-4.40)	**0.028**	1.42 (0.82-2.45)	0.206
	Bachelor's degree	48 (26.2)	73 (34.6)	2.33 (1.21-4.48)	**0.011**	1.43 (0.85-2.41)	0.177
	Master's degree	55 (30.1)	76 (36.0)	2.24 (1.16-4.31)	**0.016**	1.41 (0.84-2.37)	0.193
	PhD	29 (15.8)	30 (14.2)	1.96 (0.99-3.89)	0.054	1.66 (0.95-2.91)	0.077
	Others	15 (8.2)	4 (1.9)	0.81 (0.27-2.39)	0.706	1.05 (0.39-2.82)	0.928
Designation	Support staff	44 (24.0)	65 (30.8)	1			
	Lecturer	62 (33.9)	69 (32.7)	0.88 (0.70-1.10)	0.278		
	Administrator	37 (20.2)	43 (20.4)	0.9 (0.70-1.16)	0.426		
	Other	40 (21.9)	34 (16.1)	0.77 (0.57-1.03)	0.080		
Period worked in the institution	Below 5 years	49 (26.8)	73 (34.6)	1		1	
	5-10 years	66 (36.1)	94 (44.5)	0.98 (0.81-1.19)	0.854	0.84 (0.71- 0.99)	**0.036**
	Above 10 years	68 (37.2)	44 (20.9)	0.66 (0.50- 0.86)	**0.002**	0.72 (0.58- 0.92)	**0.007**
Average work hours per week	48 hours and below	162 (88.5)	181 (85.8)	1			
	More than 48 hours	21 (11.5)	30 (14.2)	1.11 (0.87- 1.43)	0.396		

Resting days per week	No rest	25 (13.7)	21 (10.0)	1			
	1-2 days	137 (74.9)	166 (78.7)	1.20 (0.86- 1.67)	0.281		
	More than 2 days	21 (11.5)	24 (11.4)	1.17 (0 .77- 1.77)	0.466		
Exposure to Occupational hazards	Low	89 (48.6)	107 (50.7)	1			
	High	94 (51.4)	104 (49.3)	0.96 (0.80- 1.16)	0.681		
Knowledge on OSH	High	71 (38.8)	129 (61.1)	1		1	
	Low	112 (61.2)	82 (38.9)	0.65 (0.54- 0.79)	**<0.001**	0.70 (0.59-0.83)	**<0.001**
Attitude towards OSH measures	Negative	73 (39.9)	86 (40.8)	1			
	Positive	110 (60.1)	125 (59.2)	0.54 (0.47- 0.62)	0.861		

4.8 Institutional and societal factors associated with implementation of Occupational Safety, and Health measures among university staff in Uganda

At bivariate analysis, respondents who felt that the university did not handle occupation safety and health of the staff well (CPR=0.40, 95% CI:0.23-0.72) reported a 60% lower level of implementation of OSH measures compared to their counterparts. Those who didn't feel motivated by the current management of OSH measures perceived 31% lower implementation levels (CPR=0.69, 95% CI: 0.51-0.94, P-value=0.019) compared to those who didn't. Respondents who were very satisfied with their job ("Very okay") perceived 87% higher level of implementation of OSH measures compared to those who didn't (CPR=1.87, 95% CI: 1.27-2.75, P-value=0.001). Pressure from students and other stakeholders to improve OSH measures was associated with a 22% higher level of implementation of OSH measures (PR=1.22, 95% CI: 1.02-1.47, P-value=0.030). The presence of government regulations supporting OSH implementation was associated with better implementation outcomes (PR=1.54, 95% CI: 1.28-1.85, P-value <0.001). (Table 8).

At multivariable analysis, feeling very good about the OSH measures in place, failure of the government to institute effective regulations, and management being very committed to safety were positively associated to high implementation of OSH measures in universities. Respondents who felt very good about the OSH measures in place reported significantly higher levels of OSH implementation (APR=3.49, 95% CI: 1.56-7.77, P-value=0.002) compared to their counterparts. A very committed management was significantly associated with a 77% higher level of implementation of OSH measures (APR=1.77, 95% CI: 1.09-2.87, P-value=0.021). Respondents who reported a failure of government to institute regulations to help in implementing OSH had a 45% higher perceived level of implementation of OSH measures (APR=1.45, CI:1.19-1.75, P-value<0.001). (Table 8).

Table 8: Institutional and societal factors associated with the implementation of Occupational Safety and Health measures among staff in Kyambogo and Uganda Christian University

Variables	Attribute	Implementation of OSH measures		Crude PR (95% CI)	P-values	Adjusted PR (95% CI)	P-values
		Low n (%)	High n (%)				
University handles occupation safety and health of the staff well	Yes	153 (83.6)	202 (95.7)	1		1	
	No	30 (16.4)	9 (4.3)	0.40 (0.23-0.72)	**0.002**	0.58 (0.31-1.07)	0.081
Feelings about the way the occupational health safety measures are in place	I feel bad	41 (22.4)	6 (2.8)	1		1	
	I don't know	26 (14.2)	13 (6.2)	2.61 (1.09- 6.23)	**0.031**	2.15 (0.89-5.20)	0.088
	I feel good	87 (47.5)	150 (71.1)	4.95 (1.09- 6.23)	**<0.001**	3.38 (0.53- 7.48)	0.300
	I feel very good	29 (15.8)	42 (19.9)	4.63 (2.14- 10.04)	**<0.001**	3.49 (1.56- 7.77)	**0.002**
Feel motivated with the way occupational safety and health measures are managed in this university	Yes	141 (77.0)	184 (87.2)	1		1	
	No	42 (23.0)	27 (12.8)	0.69 (0.51- 0.94)	**0.019**	1.23 (0.87-1.73)	0.236
Feelings about their job in the university	So stressing	31 (16.9)	18 (8.5)	1		1	
	I feel like I want to give up	17 (9.3)	11 (5.2)	1.07 (0.59- 1.93)	0.823	1.01 (0.62-1.93)	0.743
	Somehow okay	93 (50.8)	90 (42.7)	1.34 (0.90- 1.99)	0.149	1.12 (0.77-1.63)	0.561
	Very okay	42 (23.0)	92 (43.6)	1.87 (1.27- 2.75)	**0.001**	1.18 (0.80-1.75)	0.396
Occupation safety and health measures are well managed in the university	Yes	127 (69.4)	169 (80.1)	1		1	
	No	56 (30.6)	42 (19.9)	0.75 (0.58- 0.96)	**0.024**	1.00 (0.77- 1.30)	0.989
People in charge of	Yes	137 (74.9)	164 (77.7)	1		1	

implementing occupational safety have done their work well	No	46 (25.1)	47 (22.3)	0.93 (0.74- 1.16)	0.515		
Interested in adhering to occupational health safety measures	Not interested	34 (18.6)	23 (10.9)	1		1	
	Interested	72 (39.3)	103 (48.8)	1.46 (1.04- 2.05)	**0.029**	1.16 (0.83- 1.61)	0.383
	Somehow interested	77 (42.1)	85 (40.3)	1.3 (0.92- 1.84)	0.14	1.20 (0.86- 1.68)	0.273
Government has put in place regulations to help in implementing occupational health and safety	Yes	124 (67.8)	94 (44.5)	1		1	
	No	59 (32.2)	117 (55.5)	1.54 (1.28-1.85)	**<0.001**		
Certifications done to ensure safety of the work place	Yes	139 (76.0)	160 (75.8)	1			
	No	44 (24.0)	51 (24.2)	1.00 (0.81-1.24)	0.977		
University gets external audits on occupational safety and health from responsible authorities	Yes	124 (67.8)	128 (60.7)	1			
	No	59 (32.2)	83 (39.3)	1.15 (0.96- 1.38)	0.136		
Normally get pressure from the students and other stakeholders requesting them to put in place occupational health measures	Yes	124 (67.8)	121 (57.3)	1		1	
	No	59 (32.2)	90 (42.7)	1.22 (1.02- 1.47)	**0.030**	0.98 (0.78- 1.23)	0.863
Description of the management's commitment to safety	Not committed at all	39 (21.3)	15 (7.1)	1		1	
	Somehow committed	70 (38.3)	76 (36.0)	1.87 (1.18- 2.96)	**0.007**	1.57 (0.98- 2.49)	0.058
	Neutral	53 (29.0)	46 (21.8)	1.67 (1.03- 2.70)	**0.036**	1.38 (0.83- 2.28)	0.215
	Very committed	21 (11.5)	74 (35.1)	2.80 (1.80-4.37)	**<0.001**	1.77 (1.09- 2.87)	**0.021**
Institutional policies in place	Yes	116 (63.4)	116 (55.0)	1			

aimed at facilitating the implementation of occupational health and safety measures	No	67 (36.6)	95 (45.0)	1.17 (0.98- 1.41)	0.087		
Description of the leadership of the university in relation to occupational safety and health	Very poor	12 (6.6)	4 (1.9)	1		1	
	Poor	12 (6.6)	6 (2.8)	1.33 (0.46-3.90)	0.599	1.14 (0.44- 2.97)	0.787
	Fair	28 (15.3)	15 (7.1)	1.39 (0.54-3.58)	0.489	0.98 (0.41- 2.33)	0.957
	Neutral	31 (16.9)	36 (17.1)	2.15 (0.89-5.17)	0.088	1.40 (0.62-3.15)	0.412
	Good	45 (24.6)	93 (44.1)	2.69 (1.14-6.35)	**0.023**	1.29 (0.58- 2.88)	0.527
	Very good	44 (24.0)	40 (19.0)	1.90 (0.79- 4.59)	0.151	1.15 (0.51- 2.58)	0.733
	Excellent	11 (6.0)	17 (8.1)	2.43 (0.99- 5.98)	0.053	1.38 (0.60- 3.20)	0.449

Similarly, findings from the qualitative interviews revealed that staff members who had worked in the university for a long period of time observed the OSH. This was because these people were aware of the problems associated with not observing OSH and hence, they took it seriously.

> *"New employees might not understand the importance of safety measures, but those of us who have been here for a while recognize the positive impact they have on our well-being, we have seen people fall sick because of not taking occupational health seriously"* (Key informant 3)

It was further revealed that the level of knowledge regarding occupational safety and health significantly influenced the implementation of OSH measures. Respondents emphasized that employees who had received training or had a good understanding of OSH principles were more likely to actively advocate for and contribute to the implementation of safety measures within their departments or units. This was further emphasized by one of the study participants;

> *"…of course, and as a faculty member, I received training on OSH practices, and that knowledge has empowered me to advocate for their implementation within my department".* (Key informant 9)

Additionally, the presence of clear and comprehensive institutional policies on occupational safety and health was highlighted as an important factor in creating a culture of safety. The study participants emphasized the significance of well-defined policies that provided guidelines and procedures for addressing occupational hazards. These policies were seen as a means to standardize safety practices across the university, ensuring consistency and

accountability in safety measures. Key informants also stressed the importance of having clear reporting mechanisms and follow-up actions in place to address potential hazards.

> *"Institutional policies help us a lot as they provide a framework for addressing safety concerns. They not only help prevent accidents but also create a sense of accountability among employees to adhere to safety standards."* (Key Informant 4)

Similarly, good leadership was also identified as a critical factor in fostering positive occupational safety and health measures. Participants emphasized that leaders should take responsibility for promoting and championing occupational health and safety in the workplace. They highlighted the importance of leaders setting the tone from the top, modelling the desired safety behaviors, and creating a sense of accountability among employees. Key informants stressed the need for leaders to actively engage with employees on safety matters and provide support, resources, and guidance for safety initiatives.

"When employees are led well and given necessary resources to ensure their safety, they adhere very well…and avoid those things that would expose them to occupational hazard" (Key informant 10)

CHAPTER FIVE: DISCUSSION

5.1 Demographic characteristics

The socio-demographic analysis across the two universities highlights distinct disparities in gender, age, marital status, educational attainment, and professional roles. There was a notable gender imbalance at UCU compared to Kyambogo. The workforce was generally mature, which might imply greater experience and potentially affects organizational stability and knowledge continuity. A larger proportion of staff at Kyambogo were married compared to UCU. This may have influenced job satisfaction and stability. Both institutions have high levels of educational attainment appropriate for academic positions, with lecturers forming the largest professional group. The tenure analysis suggests better staff retention or recent expansions at UCU. Comparatively, the demographic patterns observed at UCU and Kyambogo align with global trends in higher education institutions but also show unique local nuances. Studies from academic institutions from Uganda and elsewhere often report a more balanced gender distribution among faculty (Kitone et al., 2018, Mwebaza et al., 2023, Owusu and Andoh, 2021). This suggests cultural or policy differences that affect gender equality in academic employment. The prevalence of mature academic staff mirrors findings from universities in North America, where tenure and higher education roles are typically associated with higher age profiles, underscoring the value placed on experience and stability (OECD, 2022). In terms of marital status and educational attainment, the results are similar to those seen in European universities, where higher educational qualifications and a stable personal life are common among academics (OECD, 2022). This however differs from what has been previously reported in Uganda (UBOS, 2022). However, the high retention rates and professional grouping at UCU indicate a possibly unique institutional strategy or local academic culture that emphasizes long-term commitment and specialized roles more than some international counterparts.

5.2 Occupational hazards among staff in universities in Uganda

The study revealed that more than half of the respondents reported experiencing repetitive hand movements for at least three hours per day, while about third reported working in awkward positions, such as bending, twisting, or heavy manual labour. Additionally, a higher number of respondents reported standing for more than three hours a day, and being sometimes exposed to poor sitting postures. These factors pose a significant risk of musculoskeletal disorders such as carpal tunnel syndrome, tendonitis, and other repetitive strain injuries, as well as back pain, neck pain, and shoulder pain. The findings corroborate with those from a cross-sectional study conducted in Saudi Arabia where teachers developed musculoskeletal disorders in the last 12 months, with lower back pain being the most common site of the pain, followed by shoulders, neck, knees, hips/thighs/buttocks, upper back, wrists/hands, ankles/feet, and elbows (Althomali, 2022).

Regarding physical hazards, the study found that the majority of the respondents were always exposed to electric shock. This is concerning as exposure to electric shocks can cause serious injuries, including burns, heart damage, and nerve damage. There's a need for employers to prioritize electrical safety training and implement proper safety protocols to prevent electrical injuries in the workplace. Additionally, the study revealed that the prevalence of exposure to slips, falls and trips was higher. These findings are consistent with other studies which have reported related workplace injuries from slips, falls, trips and injuries from sharp objects (Amoakohene, 2022, Njeru, 2015). Institutions must implement proper safety measures and provide adequate training to prevent these types of injuries from occurring.

The study further found that higher number of the respondents were exposed to violence, including physical, sexual, and emotional abuse. Exposure to violence in the workplace can have significant negative impacts on workers' mental and physical health. Other studies in Nigeria and South Africa have reported similar findings (Agbaje *et al.*, 2021, Godbless and

Enoh, 2022, Mahlori *et al.*, 2018). These findings indicate a need for institutional violence prevention programs and policies in order to protect workers' safety and well-being.

5.3 Level of implementation of occupational safety and health measures among staff of universities in Uganda

More than half of the respondents reported a high implementation of occupational safety and health measures. One potential explanation for this finding is that some universities may have resources or be committed to OSH measures. Occupational safety and health measures are important for preventing occupational injuries and illnesses, and promoting the overall health and well-being of workers (Islam *et al.*, 2017, Zhou *et al*., 2019). However, it is important to note that this finding is self-reported and may not necessarily reflect the actual implementation of safety measures in the workplace. Therefore, it is necessary to continue to monitor and evaluate the implementation of OSH measures in the universities to ensure that workers are adequately protected from occupational hazards.

5.4 Factors associated with the implementation of occupational safety and health measures at UCU and KYU

The study revealed that workers at UCU had a higher likelihood of implementing OSH measures. This could have been due to a stronger commitment to OSH at UCU compared to Kyambogo, leading to higher implementation rates among the employees. This finding highlights the importance of institutional support and investment in occupational safety and health. Studies have shown that organizational culture and leadership play a critical role in promoting and sustaining OSH practices in the workplace (Siame *et al*., 2022, Rahmi and Ramdhan, 2021).

Working for 5-10 years and more than 10 years in the institution was negatively associated with high implementation of OSH measures. This could be because long-term employees

may become complacent to hazardous working conditions and uptake of OSH measures. This finding highlights the importance of ongoing OSH training and awareness-raising efforts among all employees, regardless of their tenure. Studies have shown that OSH interventions should be periodically reviewed and updated to ensure their effectiveness. This study also showed that the proportion of implementation of OSH measures was lower among respondents with a low knowledge level compared to those with high knowledge of OSH. This finding emphasizes the importance of OSH education and training for workers to improve their knowledge level, and consequently their uptake of OSH measures. This findings was consistent with those reported in a scoping review conducted by Siame *et al.* (2022) which reported that workers' knowledge level a towards OSH was a facilitator for the implementation of OSH measures.

The study found that respondents who reported feeling very good about the OSH measures in place had a significantly higher proportion of implementation of OSH measures compared to their counterparts. This suggests that employees who have a positive perception of the OSH measures in their workplace are more likely to implement them effectively. This finding is consistent with other studies which have shown a positive relationship between positive perceptions about workplace safety and implementation of safety measures (Njeru, 2015, Siame *et al.*, 2022). It was further found that respondents who described the management as being very committed to safety had a significantly higher proportion of high implementation of OSH measures compared to those who described the management as not being committed to safety. This finding is consistent with previous research, which has shown that management's commitment to safety is a critical factor in promoting a safe work environment (Njeru, 2015, Siame *et al.*, 2022).

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

6.1.1 Common occupational hazards among university staff in Uganda

The common occupational hazards among the university staff were; ergonomic, physical, chemical and psychosocial hazards. Among the ergonomic hazards, issues such as poorly designed workstations and prolonged sitting or standing were predominant while physical hazards included exposure to laboratory chemicals and unsafe building conditions.

6.1.2 Implementation of occupational safety and health measures among university staff in Uganda

More than half of the respondents reported a high level of implementation of occupational safety and health measures at the universities.

6.1.3 Factors associated with the implementation of occupational safety and health measures at universities in Uganda

The factors that were associated with the implementation of occupational safety and health measures at universities included; years of work at the institution, knowledge of OSH, perceptions regarding OSH, and commitment from management were associated to implementation of OSH measures.

6.2 Recommendations

1. Universities should have well-defined safety and health policies in place, which should be regularly reviewed and updated. The policy should cover all aspects of OSH, including hazard identification, risk assessment, and control measures, as well as the provision of necessary safety equipment and first aid facilities.

2. Management in universities should enforce health and safety regulations to ensure that all employees are compliant. This can be achieved through regular safety training and awareness programs for all employees, including temporary staff and contractors.
3. There's a need for universities to promote preventive measures such as ergonomically designed work stations, job rotation, and breaks to reduce the risk of musculoskeletal disorders.
4. Measures should be put in place to prevent violence in the universities, including the provision of training on how to identify and manage violent behaviour, and the implementation of strict disciplinary procedures for offenders.
5. There's a need for preventive measures such as ergonomically designed work stations, job rotation, and breaks to reduce the risk of musculoskeletal disorders among university staff.
6. There is need to tailor OSH measures to address specific demographic needs identified, such as gender disparities at UCU. Implement targeted interventions like gender-specific safety training and enhanced monitoring of compliance in areas with pronounced disparities.

6.3 Area for future research

Future studies are necessary to explore how prolonged exposure to academic environments influences physical and mental health of the university staff.

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APPENDICES

Appendix I: Informed consent form to participate in the study

Study Title: Assessment of occupational safety and health hazards and safety practices among staff of Kyambogo and Uganda Christian University.

Introduction: Hello, my name is Mwanja Wilson Steeve, I am a student of Kyambogo University conducting a study with in Kyambogo University and Uganda Christian University. You are being requested to take part in this study.

Background of the study

Occupational safety and health hazards can result in accidents and work-related diseases that have a major impact on individuals and their families, not only in economic terms but also in terms of their physical and emotional well-being in the short and long term. The university staff given the working are exposed to working conditions that expose them to such accidents and associated injuries. There is limited information on the occupational health hazards and safety practices among the university staff in Kyambogo and Uganda Christian university.

Purpose of the study: To determine the common occupational safety and health hazards, safety practices and the factors associated with their implementation among staff in Kyambogo and Uganda Christian University.

Your participation in the study: Your decision to participate in this study is voluntary. You may refuse to take part in the study or stop at any time without affecting your relationship with the investigator of this study or Kyambogo University and Uganda Christian University. Once you accept to take part in this study, you will be asked questions about the occupational health hazards, safety practices and associated factors among staff in Uganda Christian University and Kyambogo University.

What are the risks involved in participating in this study: There are no anticipated major risks to be caused as a result of participating in this study. However, if for any reason, you feel uncomfortable with some questions asked during the interview, you are free to discontinue your participation without any repercussions whatsoever.

Your confidentiality: Your name will not be written on this form and therefore you will not be identified in any way. The data collected will be stored in a password protected computer and it will be audio recorded.

Benefits of being in this study: There are no direct benefits to you when you participate in this study. Your responses will help us in learning more about the common occupational health hazards, safety practices and the factors associated with their implementation among the staff of Kyambogo and Uganda Christian University.

Costs: You will not pay or be paid anything to participate in this study.

What does your signature mean: Your signature on this document indicates that you have decided to take part in this study, and that you have read and understood the information provided. You will be given a copy of the consent form.

Who to contact: If you have questions about the study, you can contact the Principal Investigator, Dr. Mwanja Wilson Steeve on Telephone; 0772638168.

Consent statement: I have read and I understood the provided information and I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's name	Signature / Thumb print	Date
Name of the consenting person	Signature	Date

Appendix II: Questionnaire

Hello, my name is Mwanja Wilson Steeve, I am a student of Kyambogo University conducting a study within Kyambogo University and Uganda Christian University. I am requesting you spare some time to answer a few questions on occupational health hazards and safety practices in your university. I would like to reassure you that all the information given will be confidential. We will not give this information to anybody. It will be used for research purposes only.

Section 100: Interviewer Information

DATE OF INTERVIEW	|__|__| Day |__|__| Month |__|__||__|__| Year
INTERVIEWER NAME	_____

Section 2: Socio demographic characteristics

SN	Questions	Responses	code
101	Sex of the respondent	Male…… Female…….	1 2
102	University	Kyambogo ……. Uganda Christian University…….	1 2
103	Date of birth	|__|__|day|__|__|month|__|__||__|__|year	
104	Age in completed years		
105	Your current marital status	Married .....…….. Single……..... Widowed……..…….. other…….....….	1 2 3 4
106	Your highest level of education	Certificate…… Diploma……. Bachelor's degree…….. Masters…… PHD…… Others…….	1 2 3 4 5 98
107	What job do you do at this university?	Support staff……. Lecturer…… Administrator…… Others…….	1 2 3 98
108	How long have you worked for this institution (in completed years)?	…	
109	On average, how many hours do you work per week?		
110	For how many days do you rest in a week?		

Section 200: Common Occupational hazards

The following statements are based on **workplace hazards**. Please choose the most appropriate answer options.

Answer Options

Never =0	**Rarely=1**	**Sometimes =2**	**Always =3**

#	Statement	0	1	2	3
201	How often do you do repetitive movement with your hands for at least 3 hours during the day?				
202	How often do you interact with chemicals or inflammable substances?				
203	How often do you work in awkward positions (bend, twist, heavy manual labor)?				
204	How often do you work in high noise levels				
205	How often do you stand for more than 3 hours a day?				
206	How often does your work involve sitting without changing position for prolonged hours?				
207	How often is the occurrence of exposure to improperly adjusted workstations and chairs?				
208	How often is the occurrence of exposure to poor sitting postures?				
209	How often is the occurrence of exposure to frequent lifting?				
210	How often do you manually push or lift items that are more than 20 kgs?				
211	How often is the occurrence of exposure to poor lighting?				
212	How often is the occurrence of exposure to toxic fumes and gases?				
213	How often is the occurrence of exposure to slips/Falls/trips?				
214	How often is the occurrence of exposure to cuts, needle prick and injuries from sharps?				
215	How often is the occurrence of exposure to violence including physical, sexual and emotional in your workplace?				
216	How often is the occurrence of exposure to electric shock?				
217	How often is the occurrence of exposure to vibrations?				
218	How often is the occurrence of exposure to contagious pathogens/agents or microorganisms?				

Section 300: Knowledge of occupation safety

#	Statement	Yes	No	Don't know
301	I am aware of the Uganda occupational safety and health act and know how to protect myself against occupational hazards.			
302	I have a right to be part of the process of identifying and resolving workplace health and safety concerns.			
303	It is critical for staff to master occupational safety regulations			
304	It is important to know and follow safe work procedures			
305	It is important to report injuries or illnesses immediately.			
306	I am clear about health and safety regulations at work			
307	I have a right to refuse hazardous work.			
308	Workers and employers must share the responsibility for occupational health and safety.			
309	The workplace requires adequate lighting but ventilation is a secondary concern.			
310	Occupational health and safety are the responsibility of both employers and employees in order to ensure their rights.			
311	Monitoring, inspection, and evaluation of safety practices are prerequisites for effective occupational health and safety			
312	The university should have employee assistance programs that are crucial in preventing occupational hazards to some extent			

Section 400: Attitude towards occupational safety and health

Following statements are based on workplace health and safety awareness. Please choose the most appropriate answer options.

Answer Options

Strongly Disagree (SD)=0	**Disagree (D)=1**	**Neutral(N)=2**	**Agree (A) =3**	**Strongly Agree (SA)=4**

#	**Statement**	**0**	**1**	**2**	**3**	**4**
401	Occupational hazards should be taken seriously and given prompt attention					
402	Paying extra attention to occupational hazard is an unnecessary burden on me					
403	Training of staff and provision of personal protective equipment is necessary to reduce the risk of exposure to occupational hazards					
404	Protective equipment should be worn in procedures where splash/spill of excreta or other liquid waste is likely					
405	Punitive actions should be taken against workers that violate standard safety precautions and practices					
406	Workplace risk assessment is important for occupational safety					
407	Wearing PPE should be mandatory					

Section 500: Implementation of occupational safety and health measures in universities

Answer Options

Strongly Disagree (SD)=0	**Disagree (D)=1**	**Neutral(N)=2**	**Agree (A) =3**	**Strongly Agree (SA)=4**

#	**Statement**	**1**	**2**	**3**	**4**	**5**
501	The university has a safety and health policy in place					
502	The university enforces health and safety regulations					
503	There is always an orientation program for new staff on health and safety in the university					
504	The university ensures that only authorized, adequately trained workers operate equipment					
505	The university ensures that the equipment we use is properly maintained to prevent accidents.					
506	The university promotes safety awareness and information among staff.					
507	The University provides medical and remedial first aid facilities to					

	staff.					
508	The university ensures that there that personal protective equipment available to all staff all the time.					
509	Firefighting equipment such as fire extinguishers are available and staff is trained on how to use them.					
510	There is an emergency response plan on health and safety in the university					
511	Assessments are usually done to identify risks and hazards in the university.					
512	Performance on Health and safety is regularly evaluated in this university.					
512	There is a health and safety committee constituted by staff that meets regularly to review health and safety within the university.					
513	There is a health and safety committee in place to handle occupational health and safety issues.					
514	There are mechanisms in this university to reduce the extent and severity of work-related injuries and illnesses					
515	There are clear established channels of communication in the university for handling occupational health issues and awareness					
516	The staff members are involved in the program and in the decisions that affect their health and safety.					
517	The university carries out risk assessments, to identify not only existing hazards but also conditions and operations where changes might occur to create hazards					
518	The university conducts comprehensive baseline and periodic surveys for health and safety.					
519	The university investigates the accidents so that their causes and means of prevention are identified					
520	The university has adequate lighting					
521	There are adequate sanitary facilities such as toilets for all including the disabled people.					
522	All the offices and lecture rooms in the university have adequate ventilation facilities					
523	The offices are cleaned regularly					
524	Every staff receives compulsory health and safety training					
525	There's an appointed person within your workplace responsible for health and safety matters					

526	Workplace health and safety is considered extremely important?					
527	Every employee receives medical check-ups before employment					
528	Every employee in the university receives frequent medical check-ups					

Section 600: Factors associated with the implementation of occupational safety and health measures

#	Question	Response	Code
501	Do you think this university handles occupation safety and health of the staff well?	Yes No	1 2
502	How do you feel about the way the occupational health safety measures in place	I feel bad I don't know I feel good I feel very good	1 2 3 4
503	Do you feel motivated with the way occupational safety and health measures are managed in this university	Yes No	1 2
504	How do you feel about your job in this university	So, stressing I feel like I want to give up Somehow okay Very okay	1 2 3 4
505	Do you think occupation safety and health measures are well managed in this university?	Yes No	1 2
506	If yes, how do you feel about the way this university managed occupational health?	Feel bad very Feel bad Feel good Feel very good Don't know	1 2 3 4 5
507	Do you think the people in charge of implementing occupational safety have done their work well?	Yes No	1 2
508	Are you interested in adhering to occupational health safety measures?	No interested Interested Somehow	1 2 3

		interested	
509	Do you think government has put in place regulations to help in implementing occupational health and safety?	Yes No	1 2
510	If yes which regulations are in place	…..	
511	Are there certifications done to ensure safety of the work place?	Yes No	1 2
512	Does this university get external audits on occupational safety and health from responsible authorities	Yes No	1 2
513	Do you normally get pressure from the students and other stakeholders requesting you to put in place occupational health measures	Yes No	1 2
514	How would you describe the management's commitment to safety	Not committed at all Somehow committed Neutral Very committed	1 2 3 4
515	Are there institutional policies in place aimed at facilitating the implementation of occupational health and safety measures?	Yes No	1 2
516	If yes, which policies do you think are in place?	…	
517	How would you describe the leadership of this university in relation to occupational safety and health?	Very poor Poor Fair Neutral Good Very good Excellent	1 2 3 4 5 6 7

Appendix III: Key informant interview guide

Interview date	
Respondent age	
Respondent sex	
Occupation	
University	
Time the interview has taken	

Interviewer's guidance:

These questions are to be used as a guide for initiating and stimulating discussion with the key informant purposively selected for their opinion and understanding of the implementation of occupational safety and health measures among the university staff.

1. Please briefly describe your role and responsibilities in this university.
2. Please briefly describe for me your understanding of occupational safety and health.
3. What do you think are the common occupational hazards that the staff in this university face? *Probe for physical, chemical and ergonometric hazards.*
4. **In your opinion what are some of the factors influencing implementation of occupational safety and health measures in this university?** *Probe for;*
   - ***Individual factors such as;*** *staff knowledge on occupational health and safety, attitude and their moral towards occupational health and safety.*
   - ***Societal factors such as;*** *availability of government regulations, enforcement of regulations, certification and availability of occupational safety audits.*
   - ***Institutional factors such as;*** *management's commitment to safety, institutional policies on occupational safety and health, and the leadership.*

5. Generally, what do you think the attitude of the staff in this university is towards occupational safety and health? (Probe whether positive or negative)
6. What do you think can be done to improve attitude of the staff towards occupational safety and health?
7. In your opinion, is there anything we haven't discussed and you think would add us more information on occupational safety and health among staff in this university?

Thank you for your participation

Appendix IV: Clearance from Kyambogo University

KYAMBOGO UNIVERSITY

FACULTY OF SCIENCE

P. O. BOX 1, KYAMBOGO - KAMPALA, UGANDA

TEL: +256-41-285347, 285001/2 Fax: 041-223464/222643

Website: www.kyu.ac.ug

BIOLOGICAL SCIENCES DEPARTMENT

25th July 2022

To: Kyambogo University
P. O Box 1
Kyambogo

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: INTRODUCTORY LETTER FOR CONDUCTING A FINAL YEAR RESEARCH

This is to introduce to you **Mr. Mwanja Wilson Steeve** with Registration Number **20/U/GMSPH/13245/PD** a second-year student of Kyambogo University pursuing a Master's of Public Health in the Department of Biological Sciences, Kyambogo University.

As part of the requirements for the award of the Master's degree, he's required to conduct a research project. The title of the research is **"Assessment of occupational Health and Safety measures among the staff of Universities in Uganda."** Supervised by Dr. Wekoye Stephen and Dr. Nakiguzi Harriet.

Please accord him the necessary assistance to enable him carry out the research.

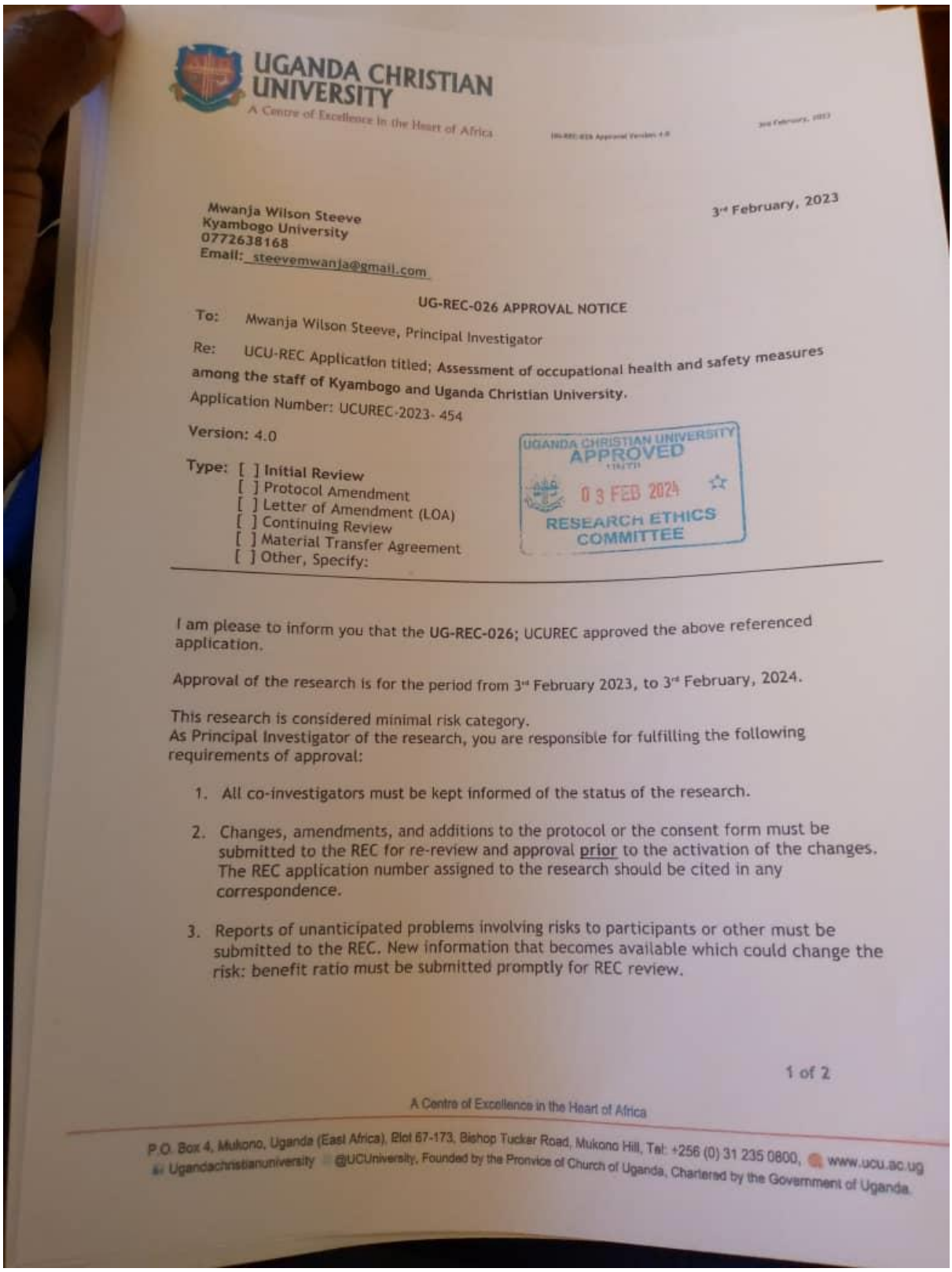
Thanks

Yours faithfully,

Asio Santa Maria (PhD)
Ag. HEAD OF DEPARTMENT

KYAMBOGO UNIVERSITY
BIOLOGICAL SCIENCE DEPT.
☆ 25 JUL 2022 ☆
P. O. BOX 1, KYAMBOGO

Appendix V: Clearance from Uganda Christian University



UGANDA CHRISTIAN UNIVERSITY
A Centre of Excellence in the Heart of Africa

Mwanja Wilson Steeve
Kyambogo University
0772638168
Email: steevemwanja@gmail.com

3rd February, 2023

UG-REC-026 APPROVAL NOTICE

To: Mwanja Wilson Steeve, Principal Investigator

Re: UCU-REC Application titled; Assessment of occupational health and safety measures among the staff of Kyambogo and Uganda Christian University.

Application Number: UCUREC-2023- 454

Version: 4.0

Type: [ ] Initial Review
[ ] Protocol Amendment
[ ] Letter of Amendment (LOA)
[ ] Continuing Review
[ ] Material Transfer Agreement
[ ] Other, Specify:

UGANDA CHRISTIAN UNIVERSITY APPROVED 03 FEB 2024 RESEARCH ETHICS COMMITTEE

I am please to inform you that the UG-REC-026; UCUREC approved the above referenced application.

Approval of the research is for the period from 3rd February 2023, to 3rd February, 2024.

This research is considered minimal risk category.
As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and additions to the protocol or the consent form must be submitted to the REC for re-review and approval prior to the activation of the changes. The REC application number assigned to the research should be cited in any correspondence.
3. Reports of unanticipated problems involving risks to participants or other must be submitted to the REC. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for REC review.

1 of 2

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P.O. Box 4, Mukono, Uganda (East Africa). Plot 67-173, Bishop Tucker Road, Mukono Hill, Tel: +256 (0) 31 235 0800, www.ucu.ac.ug
Ugandachristianuniversity @UCUniversity. Founded by the Province of Church of Uganda, Chartered by the Government of Uganda.

Appendix VI: Plagarism Report